



2017 ANNUAL GROUNDWATER MONITORING REPORT

SCPA, Sioux Energy Center

St. Charles County, Missouri, USA



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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 SCPA Surface Impoundment at the Sioux Energy Center (SEC) is subject to the requirements of the CCR Rule. This is the first Annual Report for the SCPA and describes CCR Rule groundwater monitoring activities through December 31, 2017.

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A groundwater monitoring well network was designed and installed for the SCPA to meet the requirements of the CCR Rule. The well network consists of two background monitoring wells and six downgradient monitoring wells that were installed in December 2015 and November 2016. Eight independent baseline sampling events were completed using this well network to sample and test for all Appendix III and Appendix IV parameters, as required by the CCR Rule. The first Detection Monitoring sampling event for the SEC was completed November 13-15, 2017. Statistical analysis of the Detection Monitoring data will be performed in 2018. The SCPA will continue Detection Monitoring on a semi-annual basis and, in accordance with the CCR Rule, statistical analysis of sample results will determine the need for Assessment Monitoring or any efforts related to Assessment of Corrective Measures or potential Corrective Action in the future. As of December 31, 2017, the SCPA groundwater monitoring program status remains in Detection Monitoring.



2.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the SCPA. The groundwater monitoring system consists of eight monitoring wells screened in the uppermost aquifer (alluvial aquifer). Monitoring wells were installed by Cascade Drilling LP using rotosonic drilling techniques under the direct supervision of a Golder Geologist or Engineer and were installed in accordance with Missouri Department of Natural Resources (MDNR) well construction rules (10 CSR 23-4.060 Construction Standards for Monitoring Wells). A summary of groundwater monitoring well construction details is provided in **Table 1** and **Appendix A**.

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2.1 Background Monitoring Well Locations

Background Monitoring wells for the SCPA consist of BMW-1D and BMW-3D. The Rule (§257.91(a)(1)) requires that background groundwater monitoring wells "Accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit." The Rule allows background monitoring wells that are not hydraulically upgradient where hydrogeological conditions preclude it, and/or where sampling at other monitoring wells will provide an indication of background groundwater quality that is as representative as, or more representative than, that provided by upgradient monitoring well locations. The groundwater flow direction observed in the alluvial aquifer is generally from either the Mississippi River towards the Missouri River or from the Missouri River towards the Mississippi River with a slight eastward component in the downgradient river direction. Alluvial aquifer flow is locally influenced by water levels in the SCPA and the Mississippi and Missouri River levels.

As shown in **Figure 1**, the background monitoring wells are BMW-1D and BMW-3D. These wells are located west of the SCPA and provide background groundwater quality for SCPA monitoring.

2.2 Downgradient Monitoring Well Locations

Downgradient monitoring wells are located around the SCPA to monitor downgradient water quality. **Figure 1** shows that the downgradient well network consists of six groundwater monitoring wells (UMW-1D, UMW-2D, UMW-3D, UMW-4D, UMW-5D, and UMW-6D) around the SCPA at locations that are located in locations that accurately represent the quality of groundwater passing the waste boundary of the CCR Unit.



3.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

3.1 Baseline Sampling Events (Background Events)

As required by the CCR Rule, eight baseline groundwater sampling events were completed prior to October 17, 2017. Groundwater sampling was completed by Golder in accordance with the SCPA Groundwater Monitoring Plan (GMP). As required by the CCR Rule, baseline sampling was completed for all Appendix III and Appendix IV parameters. Groundwater sampling and field parameter results from the initial baseline sampling are provided in **Appendix B** and **Tables 2-9**.

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3.2 Detection Monitoring

Detection Monitoring samples for the SEC were collected from the groundwater monitoring wells on November 13-15, 2017. As required by the CCR Rule, testing was completed for all Appendix III analytes. Groundwater sampling and field parameter results from the November 2017 Detection Monitoring event are provided in **Appendix B** and **Table 10**. Statistical analyses to evaluate Statistically Significant Increases (SSI) over background in the November 2017 Detection Monitoring data were not completed in 2017. Results of the statistical evaluation will be included in the 2018 Annual Report.

3.3 Groundwater Elevation, Flow Rate and Direction

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

Groundwater elevations were used to generate potentiometric surface maps included in **Appendix C**. As shown on the potentiometric surface maps, groundwater flow direction within the uppermost aquifer is dynamic and directly controlled by the river stages of the 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 towards the Mississippi and Missouri Rivers, depending on river levels.

Groundwater flow direction and gradient were estimated for the downgradient CCR monitoring wells using the USEPA's On-line Tool for Site Assessment Calculation for Hydraulic Gradient (Magnitude and Direction) (USEPA, 2016). Results from this assessment indicate that while groundwater flow direction is variable and gradients are relatively flat, the overall net groundwater flow at the SCPA was slightly toward the north or toward the Mississippi River. Horizontal gradients calculated by the program range 0.0001 to 0.0007 feet/foot throughout the intermediate/deep alluvial aquifer and from 0.0002 to 0.0006 feet/foot in the





compliance wells surrounding the SCPA with an estimated net annual groundwater velocity of approximately 13 feet per year.



4.0 STATUS OF THE GROUNDWATER MONITORING PROGRAM

As required by the CCR Rule prior to the October 17, 2017 deadline, the following was completed; (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, and (3) a GMP was prepared recording the design, installation, development, sampling procedures, as well as statistical methods and placed in the owner's operating record. The first Detection Monitoring sampling event for the SEC was completed on November 13-15, 2017. A summary including the number of groundwater samples that were collected for analysis, the dates the samples were collected, and whether the sample was required by baseline, detection or assessment monitoring is provided below in **Table 11**. According to the CCR Rule, statistical evaluation for these samples must be completed within 90 days of completing sampling and analysis. Verification sampling, if needed, and statistical analysis will be completed by January 15, 2018 and included in future reports and notifications as required by the CCR Rule. Semi-annual Detection Monitoring will continue as required by the CCR Rule. Section 5.0 provides discussion of activities planned for 2018.

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Table 11 - Summary of Groundwater Sampling Dates

			Grou	ndwater M	lonitoring	Wells			Baseline
Sampling Event	BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D	Detection or Assessment
			Monitoring						
Baseline Event 1	3/16/2016	11/17/2016	3/17/2016	3/16/2016	3/16/2016	3/16/2016	3/16/2016	3/17/2016	Baseline
Baseline Event 2	5/9/2016	12/8/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016	Baseline
Baseline Event 3	7/5/2016	1/3/2017	7/5/2016	7/6/2016	7/6/2016	7/6/2016	7/7/2016	7/7/2016	Baseline
Baseline Event 4	9/14/2016	2/2/2017	9/15/2016	9/14/2016	9/14/2016	9/14/2016	9/16/2016	9/16/2016	Baseline
Baseline Event 5	11/7/2016	3/8/2017	11/8/2016	11/7/2016	11/7/2016	11/7/2016	11/7/2016	11/8/2016	Baseline
Baseline Event 6	1/3/2017	4/5/2017	1/5/2017	1/5/2017	1/5/2017	1/5/2017	1/5/2017	1/5/2017	Baseline
Baseline Event 7	3/8/2017	6/5/2017	3/9/2017	3/9/2017	3/9/2017	3/9/2017	3/8/2017	3/8/2017	Baseline
Baseline Event 8	6/5/2017	6/26/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/7/2017	6/6/2017	Baseline
November 2017 Detection Monitoring Event	11/13/2017	11/13/2017	11/14/2017	11/13/2017	11/13/2017	11/13/2017	11/13/2017	11/13/2017	Detection
Total Number of Samples Collected	9	9	9	9	9	9	9	9	NA

Notes:

- 1) Baseline Events sampled for all Appendix III and Appendix IV parameters.
- 2) The November 2017 Detection Monitoring Event sampled for Appendix III parameters.
- 3) NA Not Applicable.

4.1 Sampling Issues and Monitoring Well Decommissioning

Some sampling issues were encountered during the baseline sampling events. BMW-3D was installed to replace BMW-2D in November 2016. BMW-2D was replaced due to concern that it was not providing groundwater samples that were representative of background water conditions at the SEC. The variable direction of overall groundwater movement at the SEC complicates the placement of background wells. The groundwater can flow north and south depending upon the levels of the Mississippi and Missouri Rivers. Therefore, BMW-2D is no longer used for groundwater monitoring (only for piezometric level measurement) and BMW-3D was installed as a second background well and located to the west of the CCR units at the SEC.





During Baseline Sampling Event 4, sample analysis for S-UMW-5D and S-UMW-6D were switched as the result of an error. Values were determined to be switched based on review of results and professional judgement. Consequently, testing data were matched with the correct wells and these updates are reflected in **Appendix B** and **Table 5**.

From approximately April 30, 2017 to May 15, 2017, some of the monitoring wells at the SEC were under water due to the flooding of the Mississippi and Missouri Rivers. At the SCPA, the following wells were submerged by flood water: UMW-4D, BMW-1D, and BMW-3D. On May 19, 2017 Golder performed a post-flood monitoring well inspection at the SEC and found that none of the SCPA monitoring wells sustained flood damage. Due to access problems resulting from the flood, the wells were not sampled until June 5, 2017. No other notable sampling issues were encountered during the Baseline or Detection Monitoring sampling.



5.0 ACTIVITIES PLANNED FOR 2018

Detection Monitoring sampling is currently scheduled to be completed semi-annually in the second and fourth quarters of 2018, but may be changed due to site conditions (e.g., flooding, access, etc.). Statistical analysis of the November 2017 Detection Monitoring data will be completed by January 15, 2018. If it is determined that there is an SSI over background, Ameren will collect verification samples for all SSIs. Additionally, within 90 days of determining an SSI, Ameren would either establish an Assessment Monitoring program or demonstrate that the SSI was the result of error, or caused by an alternate source.

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6.0 CLOSING

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Table 1
Monitoring Well Construction Details
SCPA Surface Impoundment
Sioux Energy Center, St. Charles County, MO

		Locat	ion ⁴	Top of Casing Elevation	Ground Surface Elevation	Top of Screen	Bottom of Screen	Base of Well	Total Depth
Well ID	Date Installed	Northing	Easting	(FT MSL) ⁵	(FT MSL) ⁵	(FT MSL) ⁵	(FT MSL) ⁵	(FT MSL) ⁵	(FT BGS) ⁵
UMW-1D	12/15/2015	1121321.4	879420.0	447.16	445.4	383.9	374.1	373.7	71.7
UMW-2D	12/17/2015	1120266.7	878981.6	433.86	431.7	386.6	376.8	376.4	55.4
UMW-3D	12/16/2015	1120570.4	878251.1	431.67	430.1	384.3	374.5	374.1	56.0
UMW-4D	12/16/2015	1121077.9	877859.9	423.52	421.7	380.7	370.9	370.5	51.2
UMW-5D	12/17/2015	1121815.0	877799.1	446.66	444.8	384.8	375.0	374.6	70.2
UMW-6D	12/18/2015	1122312.0	878639.5	447.02	444.9	384.1	374.3	373.9	71.0
BMW-1D	12/8/2015	1121713.6	876740.9	428.28	426.0	383.1	373.3	372.9	53.2
BMW-3D	11/8/2016	1121798.8	875798.3	426.41	424.2	381.8	372.0	371.6	52.6

Notes:

- 1.) All elevations and coordinates were surveyed on January 14, 2016 and December 8, 2016 by Zahner and Associates, Inc.
- 2.) FT MSL = Feet Above Mean Sea Level.
- 3.) FT BGS = Feet Below Ground Surface.
- 4.) Horizontal Datum: State Plane Coordinates NAD83 (2000) Missouri East Zone Feet.
- 5.) Vertical Datum: NAVD88 Feet.

Prepared By: JS Checked By: JSI Reviewed By: MNH

Table 2 **Baseline Sampling Event 1 Results SCPA Surface Impoundment** Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKG	ROUND		GROUN	DWATER M	IONITORING	6 WELLS	
		BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D
FIELD PARAMETERS									
DATE	NA	3/16/2016	11/17/2016	3/17/2016	3/16/2016	3/16/2016	3/16/2016	3/16/2016	3/17/2016
DISSOLVED OXYGEN	mg/L	0.27	0.96	0.63	0.58	0.47	0.25	1.16	0.71
pH	SU	7.13	6.92	7.48	8.08	8.09	7.26	6.82	6.66
REDOX POTENTIAL	mV	-96.5	-131.5	-221.3	-231.4	-184.0	-199.9	-61.7	-72.8
SPECIFIC CONDUCTIVITY	mS/cm	0.618	0.704	0.635	1.115	1.368	1.089	0.826	0.685
TURBIDITY	NTU	4.15	0.86	0.67	1.76	4.12	2.62	4.25	4.56
APPENDIX III									
BORON, TOTAL	μg/L	193	50.7 J	254	15,100	30,200	31,200	10,800	647
CALCIUM, TOTAL	μg/L	126,000	104,000	78,400	200,000	293,000	191,000	98,400	79,300
CHLORIDE, TOTAL	mg/L	5.3	8.5	18.9	19.5	17.2	25.5	24.7	17.3
FLUORIDE, TOTAL	mg/L	0.30	0.28	0.34	1.1	0.81	0.75	0.58	0.29
SULFATE, TOTAL	mg/L	36.5	26.9	80.5	524	833	511	41.5	60.0
TOTAL DISSOLVED SOLIDS	mg/L	471	429	389	1,010	1,450	1,100	455	345
APPENDIX IV									
ANTIMONY, TOTAL	μg/L	ND	ND	0.13 J	0.067 J	0.083 J	ND	ND	ND
ARSENIC, TOTAL	μg/L	0.20 J	0.24 J	0.90 J	0.87 J	0.82 J	0.70 J	0.80 J	0.31 J
BARIUM, TOTAL	μg/L	334	612	161	122	88.0	95.9	369	133
BERYLLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	μg/L	ND	0.46 J	ND	0.35 J	0.56 J	0.40 J	0.42 J	0.37 J
COBALT, TOTAL	μg/L	0.73 J	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	μg/L	ND	ND	ND	3.9 J	4.2 J	3.6 J	4.8 J	ND
LITHIUM, TOTAL	μg/L	14.2	14.2	13.1	24.6	14.7	37.9	31.4	12.6
MERCURY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	μg/L	1.3 J	ND	31.7	1,310	4,800	8,300	264	95.9
RADIUM [226 + 228]	pCi/L	ND	ND	ND	ND	ND	ND	1.283	ND
SELENIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	0.20 J	ND
THALLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
 Unit Abbreviations: μg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, and pCi/L - picocuries per liter, mV - millivolts, mS/cm - millisiemens per centimeter, NTU - nephelometric turbidity unit.
 J - Result is an estimated value.
 ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect.
 Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228

Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.

Table 3 **Baseline Sampling Event 2 Results SCPA Surface Impoundment** Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKG	ROUND		GROUN	DWATER M	IONITORING	6 WELLS	
		BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D
FIELD PARAMETERS									
DATE	NA	5/9/2016	12/8/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016
DISSOLVED OXYGEN	mg/L	1.30	0.09	0.70	1.27	1.32	1.31	0.88	1.09
Н	SU	6.24	7.21	7.35	7.34	7.06	6.68	7.24	7.10
REDOX POTENTIAL	mV	-24.6	-116.1	-74.1	-70.1	-76.3	-53.4	-96.3	-65.0
SPECIFIC CONDUCTIVITY	mS/cm	1.037	0.715	0.625	1.789	1.972	1.698	0.853	0.688
TURBIDITY	NTU	1.99	1.13	2.66	2.60	4.08	4.72	3.43	9.01
APPENDIX III									
BORON, TOTAL	μg/L	182	53.1 J	614	18,800	26,100	26,300	11,800	680
CALCIUM, TOTAL	μg/L	132,000	103,000	62,700	226,000	256,000	177,000	97,000	82,800
CHLORIDE, TOTAL	mg/L	5.5	10.8	20.0	21.2	23.5	25.5	7.3	18.6
FLUORIDE, TOTAL	mg/L	0.35	0.34	0.31	1.3	1.1	0.89	0.65	0.37
SULFATE, TOTAL	mg/L	39.9	36.8	61.1	641	663	397	26.1	66.2
TOTAL DISSOLVED SOLIDS	mg/L	465	425	321	1,110	1,210	1,000	453	377
APPENDIX IV									
ANTIMONY, TOTAL	μg/L	ND	0.076 J	0.11 J	0.077 J	0.21 J	ND	ND	ND
ARSENIC, TOTAL	μg/L	ND	ND	0.90 J	1.1	0.85 J	0.60 J	0.88 J	0.20 J
BARIUM, TOTAL	μg/L	314	667	120	121	75.6	78.4	333	129
BERYLLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	μg/L	0.58 J	0.99 J	0.62 J	0.66 J	0.62 J	0.48 J	0.56 J	ND
COBALT, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	μg/L	3.7 J	ND	3.0 J	ND	ND	ND	2.5 J	2.9 J
LITHIUM, TOTAL	μg/L	16.8	20.6	14.6	29.7	27.2	39.6	32.5	14.4
MERCURY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	μg/L	0.53 J	1.8 J	38.3	1,440	4,250	7,220	271	106
RADIUM [226 + 228]	pCi/L	ND	ND	ND	ND	ND	ND	1.535	ND
SELENIUM, TOTAL	μg/L	ND	ND	ND	ND	0.23 J	0.21 J	ND	ND
THALLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
 Unit Abbreviations: μg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, and pCi/L - picocuries per liter, mV - millivolts, mS/cm - millisiemens per centimeter, NTU - nephelometric turbidity unit.
 J - Result is an estimated value.
 ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect.
 Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228

Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.

Table 4 **Baseline Sampling Event 3 Results SCPA Surface Impoundment** Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKG	ROUND		GROUN	DWATER M	ONITORING	WELLS	
		BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D
FIELD PARAMETERS									
DATE	NA	7/5/2016	1/3/2017	7/5/2016	7/6/2016	7/6/2016	7/6/2016	7/7/2016	7/7/2016
DISSOLVED OXYGEN	mg/L	1.67	0.39	1.20	1.21	0.41	0.95	1.65	1.52
рН	SU	7.17	7.52	7.65	8.23	8.05	7.21	7.42	7.10
REDOX POTENTIAL	mV	-66.3	-111.7	-108.2	-121.2	-121.2	-75.1	-116.3	-82.1
SPECIFIC CONDUCTIVITY	mS/cm	0.839	0.724	0.620	1.252	1.303	1.258	0.739	0.594
TURBIDITY	NTU	4.00	2.54	1.55	3.35	2.93	3.64	4.09	9.30
APPENDIX III									
BORON, TOTAL	μg/L	236	76.2 J	810	16,800	24,000	26,500	12,900	760
CALCIUM, TOTAL	μg/L	121,000	141,000	68,600	209,000	219,000	178,000	94,600	76,500
CHLORIDE, TOTAL	mg/L	5.8	11.2	21.2	19.9	24.6	25.5	24.7	21.7
FLUORIDE, TOTAL	mg/L	0.26	0.34	0.22	1.1	1.0	0.86	0.66	0.34
SULFATE, TOTAL	mg/L	41.1	28.8	65.1	594	565	522	40.4	77.8
TOTAL DISSOLVED SOLIDS	mg/L	475	445	376	1,090	1,150	1,100	461	364
APPENDIX IV									
ANTIMONY, TOTAL	μg/L	ND	ND	0.078 J	ND	ND	ND	ND	ND
ARSENIC, TOTAL	μg/L	0.17 J	1.5	1.1	1.4	0.44 J	0.27 J	0.65 J	0.32 J
BARIUM, TOTAL	μg/L	261	183	138	119	70.1	83.4	312	118
BERYLLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	μg/L	0.35 J	0.59 J	ND	ND	ND	ND	0.46 J	0.67 J
COBALT, TOTAL	μg/L	ND	2.8 J	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	μg/L	ND	ND	ND	ND	2.7 J	ND	3.0 J	ND
LITHIUM, TOTAL	μg/L	12.8	7.9 J	13.7	28.7	26.0	37.9	29.8	12.1
MERCURY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	μg/L	ND	6.2 J	40.3	1,360	3,770	7,550	280	109
RADIUM [226 + 228]	pCi/L	ND	ND	ND	1.706	ND	1.396	ND	ND
SELENIUM, TOTAL	μg/L	ND	ND	ND	ND	0.30 J	ND	0.22 J	ND
THALLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
 Unit Abbreviations: μg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, and pCi/L - picocuries per liter, mV - millivolts, mS/cm - millisiemens per centimeter, NTU - nephelometric turbidity unit.
 J - Result is an estimated value.
 ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect.
 Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228

Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.

Table 5 **Baseline Sampling Event 4 Results SCPA Surface Impoundment** Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKG	ROUND		GROUN	DWATER M	ONITORING	WELLS	
7	J	BMW-1D	BMW-3D	UMW-1D	UMW-2D		UMW-4D	UMW-5D	UMW-6D
				0	0	0			
FIELD PARAMETERS									
DATE	NA	9/14/2016	2/2/2017	9/15/2016	9/14/2016	9/14/2016	9/14/2016	9/16/2016	9/16/2016
DISSOLVED OXYGEN	mg/L	1.89	0.74	0.77	1.81	1.25	0.31	0.83	0.82
рН	SU	7.36	6.12	7.02	7.90	7.98	7.30	7.10	7.01
REDOX POTENTIAL	mV	-105.6	-12.2	37.2	-137.4	-156.1	-20.4	12.5	-93.1
SPECIFIC CONDUCTIVITY	mS/cm	0.735	0.541	0.932	1.091	1.147	1.193	0.755	0.620
TURBIDITY	NTU	1.25	2.90	2.48	1.79	1.28	0.91	4.53	8.80
APPENDIX III									
BORON, TOTAL	μg/L	240	ND	318	14,700	25,200	24,100	11,400	802
CALCIUM, TOTAL	μg/L	123,000	106,000	99,000	192,000	220,000	176,000	90,400	74,100
CHLORIDE, TOTAL	mg/L	5.9	8.2	23.2	19.7	22.4	24.7	25.5	20.8
FLUORIDE, TOTAL	mg/L	0.32	0.34	0.19 J	1.0	1.0	0.84	0.63	0.44
SULFATE, TOTAL	mg/L	41.6	20.0	213	528	684	624	38.6	80.2
TOTAL DISSOLVED SOLIDS	mg/L	506	402	588	1,010	1,170	1,110	436	347
APPENDIX IV									
ANTIMONY, TOTAL	μg/L	ND	ND	0.066 J	ND	ND	ND	ND	ND
ARSENIC, TOTAL	μg/L	ND	ND	0.98 J	1.3	0.29 J	0.20 J	0.51 J	0.34 J
BARIUM, TOTAL	μg/L	309	650	195	105	71.8	81.2	300	117
BERYLLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	μg/L	ND	ND	ND	ND	0.25 J	0.45 J	ND	ND
CHROMIUM, TOTAL	μg/L	0.41 J	0.61 J	0.36 J	ND	ND	ND	0.64 J	ND
COBALT, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	μg/L	ND	ND	ND	ND	3.1 J	6.3	ND	ND
LITHIUM, TOTAL	μg/L	12.9	20.0	14.2	28.0	18.4	38.0	31.0	12.0
MERCURY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	μg/L	ND	ND	27.9	1,270	4,280	7,200	259	112
RADIUM [226 + 228]	pCi/L	ND	1.933	ND	ND	2.298	ND	ND	ND
SELENIUM, TOTAL	μg/L	ND	ND	ND	ND	0.30 J	0.27 J	0.20 J	ND
THALLIUM, TOTAL	μg/L	ND	0.082 J	ND	ND	ND	ND	ND	ND

^{1.} Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, and pCi/L - picocuries per liter, mV - millivolts, mS/cm - millisiemen per centimeter, NTU - nephelometric turbidity unit.

J - Result is an estimated value.
 ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect.

^{4.} Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228 Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.

^{5.} Due to laboratory error, BMW-1D was resampled for chloride, fluoride, and sulfate on October 20, 2016.

Table 6 **Baseline Sampling Event 5 Results SCPA Surface Impoundment** Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKG	ROUND		GROUN	DWATER M	ONITORING	S WELLS	
	1	BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D
				0		0	0		0
FIELD PARAMETERS									
DATE	NA	11/7/2016	3/8/2017	11/8/2016	11/7/2016	11/7/2016	11/7/2016	11/7/2016	11/8/2016
DISSOLVED OXYGEN	mg/L	1.06	0.55	0.48	0.47	1.15	0.29	0.35	0.40
рН	SU	7.05	7.02	7.47	8.00	8.00	7.15	7.28	7.05
REDOX POTENTIAL	mV	-118.3	64.2	-169.4	-184.4	-177.8	-138.0	-152.1	-112.2
SPECIFIC CONDUCTIVITY	mS/cm	0.898	0.660	0.922	1.205	1.423	1.474	0.793	0.626
TURBIDITY	NTU	1.03	1.61	1.92	1.36	0.89	1.42	3.29	4.70
APPENDIX III									
BORON, TOTAL	μg/L	174	69.4 J	454	10,600	26,400	24,600	12,400	902
CALCIUM, TOTAL	μg/L	129,000	120,000	110,000	177,000	230,000	186,000	94,000	77,600
CHLORIDE, TOTAL	mg/L	5.6	8.2	27.9	19.8	21.0	24.1	24.1	19.9
FLUORIDE, TOTAL	mg/L	0.29	0.26	0.25	1.0	0.95	0.78	0.70	0.40
SULFATE, TOTAL	mg/L	37.7	21.9	194	444	810	600	48.7	79.2
TOTAL DISSOLVED SOLIDS	mg/L	469	424	551	823	1,120	1,020	455	352
APPENDIX IV									
ANTIMONY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
ARSENIC, TOTAL	μg/L	0.15 J	0.086 J	1.0	1.5	0.41 J	0.18 J	0.62 J	0.38 J
BARIUM, TOTAL	μg/L	308	699	184	85.8	70.9	72.0	296	116
BERYLLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	μg/L	ND	ND	ND	ND	0.12 J	0.13 J	ND	ND
CHROMIUM, TOTAL	μg/L	0.35 J	0.70 J	ND	0.55 J	ND	0.34 J	0.44 J	0.37 J
COBALT, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	μg/L	ND	ND	ND	ND	3.5 J	5.6	ND	ND
LITHIUM, TOTAL	μg/L	14.8	21.5	15.5	31.1	16.2 J	41.3	32.5	13.6
MERCURY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	μg/L	ND	ND	27.9	989	4,230	7,190	253	114
RADIUM [226 + 228]	pCi/L	1.522	ND	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	μg/L	ND	ND	ND	ND	0.27 J	0.22 J	0.29 J	ND
THALLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
 Unit Abbreviations: μg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, and pCi/L - picocuries per liter, mV - millivolts, mS/cm - millisiemens per centimeter, NTU - nephelometric turbidity unit.
 J - Result is an estimated value.
 ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect.
 Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228

Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.

Table 7 **Baseline Sampling Event 6 Results SCPA Surface Impoundment** Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKG	ROUND		GROUN	DWATER M	ONITORING	WELLS	
		BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D
FIELD PARAMETERS									
DATE	NA	1/3/2017	4/5/2017	1/5/2017	1/5/2017	1/5/2017	1/5/2017	1/5/2017	1/5/2017
DISSOLVED OXYGEN	mg/L	0.49	0.50	0.50	0.21	0.43	0.54	0.31	0.24
pH	SU	7.49	6.44	7.47	8.03	8.55	7.57	7.32	7.03
REDOX POTENTIAL	mV	-114.5	109.7	-118.3	-170.1	-105.2	3.6	-120.2	-124.7
SPECIFIC CONDUCTIVITY	mS/cm	0.814	0.712	0.649	1.229	1.313	1.424	0.607	0.586
TURBIDITY	NTU	0.99	1.81	1.60	1.69	0.52	0.58	4.23	4.68
APPENDIX III									
BORON, TOTAL	μg/L	170	58.2 J	538	14,500	21,300	28,600	5,970	899
CALCIUM, TOTAL	μg/L	135,000	105,000	81,300	188,000	206,000	204,000	75,800	74,900
CHLORIDE, TOTAL	mg/L	5.6	8.5	23.2	20.0	23.2	25.9	24.4	20.1
FLUORIDE, TOTAL	mg/L	0.27	0.31	0.27	1.1	1.0	0.86	0.56	0.38
SULFATE, TOTAL	mg/L	38.8	24.6	85.6	477	531	550	15.5	80.2
TOTAL DISSOLVED SOLIDS	mg/L	460	414	374	885	1,020	1,120	350	349
APPENDIX IV									
ANTIMONY, TOTAL	μg/L	ND	0.041 J	ND	ND	ND	ND	ND	ND
ARSENIC, TOTAL	μg/L	ND	ND	0.98 J	1.4	0.14 J	ND	0.26 J	0.20 J
BARIUM, TOTAL	μg/L	334	684	146	92.8	76.1	90.4	281	119
BERYLLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	μg/L	ND	ND	ND	0.23 J	0.79	1.9	0.041 J	0.031 J
CHROMIUM, TOTAL	μg/L	0.42 J	ND	0.71 J	ND	0.35 J	ND	ND	0.70 J
COBALT, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	μg/L	ND	ND	ND	ND	ND	4.7 J	ND	ND
LITHIUM, TOTAL	μg/L	15.1	23.6	13.5	29.7	18.4	44.2	28.4	12.2
MERCURY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	μg/L	0.75 J	ND	40.9	1,310	3,430	7,830	254	110
RADIUM [226 + 228]	pCi/L	ND	1.761	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	μg/L	ND	0.10 J	ND	ND	0.21 J	0.24 J	ND	ND
THALLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
 Unit Abbreviations: μg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, and pCi/L - picocuries per liter, mV - millivolts, mS/cm - millisiemens per centimeter, NTU - nephelometric turbidity unit.
 J - Result is an estimated value.
 ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect.
 Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228

Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.

Table 8 **Baseline Sampling Event 7 Results SCPA Surface Impoundment** Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKG	ROUND		GROUN	DWATER N	IONITORING	WELLS	
		BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D
FIELD PARAMETERS									
DATE	NA	3/8/2017	6/5/2017	3/9/2017	3/9/2017	3/9/2017	3/9/2017	3/8/2017	3/8/2017
DISSOLVED OXYGEN	mg/L	0.40	0.38	0.55	0.27	0.39	0.43	0.25	0.31
рН	SU	7.46	7.12	7.43	7.81	8.00	7.12	7.09	6.70
REDOX POTENTIAL	mV	-33.6	-73.2	24.3	-86.5	-59.6	64.8	23.2	24.9
SPECIFIC CONDUCTIVITY	mS/cm	0.741	0.714	0.564	1.714	1.393	1.336	0.524	0.515
TURBIDITY	NTU	0.92	2.83	0.89	0.92	0.47	0.34	3.54	3.43
APPENDIX III					-				
BORON, TOTAL	μg/L	185	42.4 J	325	25,200	25,000	23,000	2,990	935
CALCIUM, TOTAL	μg/L	146,000	97,100	71,600	302,000	236,000	181,000	71,500	79,000
CHLORIDE, TOTAL	mg/L	5.0	8.1	18.8	18.9	21.6	24.1	26.0	19.5
FLUORIDE, TOTAL	mg/L	0.25	0.27	0.34	0.72	0.99	0.63	0.47	0.36
SULFATE, TOTAL	mg/L	34.4	26.1	51.0	738	603	484	16.8	74.9
TOTAL DISSOLVED SOLIDS	mg/L	483	407	314	1,380	1,090	1,010	331	346
APPENDIX IV									
ANTIMONY, TOTAL	μg/L	ND	ND	0.041 J	0.048 J	ND	ND	ND	ND
ARSENIC, TOTAL	μg/L	ND	ND	1.1	2.1	ND	ND	ND	ND
BARIUM, TOTAL	μg/L	376	665	123	131	79.8	71.2	248	115
BERYLLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	μg/L	ND	0.17 J	1.5	1.7 J	ND	ND	ND	ND
COBALT, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	μg/L	ND	ND	ND	ND	2.8 J	ND	ND	ND
LITHIUM, TOTAL	μg/L	13.7	ND	10.1	30.2	14.9	34.4	21.5	11.8
MERCURY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	μg/L	ND	ND	35.7	1,880	4,120	6,480	242	108
RADIUM [226 + 228]	pCi/L	ND	1.972	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	μg/L	ND	ND	ND	0.12 J	0.12 J	0.20 J	0.091 J	ND
THALLIUM, TOTAL	μg/L	ND	ND	0.17 J	0.25 J	0.084 J	0.046 J	ND	ND

NOTES
 Unit Abbreviations: μg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, and pCi/L - picocuries per liter, mV - millivolts, mS/cm - millisiemens per centimeter, NTU - nephelometric turbidity unit.
 J - Result is an estimated value.
 ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect.
 Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228

Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.

Table 9 **Baseline Sampling Event 8 Results SCPA Surface Impoundment** Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKG	ROUND		GROUN	DWATER M	IONITORING	WELLS	
		BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D
SISI D DADAMETERS									
FIELD PARAMETERS	N/A	C/F/2017	c /2c /2017	6/7/2017	C/7/2017	6/7/2017	6/7/2017	6/7/2017	c /c /2017
DISSOLVED OXYGEN	NA	6/5/2017	6/26/2017 13.80	6/7/2017 0.79	6/7/2017 0.13	6/7/2017 0.15	6/7/2017 0.29	6/7/2017 1.02	6/6/2017 1.69
	mg/L	1.56							
pH	SU	7.02	6.62	7.41	7.83	7.67	6.92	6.52	6.67
REDOX POTENTIAL	mV	-46.5	56.8	-56.8	-17.6	-100.8	-10.9	7.1	-39.3
SPECIFIC CONDUCTIVITY	mS/cm	0.831	0.723	0.490	1.468	1.469	1.314	0.590	0.528
TURBIDITY	NTU	4.17	2.85	1.16	1.74	0.99	0.83	3.81	5.66
APPENDIX III									
BORON, TOTAL	μg/L	179	55.2 J	278 J	24,200	24,200	21,600	7,240	781
CALCIUM, TOTAL	μg/L	118,000	102,000	53,500	244,000	231,000	174,000	82,900	69,600
CHLORIDE, TOTAL	mg/L	5.6	7.8	17.0	19.1	21.5	26.6	27.6	19.5
FLUORIDE, TOTAL	mg/L	0.24	0.29	0.34	0.78	0.94	0.70	0.53	0.37
SULFATE, TOTAL	mg/L	36.1	26.4	36.6	784	664	439	40.0	31.8
TOTAL DISSOLVED SOLIDS	mg/L	475	408	268	1,220	1,130	947	384	353
APPENDIX IV									
ANTIMONY, TOTAL	μg/L	ND	ND	ND	0.044 J	0.030 J	0.043 J	ND	ND
ARSENIC, TOTAL	μg/L	0.16 J	ND	0.98 J	1.9	0.23 J	ND	0.41 J	0.14 J
BARIUM, TOTAL	μg/L	332	668	109	96.8	70.5	67.5	284	112
BERYLLIUM, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	μg/L	ND	ND	ND	0.24 J	0.53	0.91	0.028 J	0.030 J
CHROMIUM, TOTAL	μg/L	0.16 J	ND	0.22 J	0.12 J	0.67 J	0.13 J	ND	0.10 J
COBALT, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	μg/L	ND	ND	ND	3.0 J	ND	3.4 J	ND	ND
LITHIUM, TOTAL	μg/L	ND	25.3	10.7 J	18.6	16.7	31.9	24.7	13.2
MERCURY, TOTAL	μg/L	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	μg/L	ND	ND	36.4	2,170	3,920	6,120	270	115
RADIUM [226 + 228]	pCi/L	ND	2.537	ND	ND	1.151	ND	1.192	1.244
SELENIUM, TOTAL	μg/L	ND	ND	ND	ND	0.17 J	0.12 J	0.11 J	ND
THALLIUM, TOTAL	μg/L	ND	ND	ND	0.10 J	0.052 J	0.083 J	0.038 J	ND

NOTES

NOTES
 Unit Abbreviations: μg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units, and pCi/L - picocuries per liter, mV - millivolts, mS/cm - millisiemens per centimeter, NTU - nephelometric turbidity unit.
 J - Result is an estimated value.
 ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect.
 Radium (226 + 228) is reported as the sum of the Radium 226 and the Radium 228 activity concentrations unless the sum of the Radium 226 and Radium 228

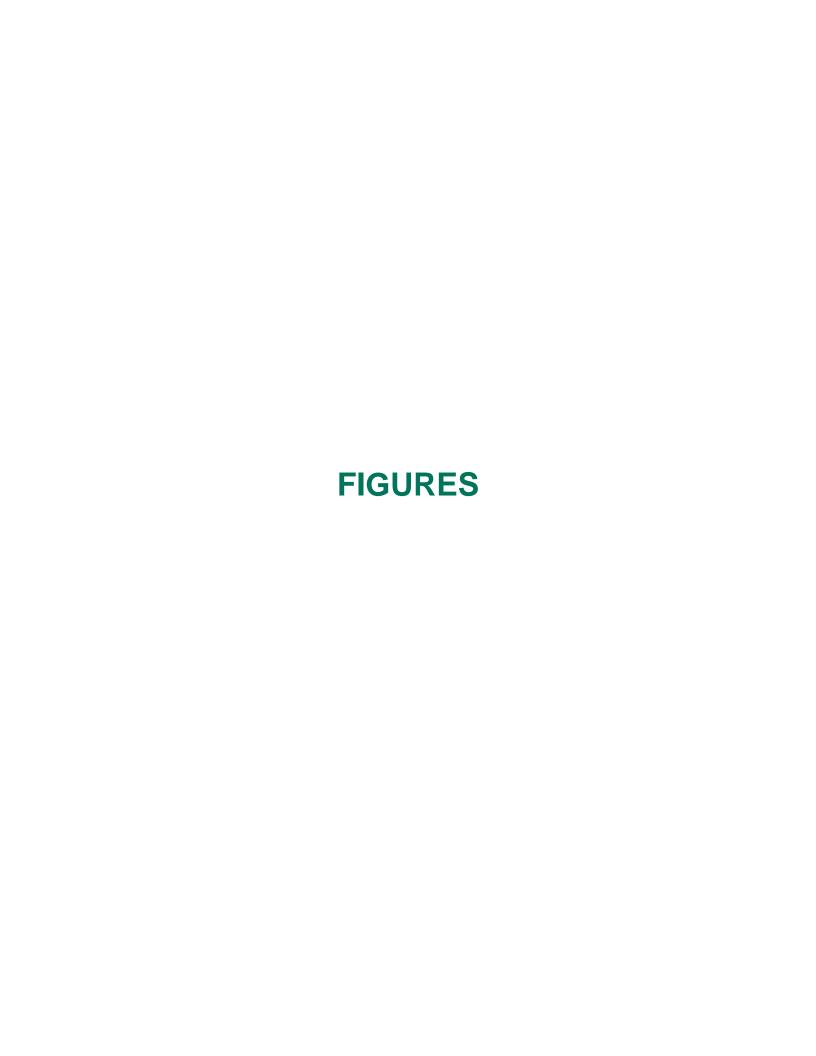
Minimum Detectable Concentrations (MDC) is higher in which case it is displayed as ND.

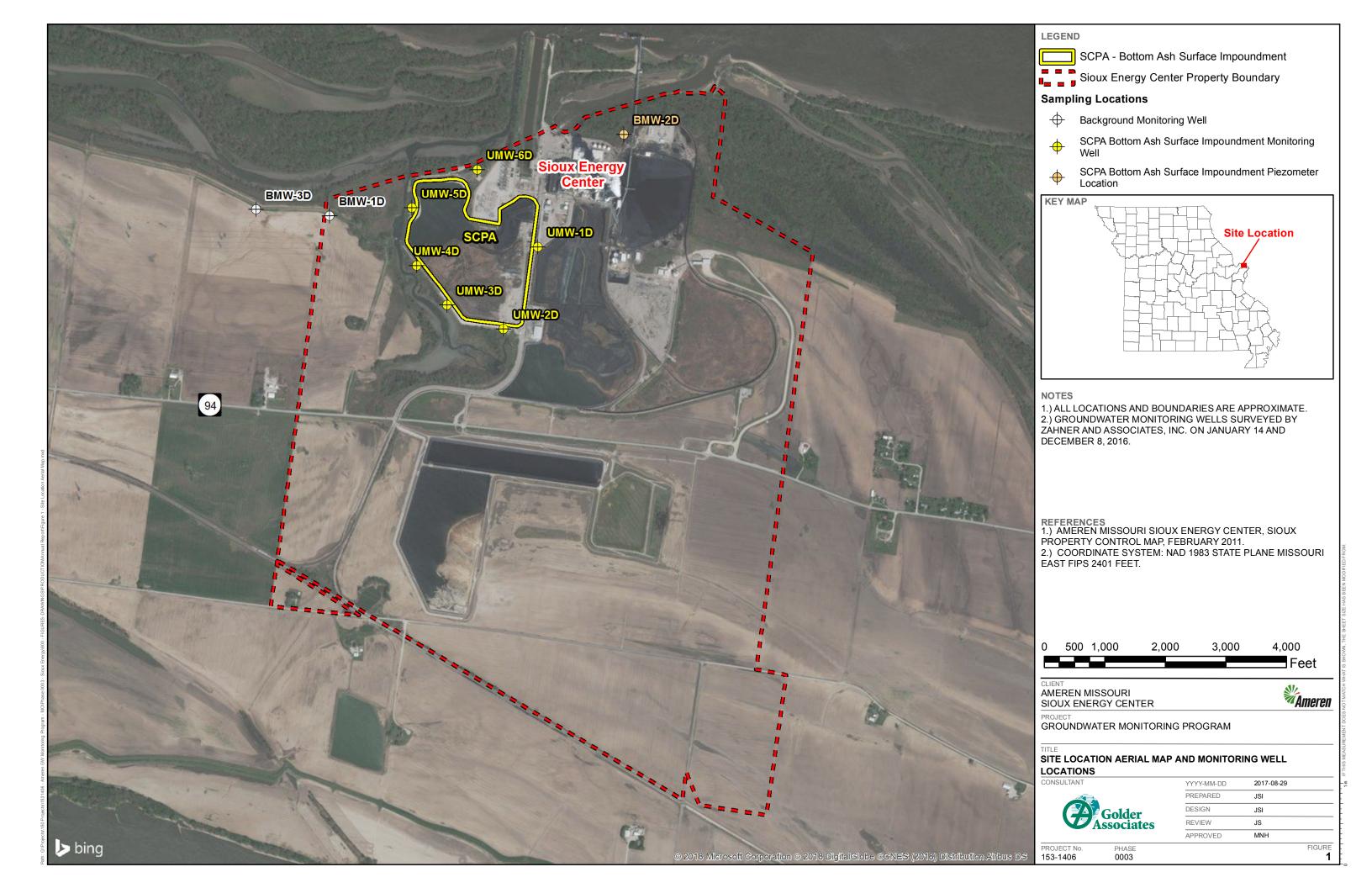
Table 10 November 2017 Detection Monitoring Results SCPA Surface Impoundment Sioux Energy Center, St. Charles County, MO

ANALYTE	UNITS	BACKGROUND GROUNDWATER MONITORING WELLS							
		BMW-1D	BMW-3D	UMW-1D	UMW-2D	UMW-3D	UMW-4D	UMW-5D	UMW-6D
FIELD PARAMETERS									
DATE	NA	11/13/2017	11/13/2017	11/14/2017	11/13/2017	11/13/2017	11/13/2017	11/13/2017	11/13/2017
DISSOLVED OXYGEN	mg/L	0.30	0.28	1.07	0.69	1.25	1.06	5.08	0.60
рН	SU	7.20	7.15	7.66	8.05	7.76	6.89	7.38	7.14
REDOX POTENTIAL	mV	-128.5	-124.6	-100.4	-101.0	-69.3	0.4	-125.9	-113.9
SPECIFIC CONDUCTIVITY	mS/cm	0.800	0.709	0.573	1.371	1.414	1.343	0.552	0.599
TURBIDITY	NTU	2.02	1.69	1.52	3.33	3.75	4.45	1.64	4.68
APPENDIX III									
BORON, TOTAL	μg/L	ND	ND	266	22,100	24,100	27,000	3,450	1,130
CALCIUM, TOTAL	μg/L	131,000	110,000	71,200	224,000	237,000	192,000	70,000	81,400
CHLORIDE, TOTAL	mg/L	5.2	8.7	18.7	19.3	20.4	25.4	25.8	18.2
FLUORIDE, TOTAL	mg/L	0.28	0.29	0.41	0.70	1.0	0.80	0.55	0.43
SULFATE, TOTAL	mg/L	37.6	27.5	49.1	722	710	544	18.3	86.4
TOTAL DISSOLVED SOLIDS	mg/L	450	409	318	1,000	1,150	1,010	310	353

NOTES

- 1. Unit Abbreviations: µg/L micrograms per liter, mg/L milligrams per liter, mg/L standard units, mV millivolts, mS/cm millisiemens per centimeter, and NTU nephelometric turbidity unit.
- 2. J Result is an estimated value.
- 3. ND Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect. Values displayed as ND.
- 4. NA Not applicable.





APPENDIX A – CCR MONITORING WELL CONSTRUCTION DIAGRAMS



ABOVE GROUND MONITORING WELL CONSTRUCTION LOG UMW-1D

PROJECT NAME: AMEREN CCR GW MONITORING PROJECT NUMBER: 153-1406.0003A

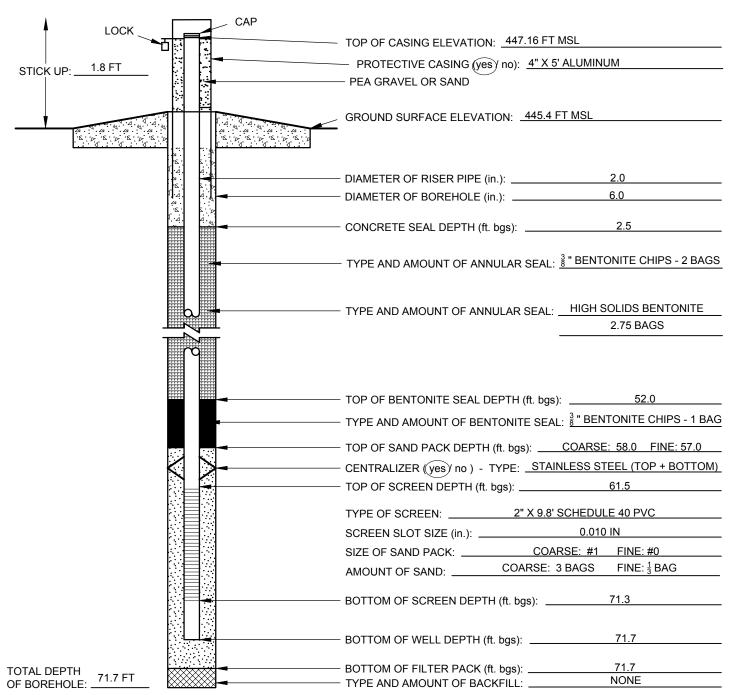
SITE NAME: SIOUX ENERGY CENTER LOCATION: UMW-1D

CLIENT: AMEREN MISSOURI SURFACE ELEVATION: 445.4 FT MSL

GEOLOGIST: J. SUOZZI NORTHING: 1121321.4 EASTING: 879420.0

DRILLER: J. DRABEK STATIC WATER LEVEL: 26.88 FT BTOC COMPLETION DATE: 12/15/2015

DRILLING COMPANY: CASCADE DRILLING METHODS: SONIC



ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.

150 GALLONS OF H2O USED DURING DRILLING. HORIZONTAL DATUM: STATE PLANE COORDINATES NAD83 US SURVEY FEET (2000)
MISSOURI EAST ZONE. VERTICAL DATUM: NAVD88. WELL SURVEYED BY ZAHNER AND ASSOCIATES, INC ON JANUARY 14, 2016.
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

PREPARED BY: J. SUOZZI

CHECKED BY: J.	INGRAM
DATE CHECKED:	



ABOVE GROUND MONITORING WELL CONSTRUCTION LOG UMW-2D

PROJECT NAME: AMEREN CCR GW MONITORING PROJECT NUMBER: 153-1406.0003A SITE NAME: SIOUX ENERGY CENTER LOCATION: UMW-2D CLIENT: AMEREN MISSOURI SURFACE ELEVATION: 431.7 FT MSL GEOLOGIST: J. SUOZZI NORTHING: 1120266.7 EASTING: 878981.6 DRILLER: J. DRABEK STATIC WATER LEVEL: 10.65 FT BTOC COMPLETION DATE: 12/17/2015 DRILLING COMPANY: CASCADE DRILLING METHODS: SONIC CAP LOCK TOP OF CASING ELEVATION: 433.86 FT MSL - PROTECTIVE CASING (yes) no): 4" X 5' ALUMINUM STICK UP: ___2.2FT PEA GRAVEL OR SAND GROUND SURFACE ELEVATION: 431.7 FT MSL DIAMETER OF RISER PIPE (in.): ____ DIAMETER OF BOREHOLE (in.): __ CONCRETE SEAL DEPTH (ft. bgs): - TYPE AND AMOUNT OF ANNULAR SEAL: $\frac{3}{8}$ " BENTONITE CHIPS - 1 BAG TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE **2.5 BAGS** - TOP OF BENTONITE SEAL DEPTH (ft. bgs): 34.0 - TYPE AND AMOUNT OF BENTONITE SEAL: $\frac{3}{8}$ BENTONITE CHIPS - 1 BAG - TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 42.0 FINE: 40.5 CENTRALIZER ((yes) no) - TYPE: STAINLESS STEEL (TOP + BOTTOM) TOP OF SCREEN DEPTH (ft. bgs): 45.2 TYPE OF SCREEN: 2" X 9.8' SCHEDULE 40 PVC SCREEN SLOT SIZE (in.): 0.010 IN COARSE: #1 FINE: #0 SIZE OF SAND PACK: _____ AMOUNT OF SAND: COARSE: 3 BAGS FINE: 3 BAG BOTTOM OF SCREEN DEPTH (ft. bgs): ___ BOTTOM OF WELL DEPTH (ft. bgs): _____ 55.4 BOTTOM OF FILTER PACK (ft. bgs): ____ TOTAL DEPTH OF BOREHOLE: 55.4 FT TYPE AND AMOUNT OF BACKFILL: ____ ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL. 200 GALLONS OF H2O USED DURING DRILLING. HORIZONTAL DATUM: STATE PLANE COORDINATES NAD83 US SURVEY FEET (2000) MISSOURI EAST ZONE. VERTICAL DATUM: NAVD88. WELL SURVEYED BY ZAHNER AND ASSOCIATES, INC ON JANUARY 14, 2016. FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

CHECKED BY: J. INGRAM DATE CHECKED: 4/20/2016

PREPARED BY: J. SUOZZI



DRILLER: J. DRABEK

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG UMW-3D

PROJECT NAME: AMEREN CCR GW MONITORING PROJECT NUMBER: 153-1406.0003A

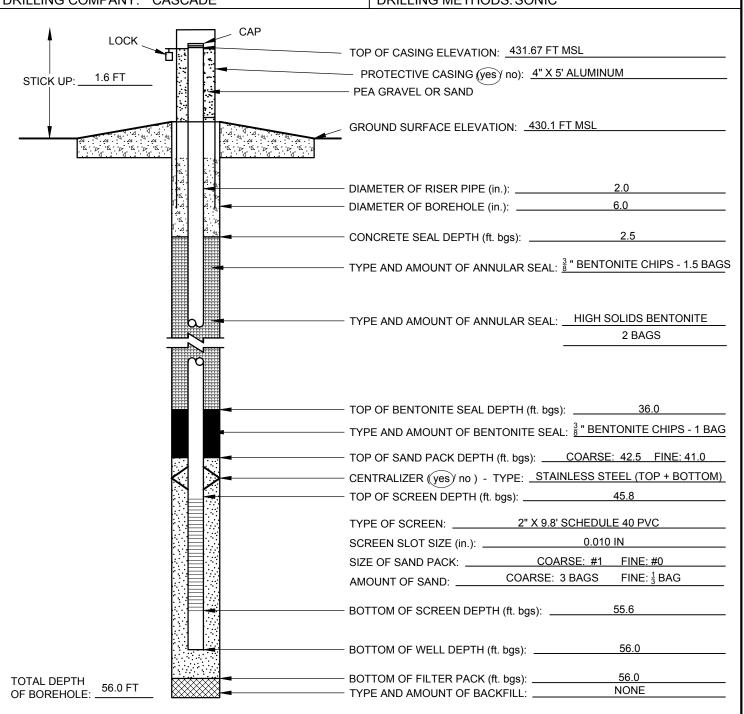
SITE NAME: SIOUX ENERGY CENTER LOCATION: UMW-3D

CLIENT: AMEREN MISSOURI SURFACE ELEVATION: 430.1 FT MSL

GEOLOGIST: J. SUOZZI NORTHING:1120570.4 EASTING: 878251.1

STATIC WATER LEVEL: 10.57 FT BTOC

DRILLING COMPANY: CASCADE DRILLING METHODS: SONIC



ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.

125 GALLONS OF H2O USED DURING DRILLING. HORIZONTAL DATUM: STATE PLANE COORDINATES NAD83 US SURVEY FEET (2000)
MISSOURI EAST ZONE. VERTICAL DATUM: NAVD88. WELL SURVEYED BY ZAHNER AND ASSOCIATES, INC ON JANUARY 14, 2016.
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

CHECKED BY: J. INGRAM

DATE CHECKED: 4/20/2016

PREPARED BY: J. SUOZZI

COMPLETION DATE: 12/16/2015



ABOVE GROUND MONITORING WELL CONSTRUCTION LOG UMW-4D

PROJECT NAME: AMEREN CCR GW MONITORING PROJECT NUMBER: 153-1406.0003A

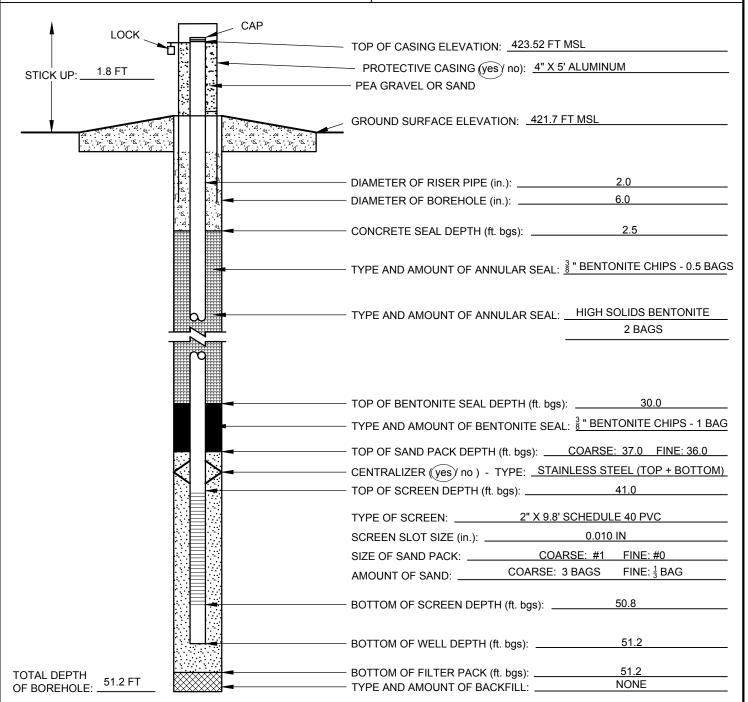
SITE NAME: SIOUX ENERGY CENTER LOCATION: UMW-4D

CLIENT: AMEREN MISSOURI SURFACE ELEVATION: 421.7 FT MSL

GEOLOGIST: J. SUOZZI NORTHING: 1121077.9 EASTING: 877859.9

DRILLER: J. DRABEK STATIC WATER LEVEL: 2.95 FT BTOC COMPLETION DATE: 12/16/2015

DRILLING COMPANY: CASCADE DRILLING METHODS: SONIC



ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.

150 GALLONS OF H2O USED DURING DRILLING. HORIZONTAL DATUM: STATE PLANE COORDINATES NAD83 US SURVEY FEET (2000)
MISSOURI EAST ZONE. VERTICAL DATUM: NAVD88. WELL SURVEYED BY ZAHNER AND ASSOCIATES, INC ON JANUARY 14, 2016.
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

CHECKED BY: J. INGRAM
DATE CHECKED: 4/20/2016

PREPARED BY: J. SUOZZI



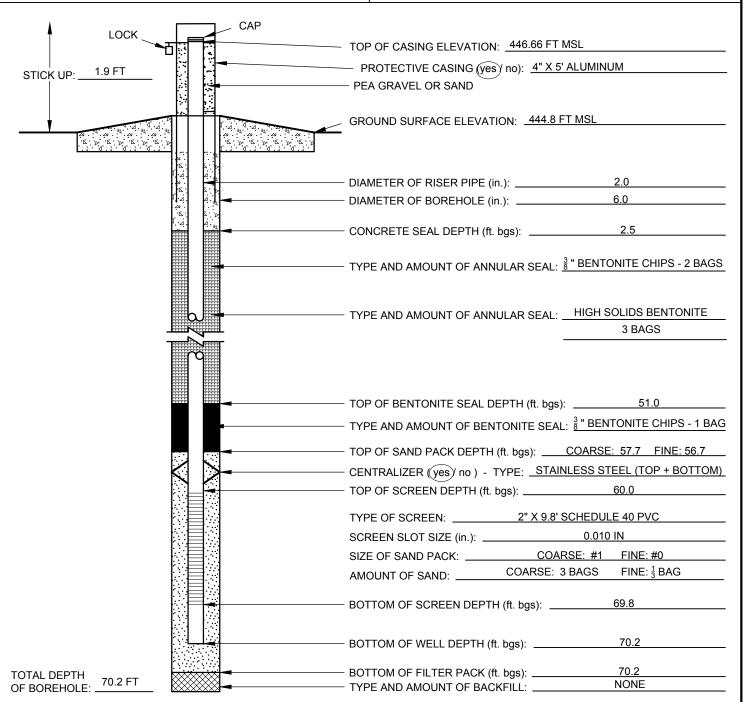
ABOVE GROUND MONITORING WELL CONSTRUCTION LOG UMW-5D

PROJECT NAME: AMEREN CCR GW MONITORING
SITE NAME: SIOUX ENERGY CENTER
LOCATION: UMW-5D
CLIENT: AMEREN MISSOURI
SURFACE ELEVATION: 444.8 FT MSL

GEOLOGIST: J. SUOZZI NORTHING:1121815.0 EASTING: 877799.1

DRILLER: J. DRABEK STATIC WATER LEVEL: 26.01 FT BTOC COMPLETION DATE: 12/17/2015

DRILLING COMPANY: CASCADE | DRILLING METHODS: SONIC



ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.

175 GALLONS OF H2O USED DURING DRILLING. HORIZONTAL DATUM: STATE PLANE COORDINATES NAD83 US SURVEY FEET (2000)
MISSOURI EAST ZONE. VERTICAL DATUM: NAVD88. WELL SURVEYED BY ZAHNER AND ASSOCIATES, INC ON JANUARY 14, 2016.
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

CHECKED BY:	J. INGRAM

DATE CHECKED: 4/20/2016

PREPARED BY: J. SUOZZI



ABOVE GROUND MONITORING WELL CONSTRUCTION LOG UMW-6D

PROJECT NAME: AMEREN CCR GW MONITORING PROJECT NUMBER: 153-1406.0003A

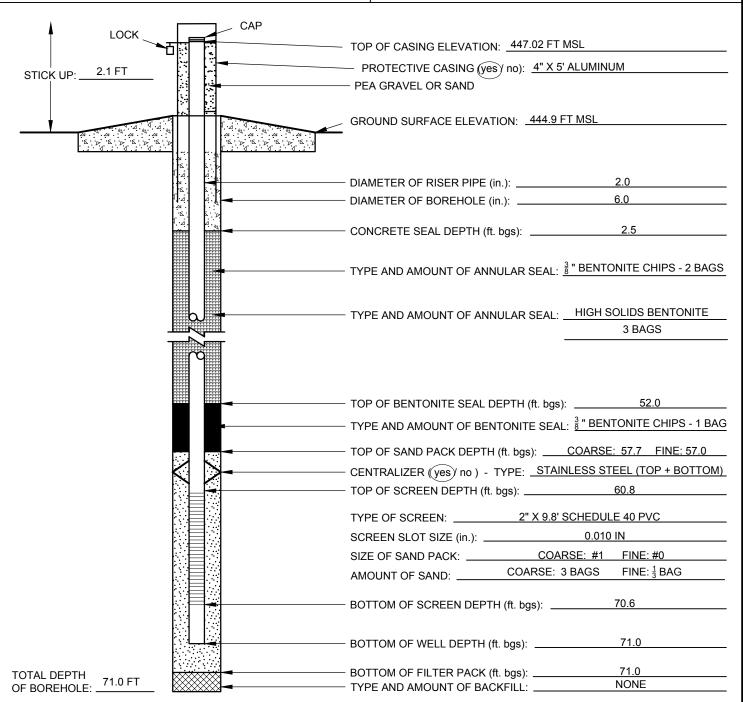
SITE NAME: SIOUX ENERGY CENTER LOCATION: UMW-6D

CLIENT: AMEREN MISSOURI SURFACE ELEVATION: 444.9 FT MSL

GEOLOGIST: J. SUOZZI NORTHING:1122312.0 EASTING: 878639.5

DRILLER: J. DRABEK STATIC WATER LEVEL: 26.55 FT BTOC COMPLETION DATE: 12/18/2015

DRILLING COMPANY: CASCADE DRILLING METHODS: SONIC



ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.

150 GALLONS OF H2O USED DURING DRILLING. HORIZONTAL DATUM: STATE PLANE COORDINATES NAD83 US SURVEY FEET (2000)
MISSOURI EAST ZONE. VERTICAL DATUM: NAVD88. WELL SURVEYED BY ZAHNER AND ASSOCIATES, INC ON JANUARY 14, 2016.
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

CHECKED BY: J.	INGRAM
DATE CHECKED:	4/20/2016

PREPARED BY: ______J. SUOZZI



ABOVE GROUND MONITORING WELL CONSTRUCTION LOG BMW-1D

Associates	ABOVE GI		NG WELL CONSTI	TOO HOLL EGG DIVIN 15
PROJECT NAME: AM	EREN CCR GW	MONITORING	PROJECT NUMBER:	153-1406.0003A
SITE NAME: SIOUX ENERGY CENTER		LOCATION:BMW-1D		
CLIENT: AMEREN I	MISSOURI		SURFACE ELEVATIO	N: 426.0 FT MSL
GEOLOGIST: J. INGR	AM	NORTHING: 1121713	.6	EASTING: 876740.9
DRILLER: J. DRAB	EK	STATIC WATER LEV	EL: 8.70 FT BTOC	COMPLETION DATE: 12/8/2015
DRILLING COMPANY	CASCADE		DRILLING METHODS	S: SONIC
STICK UP: 2.3 FT	A WAR KAR KAR KAR KAR KAR KAR KAR KAR KAR K	PE P		no): 4" X 5' ALUMINUM N: 426.0 FT MSL : 2.0 : 6.0
				3 BAGS PTH (ft. bgs): 34.0 DNITE SEAL: 38" BENTONITE CHIPS - 1 BAG
				. bgs):COARSE: 40.5 FINE: 39.0
		CEN	ITRALIZER (yes) no) - TYF	PE: STAINLESS STEEL (TOP + BOTTOM)
		TOF	OF SCREEN DEPTH (ft. bgs	s): 43.0
		SCF	REEN SLOT SIZE (in.):	2" X 9.8' SCHEDULE 40 PVC 0.010 IN COARSE: #1 FINE: #0
		AMO	OUNT OF SAND	COARSE: 3 \frac{1}{4} BAGS FINE: \frac{1}{3} BAG
			TOM OF SCREEN DEPTH (f	
		ВОТ	TOM OF WELL DEPTH (ft. b	ogs):53.2
TOTAL DEPTH OF BOREHOLE: 53.2 FT			TOM OF FILTER PACK (ft. b E AND AMOUNT OF BACKF	NONE
150 GALLONS OF H2O U MISSOURI EAST ZONE.	SED DURING DRIL VERTICAL DATUM:	LING. HORIZONTAL DATUN	D BY ZAHNER AND ASSOCIA	N SEA LEVEL. ATES NAD83 US SURVEY FEET (2000) IATES, INC ON JANUARY 14, 2016.

CHECKED BY: J. INGRAM

DATE CHECKED: 4/20/2016

PREPARED BY: J. SUOZZI



Golder Associates	ABOVE G	ROUND MONITOR	ING WELL CONSTR	RUCTION LOG BMW-3D	
PROJECT NAME: AME	EREN CCR GW	/ MONITORING	PROJECT NUMBER:	153-1406.0003A	
SITE NAME: SIOUX ENERGY CENTER		LOCATION: BMW-3D			
CLIENT: AMEREN M	IISSOURI		SURFACE ELEVATIO	N: 424.2 FT MSL	
GEOLOGIST: J. INGRA	AM/M. GORE	NORTHING: 1121798	·	EASTING: 875798.3	
DRILLER: M. RODR		STATIC WATER LEV	EL: 8.38 FT BTOC	COMPLETION DATE: 11/8/2016	
DRILLING COMPANY:			DRILLING METHODS		
STICK UP: 2.2 FT		PE P	P OF CASING ELEVATION: ROTECTIVE CASING (yes) in A GRAVEL OR SAND DUND SURFACE ELEVATION METER OF RISER PIPE (in.): METER OF BOREHOLE (in.): NCRETE SEAL DEPTH (ft. bg	426.41FT MSL no): 4" X 5' ALUMINUM N: 424.2 FT MSL 2.0 6.0	
	00000			TH (ft. bgs): 32.5	
		TYF	PE AND AMOUNT OF BENTO	NITE SEAL: 3 "BENTONITE CHIPS - 1 BUCKET	
	1930 1930	TOI	P OF SAND PACK DEPTH (ft.	bgs): <u>COARSE: 38.5 FINE: 37.5</u>	
		CEI	NTRALIZER (yes) no) - TYF	E: STAINLESS STEEL (TOP + BOTTOM)	
			P OF SCREEN DEPTH (ft. bgs		
		TVI	DE OE SCREEN:	2" X 9.7' SCHEDULE 40 PVC	
			REEN SLOT SIZE (in.):		
			E OF SAND PACK:		
		ΔM	OUNT OF SAND:	COARSE: 5 BAGS FINE: ½ BAG	
		AW	OUNT OF SAND.		
		——— во	ITOM OF SCREEN DEPTH (f	it. bgs): 52.2	
		ВО	TTOM OF WELL DEPTH (ft. b	gs):	
TOTAL DEPTH 55.0 ET	<u> </u>	ВО	TTOM OF FILTER PACK (ft. b	gs):	
OF BOREHOLE: 55.0 FT	_ 📖	TYF	PE AND AMOUNT OF BACKF	ILL: 2.4 FT NATURAL CAVE IN	
ADDITIONAL NOTES: FT I 200 GALLONS OF H2O US MISSOURI EAST ZONE. V	BGS = FEET BELC SED DURING DRIL 'ERTICAL DATUM:	LING. HORIZONTAL DATU NAVD88. WELL SURVEYE		SEA LEVEL. ATES NAD83 US SURVEY FEET (2000) ATES, INC ON DECEMBER 8, 2016.	

CHECKED BY: J. INGRAM DATE CHECKED: 8/3/2017

PREPARED BY: _____J. SUOZZI

APPENDIX B – LABORATORY ANALYTICAL DATA



January 02, 2018

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on March 19, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

REV-1, 1/2/18: Revision

Jami Church

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 Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates







CERTIFICATIONS

AMEREN SIOUX ENERGY CTR-BOTTOM Project:

Pace Project No.: 60215288

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01 Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

REPORT OF LABORATORY ANALYSIS



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60215288001	S-UMW-1D	Water	03/17/16 13:57	03/19/16 05:55
60215288002	S-UMW-2D	Water	03/16/16 15:02	03/19/16 05:55
60215288003	S-UMW-3D	Water	03/16/16 13:07	03/19/16 05:55
60215288004	S-UMW-4D	Water	03/16/16 11:42	03/19/16 05:55
60215288005	S-UMW-5D	Water	03/16/16 15:30	03/19/16 05:55
60215288006	S-UMW-6D	Water	03/17/16 14:28	03/19/16 05:55
60215288007	S-BMW-1D	Water	03/16/16 10:01	03/19/16 05:55
60215288009	S-UMW-DUP-1	Water	03/16/16 08:00	03/19/16 05:55
60215288010	S-UMW-FB-1	Water	03/16/16 11:10	03/19/16 05:55
60215288011	S-UMW-1D MS	Water	03/17/16 13:57	03/19/16 05:55
60215288012	S-UMW-1D MSD	Water	03/17/16 13:57	03/19/16 05:55

REPORT OF LABORATORY ANALYSIS



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

_ab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
0215288001	S-UMW-1D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288002	S-UMW-2D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288003	S-UMW-3D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288004	S-UMW-4D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288005	S-UMW-5D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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(913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288006	S-UMW-6D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288007	S-BMW-1D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288009	S-UMW-DUP-1	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288010	S-UMW-FB-1	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
0215288011	S-UMW-1D MS	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA





SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60215288012	S-UMW-1D MSD	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Sample: S-UMW-1D	Lab ID:	60215288001	Collecte	d: 03/17/16	3 13:57	Received: 03/	/19/16 05:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	161	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:29	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:29	7440-41-7	
Boron	254	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:29	7440-42-8	
Calcium	78400	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:29	7440-70-2	M1
Cobalt	<0.72	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:29	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:29	7439-92-1	
Lithium	13.1	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:29	7439-93-2	
Molybdenum	31.7	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:29	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	0.13J	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 15:42	7440-36-0	
Arsenic	0.90J	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 15:42	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	03/22/16 13:30	03/23/16 15:42	7440-43-9	
Chromium	<0.34	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 15:42	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 15:42	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 15:42	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 15:54	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	389	mg/L	5.0	5.0	1		03/23/16 08:22		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	8.3	Std. Units	0.10	0.10	1		04/03/16 12:05		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	18.9	mg/L	1.0	0.50	1		03/21/16 16:22	16887-00-6	
Fluoride	0.34	mg/L	0.20	0.073	1		03/21/16 16:22		
Sulfate	80.5	mg/L	20.0	5.0	20		03/21/16 14:54		
	20.0	9, =	20.0	0.0			33,21,1011.04	000 . 0 0	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

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 Preparation Method: EPA 200.7 Tepa 200.7 Method: EPA 200.7 Preparation Method: EPA 200.7 Tepa 200.7 Method: EPA 200.7 Method: EPA 200.7 Method: EPA 200.8 1 03/22/16 13:30 03/23/16 14:36 7440-41.7 Tepa 200.7 Method: EPA 200.8 Metho	Sample: S-UMW-2D	Lab ID:	60215288002	Collecte	d: 03/16/10	5 15:02	Received: 03/	/19/16 05:55 Ma	atrix: Water	
Barium 122 ug/L 10.0 0.58 1 03/22/16 13:30 03/23/16 14:36 7440-39-3 Beryllium 40.26 ug/L 1.0 0.26 1 03/22/16 13:30 03/23/16 14:36 7440-41-7 Boron 15100 ug/L 100 50.0 1 03/22/16 13:30 03/23/16 14:36 7440-42-8 440-42-7 20000 ug/L 100 50.0 1 03/22/16 13:30 03/23/16 14:36 7440-42-8 440-42-8 20000 0.02 1 03/22/16 13:30 03/23/16 14:36 7440-42-8 440-48-4 420-48-4	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium 40.26 ug/L 1.0 0.26 1 0.3/22/16 13:30 0.3/23/16 14:36 7440-41-7 7440-42-8 7440-42-8 7440-42-8 7440-42-8 7440-42-8 7440-42-8 7440-70-2 7440-70	200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP/	A 200.7			
Boron 15100 ug/L 100 50.0 1 03/22/16 13:30 03/23/16 14:36 7440-42-8 7440-42-8 Calcium 20000 ug/L 100 8.1 1 03/22/16 13:30 03/23/16 14:36 7440-42-8 7440-70-2 Calcium 2008 0.72 ug/L 5.0 0.72 1 03/22/16 13:30 03/23/16 14:36 7440-48-4 48-4 48-99-21 43-99-21 <td>Barium</td> <td>122</td> <td>ug/L</td> <td>10.0</td> <td>0.58</td> <td>1</td> <td>03/22/16 13:30</td> <td>03/23/16 14:36</td> <td>7440-39-3</td> <td></td>	Barium	122	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:36	7440-39-3	
Calcium 200000 ug/L 1 00 8.1 1 0 3/22/16 13:30 03/23/16 14:36 7440-70-2 C9A 14 C40-72 ug/L 5.0 0.72 1 03/22/16 13:30 03/23/16 14:36 7440-748-4 L846-8 L846-8 ug/L 5.0 2.5 1 03/22/16 13:30 03/23/16 14:36 7439-92-2 1 1439-92-16 13:30 03/23/16 14:36 7439-93-2 2 1 03/22/16 13:30 03/23/16 14:36 7439-93-2 2 1 03/22/16 13:30 03/23/16 14:36 7439-93-2 2 1 03/22/16 13:30 03/23/16 14:36 7439-93-2 2 200.8 MET ICPMS Analytical Exhance EPA 200.8 Preparation Method 1 03/22/16 13:30 03/23/16 15:56 7440-36-0 4 9 4 03/22/16 13:30 03/23/16 15:56 7440-36-0 4 9 4 03/22/16 13:30 03/23/16 15:56 7440-36-0 4 4 03/22/16 13:30 03/23/16 15:56 7440-36-0 4 4 03/22/16 13:30 03/23/16 15:56 7440-43-3 3 <td>Beryllium</td> <td><0.26</td> <td>ug/L</td> <td>1.0</td> <td>0.26</td> <td>1</td> <td>03/22/16 13:30</td> <td>03/23/16 14:36</td> <td>7440-41-7</td> <td></td>	Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:36	7440-41-7	
Cobalt 40.72 ug/L 5.0 0.72 1 03/22/16 13:30 03/23/16 14:36 7440-48-4 Lead 3.9J ug/L 5.0 2.5 1 03/22/16 13:30 03/23/16 14:36 7439-92-1 Lithium 24.6 ug/L 10.0 4.9 1 03/22/16 13:30 03/23/16 14:36 7439-93-2 Molybdenum 1310 ug/L 20.0 0.52 1 03/22/16 13:30 03/23/16 14:36 7439-93-2 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 0.067J ug/L 1.0 0.058 1 03/22/16 13:30 03/23/16 15:56 7440-36-0 Arsenic 0.87J ug/L 1.0 0.10 1 03/22/16 13:30 03/23/16 15:56 7440-38-0 Arsenic 0.87J ug/L 1.0 0.034 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Arterior Arterior 0.032/216 13:30 03/23/16 15:56 7440-47-3 Arterior Arterior 0.03/23/16 15:56	Boron	15100	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:36	7440-42-8	
Lead 3.9.J ug/L 5.0 2.5 1 03/22/16 13:30 03/23/16 14:36 7439-92-1 Lithium 24.6 ug/L 10.0 4.9 1 03/22/16 13:30 03/23/16 14:36 7439-93-2 Molybdenum 1310 ug/L 20.0 0.52 1 03/22/16 13:30 03/23/16 14:36 7439-93-2 200.8 MET ICPMS Analytical Ethod: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 1 03/22/16 13:30 03/23/16 15:56 7440-36-0 Arsenic 0.87J ug/L 1.0 0.058 1 03/22/16 13:30 03/23/16 15:56 7440-36-0 Cadmium -0.087J ug/L 1.0 0.010 1 03/22/16 13:30 03/23/16 15:56 7440-36-0 Chromium 0.35J ug/L 1.0 0.04 1 03/22/16 13:30 03/23/16 15:56 7440-38-0 Chromium -0.50 ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Tablium <t< td=""><td>Calcium</td><td>200000</td><td>ug/L</td><td>100</td><td>8.1</td><td>1</td><td>03/22/16 13:30</td><td>03/23/16 14:36</td><td>7440-70-2</td><td></td></t<>	Calcium	200000	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:36	7440-70-2	
Lithium Molybdenum 24.6 wg/L vg/L vg/L 10.0 vg/L vg/L 10.0 vg/L vg/L vg/L vg/L vg/L vg/L vg/L vg/L	Cobalt	<0.72	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:36	7440-48-4	
Molybdenum 1310 ug/L 20.0 0.52 1 03/22/16 13:30 03/23/16 14:36 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 0.067J ug/L 1.0 0.058 1 03/22/16 13:30 03/23/16 15:56 7440-36-0 Arsenic 0.87J ug/L 1.0 0.029 1 03/22/16 13:30 03/23/16 15:56 7440-38-2 Cadmium <0.029	Lead	3.9J	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:36	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 0.067J ug/L 1.0 0.058 1 03/22/16 13:30 03/23/16 15:56 7440-36-0 0.87J ug/L 1.0 0.10 1 03/22/16 13:30 03/23/16 15:56 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Chromium 0.35J ug/L 1.0 0.34 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Chromium 0.35J ug/L 1.0 0.34 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Chromium <0.05D ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Chromium 0.35J ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Selenium 0.35J ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-48-9 Thallium 0.35J ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Thallium 0.35J ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Thallium 03/22/16 13:30 03/22/16 13:30 03/23/16 15:56 7440-43-9 Thallium 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 15:56 7440-43-9 Thallium 10 03/22/16 13:30 03/22/16 13:30 03/22/16 15:56 7440-43-9 Thallium 10 03/22/16 13:30 03/22/16 15:56 7440-43-9 Thallium 10 03/22/16 13:30 03/22/16 15:56 7440-43-9 Thallium 10 03/22/16 13:30 03/22/16 13:30 03/22/16 15:56 7440-43-9 Thallium 10 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:30 03/22/16 13:	Lithium	24.6	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:36	7439-93-2	
Antimony	Molybdenum	1310	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:36	7439-98-7	
Arsenic 0.87J ug/L 1.0 0.10 1 03/22/16 13:30 03/23/16 15:56 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 03/22/16 13:30 03/23/16 15:56 7440-38-2 Chromium 0.35J ug/L 1.0 0.34 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Selenium <0.50 ug/L 1.0 0.50 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Thallium Analytical Method: EPA 7470 Preparation Method: EPA 7470 Wethod: EPA 7470 Wethod: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 04/01/16 10:45 04/01/16 16:01 7439-97-6 2540C Total Dissolved Solids 1010 mg/L	200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Cadmium <0.029 ug/L 0.50 0.029 1 03/22/16 13:30 03/23/16 15:56 7440-43-9 Chromium 0.35J ug/L 1.0 0.34 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Thallium <0.50 ug/L 1.0 0.50 1 03/22/16 13:30 03/23/16 15:56 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 TATO 0.00 0.039 1 04/01/16 10:45 04/01/16 16:01 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 03/22/16 10:29 4500H 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 4500-H+B 4500-H+B 0.10 0.10 1 03/23/16 10:35 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 2.0 1.0 2 03/22/16 09:55 16887-00-6 16887-00-6	Antimony	0.067J	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 15:56	7440-36-0	
Chromium 0.35J ug/L 1.0 0.34 1 03/22/16 13:30 03/23/16 15:56 7440-47-3 Selenium 40.18 ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7782-49-2 Thallium 40.50 ug/L 1.0 0.50 1 03/22/16 13:30 03/23/16 15:56 7440-28-0 7470 Mercury Analytical Wethod: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Wethod: SM 2540C 2540C Total Dissolved Solids Analytical Wethod: SM 2540C Total Dissolved Solids Analytical Wethod: SM 4500-H+B 4500H+ pH, Electrometric Analytical Wethod: EPA 300-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 03/23/16 10:35 H6 300.0 IC Anions 28 Days Analytical Wethod: EPA 300. Chloride 19.5 mg/L 2.0 1.0 2 03/22/16 09:55 16887-00-6 Fluoride 1.1 mg/L 0.20 0.073 1 03/21/1	Arsenic	0.87J	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 15:56	7440-38-2	
Selenium <0.18 ug/L 1.0 0.18 1 03/22/16 13:30 03/23/16 15:56 7782-49-2 Thallium <0.50 ug/L 1.0 0.50 1 03/22/16 13:30 03/23/16 15:56 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 04/01/16 10:45 04/01/16 16:01 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1010 mg/L 5.0 5.0 1 03/22/16 10:45 7439-97-6 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B B 3010 0.10 0.10 1 03/23/16 10:35 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 03/22/16 09:55 16887-00-6 Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	Cadmium	<0.029	ug/L	0.50	0.029	1	03/22/16 13:30	03/23/16 15:56	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 03/22/16 13:30 03/23/16 15:56 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 04/01/16 10:45 04/01/16 16:01 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C SM 2540C 5.0 5.0 1 03/22/16 10:29 03/22/16 10:29 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B H6 PH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 03/23/16 10:35 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 EPA 300.0 1 03/22/16 09:55 16887-00-6 16887-00-6 1 03/21/16 17:14 16984-48-8	Chromium	0.35J	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 15:56	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 04/01/16 10:45 04/01/16 16:01 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1010 mg/L 5.0 5.0 1 03/22/16 10:29 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 03/23/16 10:35 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.C Chloride 19.5 mg/L 2.0 1.0 2 03/22/16 09:55 16887-00-6 Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	Selenium	<0.18	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 15:56	7782-49-2	
Mercury	Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 15:56	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1010 mg/L 5.0 5.0 1 03/22/16 10:29 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 03/23/16 10:35 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 03/22/16 09:55 16887-00-6 Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	7470 Mercury	Analytical	Method: EPA 74	470 Prepa	ration Meth	od: EPA	7470			
Total Dissolved Solids 1010 mg/L 5.0 5.0 1 03/22/16 10:29 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 03/23/16 10:35 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 03/22/16 09:55 16887-00-6 Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 16:01	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 03/23/16 10:35 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 03/22/16 09:55 16887-00-6 Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
pH at 25 Degrees C	Total Dissolved Solids	1010	mg/L	5.0	5.0	1		03/22/16 10:29		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 03/22/16 09:55 16887-00-6 Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
Chloride 19.5 mg/L 2.0 1.0 2 03/22/16 09:55 16887-00-6 Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	pH at 25 Degrees C	8.1	Std. Units	0.10	0.10	1		03/23/16 10:35		H6
Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00						
Fluoride 1.1 mg/L 0.20 0.073 1 03/21/16 17:14 16984-48-8	Chloride	19.5	mg/L	2.0	1.0	2		03/22/16 09:55	16887-00-6	
g · · · · · · · · · · · · · · · · · · ·	Fluoride	1.1	mg/L	0.20	0.073	1		03/21/16 17:14	16984-48-8	
	Sulfate	524	mg/L	50.0	12.4	50		03/22/16 10:12	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Sample: S-UMW-3D	Lab ID: 6	60215288003	Collected	d: 03/16/10	6 13:07	Received: 03/	19/16 05:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical M	Method: EPA 20	00.7 Prepa	ration Meth	nod: EP/	A 200.7			
Barium	88.0	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:38	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:38	7440-41-7	
Boron	30200	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:38	7440-42-8	
Calcium	293000	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:38	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:38	7440-48-4	
Lead	4.2J	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:38	7439-92-1	
Lithium	14.7	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:38	7439-93-2	
Molybdenum	4800	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:38	7439-98-7	
200.8 MET ICPMS	Analytical M	lethod: EPA 20	00.8 Prepa	ration Meth	nod: EP/	A 200.8			
Antimony	0.083J	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 16:00	7440-36-0	
Arsenic	0.82J	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 16:00	7440-38-2	
Cadmium	<0.058	ug/L	1.0	0.058	2	03/22/16 13:30	03/25/16 13:44	7440-43-9	D3
Chromium	0.56J	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 16:00	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 16:00	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 16:00	7440-28-0	
7470 Mercury	Analytical M	fethod: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 16:03	7439-97-6	
2540C Total Dissolved Solids	Analytical M	lethod: SM 25	40C						
Total Dissolved Solids	1450	mg/L	5.0	5.0	1		03/22/16 10:29		
4500H+ pH, Electrometric	Analytical M	lethod: SM 45	00-H+B						
pH at 25 Degrees C	7.9	Std. Units	0.10	0.10	1		03/23/16 10:35		H6
300.0 IC Anions 28 Days	Analytical M	lethod: EPA 3	0.00						
Chloride	17.2	mg/L	1.0	0.50	1		03/21/16 17:49	16887-00-6	
Fluoride	0.81	mg/L	0.20	0.073	1		03/21/16 17:49		
Sulfate	833	mg/L	100	24.8	100		03/22/16 10:30		



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Sample: S-UMW-4D	Lab ID:	60215288004	Collecte	d: 03/16/16	5 11:42	Received: 03/	/19/16 05:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	95.9	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:40	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:40	7440-41-7	
Boron	31200	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:40	7440-42-8	
Calcium	191000	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:40	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:40	7440-48-4	
Lead	3.6J	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:40	7439-92-1	
Lithium	37.9	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:40	7439-93-2	
Molybdenum	8300	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:40	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 16:04	7440-36-0	
Arsenic	0.70J	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 16:04	7440-38-2	
Cadmium	<0.087	ug/L	1.5	0.087	3	03/22/16 13:30	03/25/16 13:53	7440-43-9	D3
Chromium	0.40J	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 16:04	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 16:04	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 16:04	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 16:05	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1100	mg/L	5.0	5.0	1		03/22/16 10:30		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.4	Std. Units	0.10	0.10	1		03/23/16 10:35		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	25.5	mg/L	2.0	1.0	2		03/22/16 11:39	16887-00-6	
Fluoride	0.75	mg/L	0.20	0.073	1		03/21/16 18:23	16984-48-8	
Sulfate	511	mg/L	50.0	12.4	50		03/22/16 10:47		
		··· <i>y</i> · –							



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Sample: S-UMW-5D	Lab ID:	60215288005	Collecte	d: 03/16/10	5 15:30	Received: 03/	/19/16 05:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	369	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:43	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:43	7440-41-7	
Boron	10800	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:43	7440-42-8	
Calcium	98400	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:43	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:43	7440-48-4	
Lead	4.8J	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:43	7439-92-1	
Lithium	31.4	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:43	7439-93-2	
Molybdenum	264	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:43	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 16:09	7440-36-0	
Arsenic	0.80J	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 16:09	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	03/22/16 13:30	03/23/16 16:09	7440-43-9	
Chromium	0.42J	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 16:09	7440-47-3	
Selenium	0.20J	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 16:09	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 16:09	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 16:07	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	455	mg/L	5.0	5.0	1		03/22/16 10:30		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.8	Std. Units	0.10	0.10	1		03/23/16 10:35		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	24.7	mg/L	2.0	1.0	2		03/22/16 11:57	16887-00-6	
Fluoride	0.58	mg/L	0.20	0.073	1		03/21/16 19:33	16984-48-8	
Sulfate	41.5	mg/L	5.0	1.2	5		03/22/16 12:14	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Sample: S-UMW-6D	Lab ID:	60215288006	Collecte	d: 03/17/10	5 14:28	Received: 03/	/19/16 05:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	133	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:45	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:45	7440-41-7	
Boron	647	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:45	7440-42-8	
Calcium	79300	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:45	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:45	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:45	7439-92-1	
Lithium	12.6	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:45	7439-93-2	
Molybdenum	95.9	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:45	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 16:13	7440-36-0	
Arsenic	0.31J	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 16:13	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	03/22/16 13:30	03/23/16 16:13	7440-43-9	
Chromium	0.37J	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 16:13	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 16:13	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 16:13	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 16:14	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	345	mg/L	5.0	5.0	1		03/23/16 08:23		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.8	Std. Units	0.10	0.10	1		04/03/16 12:05		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	17.3	mg/L	1.0	0.50	1		03/21/16 20:08	16887-00-6	
Fluoride	0.29	mg/L	0.20	0.073	1		03/21/16 20:08	16984-48-8	
Sulfate	60.0	mg/L	5.0	1.2	5		03/22/16 12:31	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Sample: S-BMW-1D	Lab ID:	60215288007	Collecte	d: 03/16/16	5 10:01	Received: 03/	19/16 05:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical N	Method: EPA 20	00.7 Prepa	ration Meth	od: EP	A 200.7			
Barium	334	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:47	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:47	7440-41-7	
Boron	193	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:47	7440-42-8	
Calcium	126000	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:47	7440-70-2	
Cobalt	0.73J	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:47	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:47	7439-92-1	
Lithium	14.2	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:47	7439-93-2	
Molybdenum	1.3J	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:47	7439-98-7	
200.8 MET ICPMS	Analytical N	Method: EPA 20	00.8 Prepa	ration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 16:27	7440-36-0	
Arsenic	0.20J	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 16:27	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	03/22/16 13:30	03/23/16 16:27	7440-43-9	
Chromium	< 0.34	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 16:27	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 16:27	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 16:27	7440-28-0	
7470 Mercury	Analytical N	Method: EPA 74	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 16:16	7439-97-6	
2540C Total Dissolved Solids	Analytical N	Method: SM 25	40C						
Total Dissolved Solids	471	mg/L	5.0	5.0	1		03/22/16 10:31		
4500H+ pH, Electrometric	Analytical N	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.8	Std. Units	0.10	0.10	1		03/22/16 16:15		H6
300.0 IC Anions 28 Days	Analytical N	Method: EPA 30	0.00						
Chloride	5.3	mg/L	1.0	0.50	1		03/21/16 20:43	16887-00-6	
Fluoride	0.30	mg/L	0.20	0.073	1		03/21/16 20:43	16984-48-8	
Sulfate	36.5	mg/L	5.0	1.2	5		03/22/16 12:49	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Sample: S-UMW-DUP-1	Lab ID:	60215288009	Collecte	d: 03/16/10	08:00	Received: 03/	19/16 05:55 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP/	A 200.7			
Barium	87.9	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:56	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:56	7440-41-7	
Boron	30000	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:56	7440-42-8	
Calcium	288000	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:56	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:56	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:56	7439-92-1	
Lithium	15.2	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:56	7439-93-2	
Molybdenum	4790	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:56	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EPA	A 200.8			
Antimony	0.12J	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 16:35	7440-36-0	
Arsenic	0.76J	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 16:35	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	03/22/16 13:30	03/23/16 16:35	7440-43-9	
Chromium	0.50J	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 16:35	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 16:35	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 16:35	7440-28-0	
7470 Mercury	Analytical	Method: EPA 74	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 16:21	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1420	mg/L	5.0	5.0	1		03/22/16 10:32		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.9	Std. Units	0.10	0.10	1		03/22/16 16:15		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00						
Chloride	16.9	mg/L	1.0	0.50	1		03/21/16 21:52	16887-00-6	
Fluoride	0.82	mg/L	0.20	0.073	1		03/21/16 21:52		
Sulfate	823	mg/L	100	24.8	100		03/22/16 13:24		
	020	9, =	.00	20			33,22,10 13.24	. 1000 10 0	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Sample: S-UMW-FB-1	Lab ID:	60215288010	Collecte	d: 03/16/10	3 11:10	Received: 03/	19/16 05:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	<0.58	ug/L	10.0	0.58	1	03/22/16 13:30	03/23/16 14:58	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	03/22/16 13:30	03/23/16 14:58	7440-41-7	
Boron	52.4J	ug/L	100	50.0	1	03/22/16 13:30	03/23/16 14:58	7440-42-8	
Calcium	930	ug/L	100	8.1	1	03/22/16 13:30	03/23/16 14:58	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	03/22/16 13:30	03/23/16 14:58	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	03/22/16 13:30	03/23/16 14:58	7439-92-1	
Lithium	<4.9	ug/L	10.0	4.9	1	03/22/16 13:30	03/23/16 14:58	7439-93-2	
Molybdenum	2.0J	ug/L	20.0	0.52	1	03/22/16 13:30	03/23/16 14:58	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	03/22/16 13:30	03/23/16 16:40	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1	03/22/16 13:30	03/23/16 16:40	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	03/22/16 13:30	03/23/16 16:40	7440-43-9	
Chromium	< 0.34	ug/L	1.0	0.34	1	03/22/16 13:30	03/23/16 16:40	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	03/22/16 13:30	03/23/16 16:40	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	03/22/16 13:30	03/23/16 16:40	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	04/01/16 10:45	04/01/16 16:23	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	8.0	mg/L	5.0	5.0	1		03/22/16 10:32		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	5.9	Std. Units	0.10	0.10	1		03/22/16 16:15		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	<0.50	mg/L	1.0	0.50	1		03/21/16 23:02	16887-00-6	
Fluoride	< 0.073	mg/L	0.20	0.073	1		03/21/16 23:02	16984-48-8	
Sulfate	<0.25	mg/L	1.0	0.25	1		03/21/16 23:02		



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

QC Batch: 424743 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010

METHOD BLANK: 1734344 Matrix: Water

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010

Blank Reporting Units MDL Qualifiers Parameter Result Limit Analyzed Mercury ug/L < 0.039 0.20 0.039 04/01/16 15:49 LABORATORY CONTROL SAMPLE: 1734345 LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers 5 5.2 104 80-120 Mercury ug/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1734347 1734346 MS MSD Spike Spike MS MSD MS MSD 60215288001 % Rec Max RPD RPD Parameter Units Result Conc. Result Result % Rec % Rec Limits Conc. Qual Mercury ug/L < 0.039 5 5 5.1 5.1 103 102 75-125 20

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

QC Batch: 423332 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010

METHOD BLANK: 1728575 Matrix: Water

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	03/23/16 14:20	
Beryllium	ug/L	< 0.26	1.0	0.26	03/23/16 14:20	
Boron	ug/L	<50.0	100	50.0	03/23/16 14:20	
Calcium	ug/L	14.2J	100	8.1	03/23/16 14:20	
Cobalt	ug/L	< 0.72	5.0	0.72	03/23/16 14:20	
Lead	ug/L	<2.5	5.0	2.5	03/23/16 14:20	
Lithium	ug/L	<4.9	10.0	4.9	03/23/16 14:20	
Molybdenum	ug/L	< 0.52	20.0	0.52	03/23/16 14:20	

LABORATORY CONTROL SAMPLE:	1728576					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	1010	101	85-115	
Boron	ug/L	1000	1040	104	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Cobalt	ug/L	1000	1030	103	85-115	
Lead	ug/L	1000	1020	102	85-115	
Lithium	ug/L	1000	986	99	85-115	
Molybdenum	ug/L	1000	1080	108	85-115	

MATRIX SPIKE & MATRIX SPIR	KE DUPLICA	TE: 17285	77		1728578							
			MS	MSD								
	60	0215288001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD Qua	al
Barium	ug/L	161	1000	1000	1160	1160	100	100	70-130	0	20	
Beryllium	ug/L	< 0.26	1000	1000	985	985	98	99	70-130	0	20	
Boron	ug/L	254	1000	1000	1260	1260	100	101	70-130	0	20	
Calcium	ug/L	78400	10000	10000	84100	85400	57	71	70-130	2	20 M1	
Cobalt	ug/L	< 0.72	1000	1000	988	987	99	99	70-130	0	20	
Lead	ug/L	<2.5	1000	1000	992	991	99	99	70-130	0	20	
Lithium	ug/L	13.1	1000	1000	998	1000	98	99	70-130	0	20	
Molybdenum	ug/L	31.7	1000	1000	1090	1090	106	105	70-130	0	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

QC Batch: 423333 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010

METHOD BLANK: 1728579 Matrix: Water

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	03/23/16 15:34	
Arsenic	ug/L	<0.10	1.0	0.10	03/23/16 15:34	
Cadmium	ug/L	< 0.029	0.50	0.029	03/23/16 15:34	
Chromium	ug/L	< 0.34	1.0	0.34	03/23/16 15:34	
Selenium	ug/L	<0.18	1.0	0.18	03/23/16 15:34	
Thallium	ug/L	< 0.50	1.0	0.50	03/23/16 15:34	

LABORATORY CONTROL SAMPLE:	1728580					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	42.1	105	85-115	
Arsenic	ug/L	40	40.7	102	85-115	
Cadmium	ug/L	40	42.2	105	85-115	
Chromium	ug/L	40	40.9	102	85-115	
Selenium	ug/L	40	43.3	108	85-115	
Thallium	ug/L	40	38.2	95	85-115	

MATRIX SPIKE & MATRIX SPIR	KE DUPLIC	ATE: 17285	31		1728582							
			MS	MSD								
		60215288001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	0.13J	40	40	40.5	40.2	101	100	70-130	1	20	
Arsenic	ug/L	0.90J	40	40	40.4	40.0	99	98	70-130	1	20	
Cadmium	ug/L	< 0.029	40	40	39.5	38.7	99	97	70-130	2	20	
Chromium	ug/L	< 0.34	40	40	39.7	39.4	98	98	70-130	1	20	
Selenium	ug/L	<0.18	40	40	39.6	39.6	99	99	70-130	0	20	
Thallium	ug/L	<0.50	40	40	37.2	36.9	93	92	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

QC Batch: 423301 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60215288002, 60215288003, 60215288004, 60215288005, 60215288007, 60215288009, 60215288010

METHOD BLANK: 1728448 Matrix: Water

Associated Lab Samples: 60215288002, 60215288003, 60215288004, 60215288005, 60215288007, 60215288009, 60215288010

Blank Reporting

ParameterUnitsResultLimitMDLAnalyzedQualifiersTotal Dissolved Solidsmg/L<5.0</td>5.003/22/16 10:28

LABORATORY CONTROL SAMPLE: 1728449

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 980 98 80-120

SAMPLE DUPLICATE: 1728450

60215252009 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 3580 **Total Dissolved Solids** 3560 1 10 mg/L

SAMPLE DUPLICATE: 1728486

Date: 01/02/2018 02:30 PM

60215284001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 206 **Total Dissolved Solids** mg/L 212 3 10

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

QC Batch: 423408 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60215288001, 60215288006

METHOD BLANK: 1728797 Matrix: Water

Associated Lab Samples: 60215288001, 60215288006

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 5.0 03/23/16 08:20

LABORATORY CONTROL SAMPLE: 1728798

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 951 95 80-120

SAMPLE DUPLICATE: 1728799

60215288001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 389 0 10 **Total Dissolved Solids** 389 mg/L

SAMPLE DUPLICATE: 1728800

Date: 01/02/2018 02:30 PM

60215292004 Dup Max RPD RPD Parameter Units Result Result Qualifiers 468 **Total Dissolved Solids** mg/L 609 26 10 D6

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

(913)599-5665



QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

QC Batch: 423206 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60215288007, 60215288009, 60215288010

SAMPLE DUPLICATE: 1728090

Date: 01/02/2018 02:30 PM

60215020001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.9 pH at 25 Degrees C 7.9 5 H6 Std. Units 0

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

QC Batch: 423374 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60215288002, 60215288003, 60215288004, 60215288005

SAMPLE DUPLICATE: 1728707

Date: 01/02/2018 02:30 PM

60215292004 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.3 pH at 25 Degrees C 7.3 5 H6 Std. Units 0

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

QC Batch: 424886 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60215288001, 60215288006

SAMPLE DUPLICATE: 1735395

Date: 01/02/2018 02:30 PM

60215288001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 8.3 pH at 25 Degrees C 5 H6 Std. Units 8.3 0

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

LABORATORY CONTROL CAMPLE.

Date: 01/02/2018 02:30 PM

QC Batch: 423186 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010

METHOD BLANK: 1728031 Matrix: Water

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	03/21/16 14:20	
Fluoride	mg/L	< 0.073	0.20	0.073	03/21/16 14:20	
Sulfate	mg/L	< 0.25	1.0	0.25	03/21/16 14:20	

METHOD BLANK: 1728422 Matrix: Water

Associated Lab Samples: 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007, 60215288009

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	03/22/16 09:20	
Sulfate	mg/L	< 0.25	1.0	0.25	03/22/16 09:20	

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L		4.8	97	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

LABORATORY CONTROL SAMPLE:	1728423					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIK	(E DUPLIC	ATE: 17280	33		1728034							
	(60215288001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	18.9	5	5	23.4	23.4	90	89	80-120	0	15	
Fluoride	mg/L	0.34	2.5	2.5	2.6	2.6	92	91	80-120	1	15	
Sulfate	mg/L	80.5	100	100	173	175	92	94	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.



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-1D Lab ID: 60215288001 Collected: 03/17/16 13:57 Received: 03/19/16 05:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.119 ± 0.369 (0.715) C:NA T:92%	pCi/L	04/07/16 12:51	13982-63-3	
Radium-228	EPA 904.0	0.290 ± 0.366 (0.778) C:80% T:91%	pCi/L	04/08/16 13:25	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-2D Lab ID: 60215288002 Collected: 03/16/16 15:02 Received: 03/19/16 05:55 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac CAS No. **Parameters** Units Analyzed Qual EPA 903.1 $0.319 \pm 0.333 \quad (0.469)$ Radium-226 pCi/L 04/07/16 12:39 13982-63-3 C:NA T:90% EPA 904.0 $-0.0628 \pm 0.299 \quad (0.709)$ Radium-228 pCi/L 04/08/16 12:45 15262-20-1 C:82% T:90%



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-3D Lab ID: 60215288003 Collected: 03/16/16 13:07 Received: 03/19/16 05:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.280 ± 0.293 (0.413) C:NA T:90%	pCi/L	04/07/16 13:02	13982-63-3	
Radium-228	EPA 904.0	0.251 ± 0.299 (0.629) C:83% T:87%	pCi/L	04/08/16 12:46	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-4D Lab ID: 60215288004 Collected: 03/16/16 11:42 Received: 03/19/16 05:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.235 ± 0.432 (0.771) C:NA T:95%	pCi/L	04/07/16 13:02	13982-63-3	
Radium-228	EPA 904.0	0.449 ± 0.510 (1.08) C:83% T:83%	pCi/L	04/08/16 16:55	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-5D Lab ID: 60215288005 Collected: 03/16/16 15:30 Received: 03/19/16 05:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.553 ± 0.367 (0.166) C:NA T:90%	pCi/L	04/07/16 12:29	13982-63-3	
Radium-228	EPA 904.0	0.730 ± 0.399 (0.730) C:83% T:91%	pCi/L	04/08/16 16:55	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-6D Lab ID: 60215288006 Collected: 03/17/16 14:28 Received: 03/19/16 05:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.111 ± 0.254 (0.151) C:NA T:90%	pCi/L	04/07/16 12:52	13982-63-3	
Radium-228	EPA 904.0	0.472 ± 0.444 (0.919) C:85% T:83%	pCi/L	04/08/16 16:55	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-BMW-1D Lab ID: 60215288007 Collected: 03/16/16 10:01 Received: 03/19/16 05:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.158 ± 0.311 (0.568) C:NA T:99%	pCi/L	04/07/16 19:57	13982-63-3	
Radium-228	EPA 904.0	0.638 ± 0.430 (0.840) C:84% T:89%	pCi/L	04/08/16 16:55	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-DUP-1 Lab ID: 60215288009 Collected: 03/16/16 08:00 Received: 03/19/16 05:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.057 ± 0.260 (0.613) C:NA T:93%	pCi/L	04/07/16 19:57	13982-63-3	
Radium-228	EPA 904.0	0.187 ± 0.349 (0.766) C:80% T:86%	pCi/L	04/08/16 16:59	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-FB-1 Lab ID: 60215288010 Collected: 03/16/16 11:10 Received: 03/19/16 05:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.114 ± 0.273 (0.528) C:NA T:91%	pCi/L	04/07/16 20:09	13982-63-3	
Radium-228	EPA 904.0	0.447 ± 0.348 (0.691) C:82% T:94%	pCi/L	04/08/16 16:59	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-1D MS Lab ID: 60215288011 Collected: 03/17/16 13:57 Received: 03/19/16 05:55 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac CAS No. **Parameters** Units Analyzed Qual EPA 903.1 85.11 %REC ± NA (NA) Radium-226 pCi/L 04/07/16 19:57 13982-63-3 C:NA T:NA EPA 904.0 82.6 %REC +/- NA (NA) Radium-228 pCi/L 04/08/16 17:29 15262-20-1 C:NA T:NA



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Sample: S-UMW-1D MSD Lab ID: 60215288012 Collected: 03/17/16 13:57 Received: 03/19/16 05:55 Matrix: Water

C:NA T:NA

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac **Parameters** Units Analyzed CAS No. Qual EPA 903.1 95.29 %REC 11.29 RPD ± Radium-226 pCi/L 04/07/16 21:24 13982-63-3 NA (NA) C:NA T:NA 80.4 %REC 2.70 RPD +/-EPA 904.0 pCi/L Radium-228 04/08/16 17:29 15262-20-1 NA (NA)

(913)599-5665



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

QC Batch: 214144 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288007,

60215288009, 60215288010, 60215288011, 60215288012

METHOD BLANK: 1046812 Matrix: Water

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010, 60215288011, 60215288012

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 -0.113 ± 0.259 (0.610) C:NA T:101%
 pCi/L
 04/07/16 12:28

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

(913)599-5665



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

QC Batch: 214972 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010, 60215288011, 60215288012

METHOD BLANK: 1050674 Matrix: Water

Associated Lab Samples: 60215288001, 60215288002, 60215288003, 60215288004, 60215288005, 60215288006, 60215288007,

60215288009, 60215288010, 60215288011, 60215288012

 Parameter
 Act \pm Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.436 \pm 0.387 (0.788) C:78% T:88%
 pCi/L
 04/08/16 12:56

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 01/02/2018 02:30 PM

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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

H6 Analysis initiated outside of the 15 minute EPA required holding time.

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



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60215288001	S-UMW-1D	EPA 200.7	423332	EPA 200.7	423386
60215288002	S-UMW-2D	EPA 200.7	423332	EPA 200.7	423386
0215288003	S-UMW-3D	EPA 200.7	423332	EPA 200.7	423386
0215288004	S-UMW-4D	EPA 200.7	423332	EPA 200.7	423386
0215288005	S-UMW-5D	EPA 200.7	423332	EPA 200.7	423386
0215288006	S-UMW-6D	EPA 200.7	423332	EPA 200.7	423386
0215288007	S-BMW-1D	EPA 200.7	423332	EPA 200.7	423386
0215288009	S-UMW-DUP-1	EPA 200.7	423332	EPA 200.7	423386
0215288010	S-UMW-FB-1	EPA 200.7	423332	EPA 200.7	423386
0215288001	S-UMW-1D	EPA 200.8	423333	EPA 200.8	423387
0215288002	S-UMW-2D	EPA 200.8	423333	EPA 200.8	423387
0215288003	S-UMW-3D	EPA 200.8	423333	EPA 200.8	423387
0215288004	S-UMW-4D	EPA 200.8	423333	EPA 200.8	423387
215288005	S-UMW-5D	EPA 200.8	423333	EPA 200.8	423387
0215288006	S-UMW-6D	EPA 200.8	423333	EPA 200.8	423387
0215288007	S-BMW-1D	EPA 200.8	423333	EPA 200.8	423387
0215288009	S-UMW-DUP-1	EPA 200.8	423333	EPA 200.8	423387
0215288010	S-UMW-FB-1	EPA 200.8	423333	EPA 200.8	423387
0215288001	S-UMW-1D	EPA 7470	424743	EPA 7470	424782
0215288002	S-UMW-2D	EPA 7470	424743	EPA 7470	424782
215288003	S-UMW-3D	EPA 7470	424743	EPA 7470	424782
215288004	S-UMW-4D	EPA 7470	424743	EPA 7470	424782
215288005	S-UMW-5D	EPA 7470	424743	EPA 7470	424782
215288006	S-UMW-6D	EPA 7470	424743	EPA 7470	424782
215288007	S-BMW-1D	EPA 7470	424743	EPA 7470	424782
0215288009	S-UMW-DUP-1	EPA 7470	424743	EPA 7470	424782
215288010	S-UMW-FB-1	EPA 7470	424743	EPA 7470	424782
0215288001	S-UMW-1D	EPA 903.1	214144		
0215288002	S-UMW-2D	EPA 903.1	214144		
0215288003	S-UMW-3D	EPA 903.1	214144		
215288004	S-UMW-4D	EPA 903.1	214144		
0215288005	S-UMW-5D	EPA 903.1	214144		
0215288006	S-UMW-6D	EPA 903.1	214144		
0215288007	S-BMW-1D	EPA 903.1	214144		
0215288009	S-UMW-DUP-1	EPA 903.1	214144		
0215288010	S-UMW-FB-1	EPA 903.1	214144		
0215288011	S-UMW-1D MS	EPA 903.1	214144		
215288012	S-UMW-1D MSD	EPA 903.1	214144		
0215288001	S-UMW-1D	EPA 904.0	214972		
0215288002	S-UMW-2D	EPA 904.0	214972		
0215288003	S-UMW-3D	EPA 904.0	214972		
0215288004	S-UMW-4D	EPA 904.0	214972		
0215288005	S-UMW-5D	EPA 904.0	214972		
0215288006	S-UMW-6D	EPA 904.0	214972		
0215288007	S-BMW-1D	EPA 904.0	214972		
0215288009	S-UMW-DUP-1	EPA 904.0	214972		
, 020000	3 3 mm 2 31 - 1	LI /\ 004.0	21-1012		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60215288

Date: 01/02/2018 02:30 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60215288011	S-UMW-1D MS	EPA 904.0	 214972		
60215288012	S-UMW-1D MSD	EPA 904.0	214972		
60215288001	S-UMW-1D	SM 2540C	423408		
60215288002	S-UMW-2D	SM 2540C	423301		
60215288003	S-UMW-3D	SM 2540C	423301		
60215288004	S-UMW-4D	SM 2540C	423301		
60215288005	S-UMW-5D	SM 2540C	423301		
60215288006	S-UMW-6D	SM 2540C	423408		
60215288007	S-BMW-1D	SM 2540C	423301		
60215288009	S-UMW-DUP-1	SM 2540C	423301		
60215288010	S-UMW-FB-1	SM 2540C	423301		
60215288001	S-UMW-1D	SM 4500-H+B	424886		
60215288002	S-UMW-2D	SM 4500-H+B	423374		
60215288003	S-UMW-3D	SM 4500-H+B	423374		
60215288004	S-UMW-4D	SM 4500-H+B	423374		
60215288005	S-UMW-5D	SM 4500-H+B	423374		
60215288006	S-UMW-6D	SM 4500-H+B	424886		
60215288007	S-BMW-1D	SM 4500-H+B	423206		
60215288009	S-UMW-DUP-1	SM 4500-H+B	423206		
60215288010	S-UMW-FB-1	SM 4500-H+B	423206		
60215288001	S-UMW-1D	EPA 300.0	423186		
60215288002	S-UMW-2D	EPA 300.0	423186		
60215288003	S-UMW-3D	EPA 300.0	423186		
60215288004	S-UMW-4D	EPA 300.0	423186		
60215288005	S-UMW-5D	EPA 300.0	423186		
60215288006	S-UMW-6D	EPA 300.0	423186		
60215288007	S-BMW-1D	EPA 300.0	423186		
60215288009	S-UMW-DUP-1	EPA 300.0	423186		
60215288010	S-UMW-FB-1	EPA 300.0	423186		



Sample Condition Upon Receipt



Client Name: GALLE				
	DEV C	_	o. –	Optional
Courier: FedEx UPS VIA Clay	PEX 🗆			Pace ☐ Other ☑ Client ☐ Proj Due Date:
				Jsed? Yes No □ Proj Name:
Custody Seal on Cooler/Box Present: Yes No		eals in		′es ☑ No □
Packing Material: Bubble Wrap ☐ Bubble Ba		1	Foam I	
2	ype of lo	e: (V	100 1111	ue (None
Temperature should be above freezing to 6°C			(Olloit	Date and initials of person examining contents:
Chain of Custody present:	∕ZYes	□No	□N/A	1 Coder Hunds acceptable.
Chain of Custody filled out:	∕ZYes	□No	□n/a	2 2 coder w/o ice contained
Chain of Custody relinquished:	ZYes	□No	□n/a	3. Radium testing volume only
Sampler name & signature on COC:	Yes	□No	□n/a	4. 0 '
Samples arrived within holding time:	Yes	∕No	□n/a	5.
Short Hold Time analyses (<72hr):	Yes	□No	□N/A	6. pM
Rush Turn Around Time requested:	□Yes	ZNo	□N/A	7.
Sufficient volume:	√Yes	□No	□n/a	8.
Correct containers used:		imi C	Shuch	
Pace containers used:	Ja			
Containers intact:	Z Yes	□No	□n/a	10.
Unpreserved 5035A soils frozen w/in 48hrs?	□Yes	□No	⊠N/A	11.
Filtered volume received for dissolved tests?	□Yes	□No	ØN/A	12.
Sample labels match COC:	Ves	□No	□n/a	
Includes date/time/ID/analyses Matrix:	1	_		13.
All containers needing preservation have been checked.	√Yes	□No	□n/a	
All containers needing preservation are found to be in compliance with EPA recommendation.	Yes	□No	□n/a	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	□Yes	Ū∕No		Initial when Lot # of added completed preservative
Trip Blank present:	□Yes	□No	N/A	
Pace Trip Blank lot # (if purchased):				15.
Headspace in VOA vials (>6mm):	□Yes	□No	⊠N/A	
				16.
Project sampled in USDA Regulated Area:	□Yes	□No	⊠ N/A	17. List State:
Additional labels attached to 5035A vials in the field?	□Yes	□No	ØN/A	18.
	OC to Clie		Y / N	
Person Contacted: Da	ate/Time:	:		
Comments/ Resolution:				
Jami Chunch				3/21/16
Project Manager Review:				Date:



CHAIN-OF-CUSTODY / Analytical Request Document

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

3 3 200 3 8 63 Pace Project No./ Lab I.D. 800 000 S 3 (N/Y) Samples Intact DRINKING WATER SAMPLE CONDITIONS F-ALL-Q-020rev.08, 12-Oct-2007 Cooler (Y/N) OTHER ō Sustody Seale Ice (Y/N) Received on GROUND WATER Page: Residual Chlorine (Y/N) S 174 O° ni qmeT REGULATORY AGENCY 9 RCRA TIME Requested Analysis Filtered (Y/N) 2 9102 81/80 Site Location STATE: DATE NPDES UST 822 & 322 muibs 7 z 2 # 7 3 Ţ 7 1 2 DATE Signed (MM/DD/YY): Ho z ACCEPTED BY WAFFILIATION _ z LDS _ _ Chloride/Fluoride/Sulfate n z ^sletals* z **↓** taoT sisylsnA N /A Other Methanol Mozz Jamie Church Preservatives Na₂S₂O₃ HORN HCI 9285 S S S S 4 M nvoice Information. HNO 14 5 company Name: Sohn ⁷OS²H ace Profile #: Reference: TIME Section C 6 Uppreserved ace Quote Address: ۵ و 9 0 # OF CONTAINERS SAMPLER NAME AND SIGNATURE 3/18/1/2 PRINT Name of SAMPLER: SIGNATURE of SAMPLER: SAMPLE TEMP AT COLLECTION 318/16 Ameren Sioux Energy Center - Bottom Ash DATE 1344 3/14/16 1224 3/16/16 1307 3/16/16 15:30 1428 3/17/16 1357 3/16/16 1502 3/16/16 1142 TIME 1001 223 1 Report To: Mark Haddock (mhaddock@golder.com) COMPOSITE END/GRAB 317/16 3/10/16 3/16/16 0933 3/16/16 3/16/16 COLLECTED 7FGA Golder RELINQUISHED BY / AFFILIATION 333 1435 3/14/16 1325 3/16/16 1117 Blushast TIME 0 | 1 अध्या मार 1 COMPOSITE 153-1406.0003A START 3/16/18 3/11/16 3/w/le 3/17/16 6 3/16/16 DATE Section B Required Project Information: Copy To: Jeffrey Ingram U Q O တ O O O **BAYT BJAMA**8 (G=GRAB C=COMP) Purchase Order No.: ¥ Z Ž 5 ₹ ķ ¥ Ş 7 5 roject Number: (see valid codes to left) MATRIX CODE Project Name: CODE Valid Matrix Codes SL PWP TS TS DRINKING WATER WASTE WASTE WASTE WASTE SOIL/SOLID , Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg As, Cd, Cr, Se, Tl Fax 636-724-9323 820 South Main Street, Suite 100 MATRIX S-UMW-DUP-1 S-UMW-FB-1 S-BMW-1D S-BMW-2D S-UMW-3D S-UMW-4D S-UMW-5D S-UMW-6D S-UMW-1D S-UMW-2D ADDITIONAL COMMENTS (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE maddock@golder.com St Charles, MO 63301 SAMPLE ID Golder Associates Required Client Information Section A Required Client Information: Requested Due Date/TAT: 636-724-9191 Section D Ba, Sb. EPA 200.7: E EPA 200.8: S Page 42 of 42 :ompany: hone: ø 2 = 12 # M31

enting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any in Important Note: By signing this form you are ac



January 02, 2018

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on May 13, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

REV-1, 1/2/18: Revision

Jami Church

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 Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates



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



CERTIFICATIONS

AMEREN SIOUX ENERGY CTR-BOTTOM Project:

Pace Project No.: 60219054

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143 West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60219054001	S-UMW-1D	Water	05/10/16 10:19	05/13/16 03:30
60219054002	S-UMW-2D	Water	05/10/16 14:45	05/13/16 03:30
60219054003	S-UMW-3D	Water	05/10/16 13:17	05/13/16 03:30
60219054004	S-UMW-4D	Water	05/10/16 11:55	05/13/16 03:30
60219054005	S-UMW-5D	Water	05/10/16 14:17	05/13/16 03:30
60219054006	S-UMW-6D	Water	05/10/16 13:02	05/13/16 03:30
60219054007	S-BMW-1D	Water	05/09/16 11:15	05/13/16 03:30
60219054009	S-UMW-DUP-1	Water	05/10/16 08:00	05/13/16 03:30
60219054010	S-UMW-FB-1	Water	05/10/16 12:52	05/13/16 03:30
60219054011	S-UMW-1D MS	Water	05/10/13 10:19	05/13/16 03:30
60219054012	S-UMW-1D MSD	Water	05/10/13 10:19	05/13/16 03:30



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

_ab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60219054001	S-UMW-1D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054002	S-UMW-2D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054003	S-UMW-3D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054004	S-UMW-4D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054005	S-UMW-5D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054006	S-UMW-6D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054007	S-BMW-1D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
	EPA 904.0	JLW	1	PASI-PA	
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054009	S-UMW-DUP-1	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054010	S-UMW-FB-1	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	CRS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0219054011	S-UMW-1D MS	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

Lenexa, KS 66219 (913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60219054012	S-UMW-1D MSD	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Barium 120 ug/L 10.0 0.58 1 05/16/16 15:25 05/20/16 09:50 7440-39-3 Beryllium	Sample: S-UMW-1D	Lab ID:	60219054001	Collected	d: 05/10/10	6 10:19	Received: 05/	/13/16 03:30 Ma	atrix: Water	
Barium 120 ug/L 10.0 0.58 1 05/16/16 15:25 05/20/16 09:50 7440-39-3 Beryllium	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium	200.7 Metals, Total	Analytica	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
Boron 614 ug/L 100 50.0 1 05/16/16 15:25 05/20/16 09:50 7440-42-8 Calcium 62700 ug/L 100 8.1 1 05/16/16 15:25 05/20/16 09:50 7440-70-2 Cobalt 40.72 ug/L 5.0 0.72 1 05/16/16 15:25 05/20/16 09:50 7440-70-2 Cobalt 40.72 ug/L 5.0 0.72 1 05/16/16 15:25 05/20/16 09:50 7440-48-4 Calcium 14.6 ug/L 10.0 4.9 1 05/16/16 15:25 05/20/16 09:50 7439-92-1 Cibium 14.6 ug/L 10.0 4.9 1 05/16/16 15:25 05/20/16 09:50 7439-93-2 Molybdenum 38.3 ug/L 20.0 0.52 1 05/16/16 15:25 05/20/16 09:50 7439-93-2 Cobalt 40.00 4.9 4.0 0.50 4.9 4.0 0.50 0.52 0.52/16/16 15:25 05/20/16 09:50 7439-93-2 Cobalt 40.00 4.9 4.0 0.50 4.9 4.0 0.50 0.52 0.52/16/16 15:25 05/20/16 09:50 7439-93-2 Cobalt 40.00 4.9 4.0 0.50 4.0 0.50 0.52 0.52/16/16 15:25 05/20/16 09:50 7439-93-2 Cobalt 40.00 4.9 4.0 0.55 4.0 0.50 0.52 0.52/16/16 15:25 05/20/16 09:50 7439-93-2 Cobalt 40.00 4.9 4.0 0.55 4.0 0.50 0.52 0.52/16/16 15:25 05/20/16 09:50 7439-93-2 Cobalt 40.00 4.9 4.0 0.55 4.0 0.50 0.52 0.52/16/16 15:25 0.52/20/16 09:50 7439-93-2 Cobalt 40.00 4.9 4.0 0.00 0.55 0.52/20/16 15:25 0.52/20/16 09:50 7439-93-2 Cobalt 40.00 4.0 0.55 0.52/20/16 15:25 0.52/20/16 09:50 7439-93-2 Cobalt 40.00 0.00 0.00 0.00 0.55 0.00 0.52 0.52/20/16 09:50 0.52/20/16 09:50 7440-38-2 Cobalt 40.00 0	Barium	120	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 09:50	7440-39-3	
Calcium 62700 ug/L 100 8.1 1 05/16/16 15:25 05/20/16 09:50 7440-70-2 Cobalt <0.72	Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 09:50	7440-41-7	
Cobalt <0.72 ug/L 5.0 0.72 1 05/16/16 15:25 05/20/16 09:50 7440-48-4 Lead 3.0J ug/L 5.0 2.5 1 05/16/16 15:25 05/20/16 09:50 7439-92-1 Lithium 14.6 ug/L 10.0 4.9 1 05/16/16 15:25 05/20/16 09:50 7439-93-2 Molybdenum 38.3 ug/L 20.0 0.52 1 05/16/16 15:25 05/20/16 09:50 7439-93-2 Molybdenum 38.3 ug/L 10.0 0.058 1 05/16/16 15:25 05/20/16 09:50 7439-93-2 Molybdenum 38.3 ug/L 10.0 0.058 1 05/16/16 15:30 05/24/16 09:50 7439-93-2 Analymore 7440-38-9 Preparation Molybdenum 8.0 7440-38-9 Preparation 8.0 05/16/16 15:30 05/24/16 11:36 7440-38-0 05/24/16 11:36 7440-38-0 05/24/16 11:36 7440-43-9 05/24/16 11:36 7440-43-9 05/24/16 11:36 7440-43-9 05/24/16 11:36 05/24/16 11:36 7440-43-9 05/24/16 11:36 05/24/16 11:36	Boron	614	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 09:50	7440-42-8	
Selenium	Calcium	62700	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 09:50	7440-70-2	
Lithium 14.6 ug/L 20.0 10.52 1 05/16/16 15:25 05/20/16 09:50 7439-93-2 Molybdenum 38.3 ug/L 20.0 0.52 1 05/16/16 15:25 05/20/16 09:50 7439-93-2 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 0.11J 0g/L 1.0 0.058 1 05/16/16 15:30 05/24/16 11:36 7440-36-0 Arsenic 0.90J 0.90J 0.90L 1.0 0.10 1 05/16/16 15:30 05/24/16 11:36 7440-38-2 Cadmium 0.029 ug/L 0.50 0.029 1 05/16/16 15:30 05/24/16 11:36 7440-38-2 Cadmium 0.021 ug/L 1.0 0.30 1 05/16/16 15:30 05/24/16 11:36 7440-38-2 Cadmium 0.021 ug/L 1.0 0.30 0.029 1 05/16/16 15:30 05/24/16 11:36 7440-43-9 Chromium 0.021 ug/L 1.0 0.30 0.18 1 05/16/16 15:30 05/24/16 11:36 7440-43-9 Chromium 0.021 ug/L 1.0 0.30 0.18 1 05/16/16 15:30 05/24/16 11:36 7440-47-3 Selenium 0.018 ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 11:36 7440-47-3 Selenium 0.020 ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 11:36 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 2540C Analytical Method: SM 2540C 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.6 Std. Units 0.10 0.10 0.10 0.10 1 05/16/16 13:45 T439-97-6 16 300.0 IC Anions 28 Days Chloride 20.0 mg/L 1.0 0.50 1 05/05/16 20:27 16887-00-6 Fluoride 0.31 mg/L 0.20 0.073 1 05/05/16 20:27 16887-00-6 Fluoride 0.31 mg/L 0.20 0.073 1 05/05/16 20:27 16984-48-8	Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 09:50	7440-48-4	
Molybdenum 38.3 ug/L 20.0 0.52 1 05/16/16 15:25 05/20/16 09:50 7439-98-7	Lead	3.0J	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 09:50	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 0.11,J 0.11,J	Lithium	14.6	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 09:50	7439-93-2	
Antimony	Molybdenum	38.3	ug/L	20.0	0.52	1	05/16/16 15:25	05/20/16 09:50	7439-98-7	
Arsenic 0.90J ug/L 1.0 0.10 1 05/16/16 15:30 05/24/16 11:36 7440-38-2 Cadmium	200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	ration Meth	od: EP	A 200.8			
Arsenic 0.90J ug/L 1.0 0.10 1 05/16/16 15:30 05/24/16 11:36 7440-38-2 Cadmium	Antimony	0.11J	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 11:36	7440-36-0	
Chromium	Arsenic	0.90J	•	1.0	0.10	1	05/16/16 15:30	05/24/16 11:36	7440-38-2	
Selenium Co.18 Ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 11:36 7782-49-2 1.0 0.50 1 05/16/16 15:30 05/24/16 11:36 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury Co.039 Ug/L 0.20 0.039 1 05/19/16 10:00 05/19/16 13:45 7439-97-6 L3 Co.18	Cadmium	< 0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 11:36	7440-43-9	
Thallium	Chromium	0.62J	ug/L	1.0	0.34	1	05/16/16 15:30	05/24/16 11:36	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 05/19/16 10:00 05/19/16 13:45 7439-97-6 L3 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 321 mg/L 5.0 5.0 1 05/16/16 08:50 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.6 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 20.0 mg/L 1.0 0.50 1 05/25/16 20:27 16887-00-6 Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	Selenium	<0.18	ug/L	1.0	0.18	1	05/16/16 15:30	05/24/16 11:36	7782-49-2	
Mercury <0.039 ug/L 0.20 0.039 1 05/19/16 10:00 05/19/16 13:45 7439-97-6 L3 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 321 mg/L 5.0 5.0 1 05/16/16 08:50 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B Degrees C 7.6 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 20.0 mg/L 1.0 0.50 1 05/25/16 20:27 16887-00-6 6 Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30	05/24/16 11:36	7440-28-0	
2540C Total Dissolved Solids	7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Total Dissolved Solids 321 mg/L 5.0 5.0 1 05/16/16 08:50 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.6 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 20.0 mg/L 1.0 0.50 1 05/25/16 20:27 16887-00-6 Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 13:45	7439-97-6	L3
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.6 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 20.0 mg/L 1.0 0.50 1 05/25/16 20:27 16887-00-6 Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	2540C Total Dissolved Solids	Analytica	Method: SM 25	40C						
pH at 25 Degrees C 7.6 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 20.0 mg/L 1.0 0.50 1 05/25/16 20:27 16887-00-6 Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	Total Dissolved Solids	321	mg/L	5.0	5.0	1		05/16/16 08:50		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 20.0 mg/L 1.0 0.50 1 05/25/16 20:27 16887-00-6 Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	4500H+ pH, Electrometric	Analytica	Method: SM 45	600-H+B						
Chloride 20.0 mg/L 1.0 0.50 1 05/25/16 20:27 16887-00-6 Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	pH at 25 Degrees C	7.6	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Fluoride 0.31 mg/L 0.20 0.073 1 05/25/16 20:27 16984-48-8	Chloride	20.0	mg/L	1.0	0.50	1		05/25/16 20:27	16887-00-6	
·	Fluoride		ū							
	Sulfate	61.1	mg/L	5.0	1.2	5				



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Sample: S-UMW-2D	Lab ID:	60219054002	Collecte	d: 05/10/10	3 14:45	Received: 05/	/13/16 03:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	121	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 09:56	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 09:56	7440-41-7	
Boron	18800	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 09:56	7440-42-8	
Calcium	226000	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 09:56	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 09:56	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 09:56	7439-92-1	
Lithium	29.7	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 09:56	7439-93-2	
Molybdenum	1440	ug/L	20.0	0.52	1	05/16/16 15:25	05/20/16 09:56	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	0.077J	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 11:49	7440-36-0	
Arsenic	1.1	ug/L	1.0	0.10	1	05/16/16 15:30	05/24/16 11:49	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 11:49	7440-43-9	
Chromium	0.66J	ug/L	1.0	0.34	1	05/16/16 15:30	05/24/16 11:49	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	05/16/16 15:30	05/24/16 11:49	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30	05/24/16 11:49	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 13:52	7439-97-6	L3
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1110	mg/L	5.0	5.0	1		05/16/16 08:55		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.9	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	21.2	mg/L	2.0	1.0	2		05/27/16 14:58	16887-00-6	
Fluoride	1.3	mg/L	0.20	0.073	1		05/25/16 21:10	16984-48-8	
Sulfate	641	mg/L	50.0	12.4	50		05/27/16 15:13	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Sample: S-UMW-3D	Lab ID:	60219054003	Collected	d: 05/10/1	6 13:17	Received: 05/	/13/16 03:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	nod: EP	A 200.7			
Barium	75.6	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 09:59	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 09:59	7440-41-7	
Boron	26100	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 09:59	7440-42-8	
Calcium	256000	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 09:59	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 09:59	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 09:59	7439-92-1	
Lithium	27.2	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 09:59	7439-93-2	
Molybdenum	4250	ug/L	20.0	0.52	1	05/16/16 15:25	05/20/16 09:59	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	ration Meth	nod: EP	A 200.8			
Antimony	0.21J	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 11:54	7440-36-0	
Arsenic	0.85J	ug/L	1.0	0.10	1	05/16/16 15:30	05/24/16 11:54	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 11:54	7440-43-9	
Chromium	0.62J	ug/L	1.0	0.34	1	05/16/16 15:30	05/24/16 11:54	7440-47-3	
Selenium	0.23J	ug/L	1.0	0.18	1	05/16/16 15:30	05/24/16 11:54	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30	05/24/16 11:54	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 13:54	7439-97-6	L3
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1210	mg/L	5.0	5.0	1		05/16/16 08:56		
4500H+ pH, Electrometric	Analytical	Method: SM 45	600-H+B						
pH at 25 Degrees C	7.7	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	23.5	mg/L	2.0	1.0	2		05/27/16 15:28	16887-00-6	
Fluoride	1.1	mg/L	0.20	0.073	1		05/25/16 21:38	16984-48-8	
Sulfate	663	mg/L	100	24.8	100		05/27/16 15:42		



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Sample: S-UMW-4D	Lab ID:	60219054004	Collecte	d: 05/10/10	3 11:55	Received: 05/	/13/16 03:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	78.4	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 10:01	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 10:01	7440-41-7	
Boron	26300	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 10:01	7440-42-8	
Calcium	177000	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 10:01	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 10:01	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 10:01	7439-92-1	
Lithium	39.6	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 10:01	7439-93-2	
Molybdenum	7220	ug/L	20.0	0.52	1	05/16/16 15:25	05/20/16 10:01	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 11:58	7440-36-0	
Arsenic	0.60J	ug/L	1.0	0.10	1	05/16/16 15:30			
Cadmium	< 0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 11:58	7440-43-9	
Chromium	0.48J	ug/L	1.0	0.34	1	05/16/16 15:30	05/24/16 11:58	7440-47-3	
Selenium	0.21J	ug/L	1.0	0.18	1	05/16/16 15:30	05/24/16 11:58	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30	05/24/16 11:58	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 13:56	7439-97-6	L3
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1000	mg/L	5.0	5.0	1		05/16/16 08:56		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	25.5	mg/L	2.0	1.0	2		05/27/16 15:57	16887-00-6	
Fluoride	0.89	mg/L	0.20	0.073	1		05/25/16 22:35	16984-48-8	
Sulfate	397	mg/L	50.0	12.4	50		05/27/16 16:12	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Sample: S-UMW-5D	Lab ID:	60219054005	Collected	d: 05/10/1	6 14:17	Received: 05/	/13/16 03:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytica	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
Barium	333	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 10:03	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 10:03	7440-41-7	
Boron	11800	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 10:03	7440-42-8	
Calcium	97000	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 10:03	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 10:03	7440-48-4	
Lead	2.5J	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 10:03	7439-92-1	
Lithium	32.5	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 10:03	7439-93-2	
Molybdenum	271	ug/L	20.0	0.52	1	05/16/16 15:25	05/20/16 10:03	7439-98-7	
200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	ration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 12:02	7440-36-0	
Arsenic	0.88J	ug/L	1.0	0.10	1	05/16/16 15:30	05/24/16 12:02	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 12:02	7440-43-9	
Chromium	0.56J	ug/L	1.0	0.34	1	05/16/16 15:30	05/24/16 12:02	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	05/16/16 15:30	05/24/16 12:02	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30	05/24/16 12:02	7440-28-0	
7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 13:58	7439-97-6	L3
2540C Total Dissolved Solids	Analytica	Method: SM 25	40C						
Total Dissolved Solids	453	mg/L	5.0	5.0	1		05/16/16 08:57		
4500H+ pH, Electrometric	Analytica	Method: SM 45	600-H+B						
pH at 25 Degrees C	7.3	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Chloride	7.3	mg/L	2.0	1.0	2		05/27/16 16:27	16887-00-6	
Fluoride	0.65	mg/L	0.20	0.073	1		05/25/16 22:49		
Sulfate	26.1	mg/L	2.0	0.50	2		05/27/16 16:27		



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Sample: S-UMW-6D	Lab ID:	60219054006	Collected	d: 05/10/10	6 13:02	Received: 05/	/13/16 03:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytica	l Method: EPA 2	00.7 Prepa	ration Meth	nod: EP	A 200.7			
Barium	129	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 10:05	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 10:05	7440-41-7	
Boron	680	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 10:05	7440-42-8	
Calcium	82800	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 10:05	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 10:05	7440-48-4	
Lead	2.9J	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 10:05	7439-92-1	
Lithium	14.4	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 10:05	7439-93-2	
Molybdenum	106	ug/L	20.0	0.52	1	05/16/16 15:25	05/20/16 10:05	7439-98-7	
200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	ration Meth	nod: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 12:07	7440-36-0	
Arsenic	0.20J	ug/L	1.0	0.10	1	05/16/16 15:30	05/24/16 12:07	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 12:07	7440-43-9	
Chromium	0.41J	ug/L	1.0	0.34	1	05/16/16 15:30	05/24/16 12:07	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	05/16/16 15:30	05/24/16 12:07	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30	05/24/16 12:07	7440-28-0	
7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 14:05	7439-97-6	L3
2540C Total Dissolved Solids	Analytica	Method: SM 25	40C						
Total Dissolved Solids	377	mg/L	5.0	5.0	1		05/16/16 08:57		
4500H+ pH, Electrometric	Analytica	Method: SM 45	600-H+B						
pH at 25 Degrees C	7.0	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Chloride	18.6	mg/L	5.0	2.5	5		05/28/16 15:59	16887-00-6	
Fluoride	0.37	mg/L	0.20	0.073	1		05/28/16 15:44	16984-48-8	
Sulfate	66.2	mg/L	5.0	1.2	5		05/28/16 15:59	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Parameters Results Units PQL MDL DF Prepared Analyzed CAS No. Qual	Sample: S-BMW-1D	Lab ID:	60219054007	Collecte	d: 05/09/10	6 11:15	Received: 05/	13/16 03:30 Ma	atrix: Water	
Barium	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium 40.26 ug/L ug/L 1.0 0.26 1 0.5/16/16 15:25 05/20/16 10:12 7440-41-7 Paron 182 ug/L 100 50.0 1 0.5/16/16 15:25 05/20/16 10:12 7440-42-8 Paron 182 ug/L 100 50.0 1 0.5/16/16 15:25 0.5/20/16 10:12 7440-42-8 Paron 7440-48-4 Paron 7440-48-3 Paron 7440-48-4 Paron 7440-38-9 Paron 7440-	200.7 Metals, Total	Analytica	l Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron 182 ug/L 100 50.0 1 05/16/16 15:25 05/20/16 10:12 7440-42-8 Calcium 132000 ug/L 100 8.1 1 05/16/16 15:25 05/20/16 10:12 7440-42-8 Calcium 40.72 ug/L 5.0 0.72 1 05/16/16 15:25 05/20/16 10:12 7440-70-2 Calcium 40.72 ug/L 5.0 0.72 1 05/16/16 15:25 05/20/16 10:12 7440-48-8 Lead 3.73 ug/L 10.0 4.9 1 05/16/16 15:25 05/20/16 10:12 7439-92-1 Lithium 16.8 ug/L 10.0 4.9 1 05/16/16 15:25 05/20/16 10:12 7439-93-2 Molybdenum 0.53 ug/L 10.0 0.52 1 05/16/16 15:20 05/20/16 10:12 7439-93-2 Molybdenum 0.50 1 05/16/16 15:20 05/20/16 10:12 7439-93-2 Molybdenum 0.0 0.50 1 05/16/16 15:30 05/24/16 10:12 7440-38-9 40-36-0 40-36-0 40-36-0 40-36-0 40-36-0 4	Barium	314	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 10:12	7440-39-3	
Calcium 132000 ug/L 100 8.1 1 05/16/16 15:25 05/20/16 10:12 7440-70-2 C940-84-8 Lead 40.72 ug/L 5.0 0.72 1 05/16/16 15:25 05/20/16 10:12 7440-70-2 7440-70-2 1 05/16/16 15:25 05/20/16 10:12 7440-92-1 1 2430-92-1 1 05/16/16 15:25 05/20/16 10:12 7430-92-1 2 1 05/16/16 15:25 05/20/16 10:12 7430-92-1 2 1 05/16/16 15:25 05/20/16 10:12 7430-92-1 2 1 05/16/16 15:25 05/20/16 10:12 7430-92-1 2 1 05/16/16 15:25 05/20/16 10:12 7430-93-2 2 1 05/16/16 15:35 05/20/16 10:12 7430-93-2 2 1 05/16/16 15:30 05/20/16 10:12 7430-93-2 2	Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 10:12	7440-41-7	
Cobalt 40.72 ug/L 5.0 0.72 1 05/16/16 15:25 05/20/16 10:12 7440-48-4 Lead 3.7J ug/L 5.0 2.5 1 05/16/16 15:25 05/20/16 10:12 7439-92-1 Lithium 16.8 ug/L 10.0 4.9 1 05/16/16 15:25 05/20/16 10:12 7439-93-2 Molybdenum 0.53J ug/L 20.0 0.52 1 05/16/16 15:25 05/20/16 10:12 7439-93-7 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 1 05/16/16 15:30 05/24/16 12:24 7440-36-0 Antimony <0.058	Boron	182	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 10:12	7440-42-8	
Lead 3.7J ug/L 5.0 2.5 1 05/16/16 15:25 05/20/16 10:12 7439-92-1 Lithium 16.8 ug/L 10.0 4.9 1 05/16/16 15:25 05/20/16 10:12 7439-92-1 7439-93-2 Molybdenum 0.53J ug/L 10.0 4.9 1 05/16/16 15:25 05/20/16 10:12 7439-93-2 Molybdenum 0.53J ug/L 10.0 0.52 1 05/16/16 15:25 05/20/16 10:12 7439-93-2 Molybdenum 0.53J ug/L 10.0 0.52 1 05/16/16 15:25 05/20/16 10:12 7439-93-2 Molybdenum 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.516/16 15:30 05/24/16 12:24 7440-36-0 A40-38-2 Cadmium 40.03 0.50 0.029 1 05/16/16 15:30 05/24/16 12:24 7440-38-2 Cadmium 40.03 0.029 0.029 1 05/16/16 15:30 05/24/16 12:24 7440-38-2 Cadmium 40.03 0.029 1 05/16/16 15:30 05/24/16 12:24	Calcium	132000	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 10:12	7440-70-2	
Lithium Molybdenum 16.8 ug/L 0.53J ug/L 10.0 20.0 0.52 1 0.05/16/16 15:25 05/20/16 10:12 7439-93-2 05/20/16 10:12 7439-93-2 00.8 4.9 0.53J ug/L 20.0 0.52 1 0.05/16/16 15:25 05/20/16 10:12 7439-98-7 7439-93-2 7439-93-2 7439-93-2 0.05/20/16 10:12 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 1 05/16/16 15:30 05/24/16 12:24 7440-36-0 0.029 0.029 1 0.05/16/16 15:30 05/24/16 12:24 7440-38-2 0.029 0.029 1 0.05/16/16 15:30 05/24/16 12:24 7440-38-2 0.029 0.029 1 0.05/16/16 15:30 05/24/16 12:24 7440-38-2 0.029 0.029 1 0.05/16/16 15:30 05/24/16 12:24 7440-33-9 0.029 0.018 0.029 0.05/16/16 15:30 05/24/16 12:24 7440-33-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-33-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 0.05/24/16 12:24 7440-23-9 0.029 0.039 0.05/16/16 15:30 0.05/24/16 12:24 7440-23-9 0.029 0.039 0.039 0.05/16/16 15:30 0.05/24/16 12:24 7440-23-9 0.029 0.029 0.039 0.039 0.05/16/16 15:30 0.05/24/16 12:24 7440-23-9 0.02	Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 10:12	7440-48-4	
Molybdenum 0.53J ug/L 20.0 0.52 1 05/16/16 15:25 05/20/16 10:12 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony Arsenic <0.058 ug/L 1.0 0.058 1 05/16/16 15:30 05/24/16 12:24 7440-36-0 Arsenic <0.10 ug/L 1.0 0.010 1 05/16/16 15:30 05/24/16 12:24 7440-38-2 Cadmium <0.029 ug/L 1.0 0.034 1 05/16/16 15:30 05/24/16 12:24 7440-38-2 Cadmium <0.029 ug/L 1.0 0.34 1 05/16/16 15:30 05/24/16 12:24 7440-43-9 Chromium 0.58J ug/L 1.0 0.34 1 05/16/16 15:30 05/24/16 12:24 7440-43-9 Chromium 0.0 0.1 0.5 0.5 0.5 0.5/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium 40.1 0.0 0.0 0.5 1 05/16/16 15:30 05/24/16 12:24 7440-28-0 7470 Merc	Lead	3.7J	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 10:12	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.058 ug/L 1.0 0.058 1 05/16/16 15:30 05/24/16 12:24 7440-36-0 Arsenic 40.10 ug/L 1.0 0.10 1 05/16/16 15:30 05/24/16 12:24 7440-38-2 Cadmium 40.029 ug/L 0.50 0.029 1 05/16/16 15:30 05/24/16 12:24 7440-38-2 Chromium 0.58J ug/L 1.0 0.34 1 05/16/16 15:30 05/24/16 12:24 7440-43-9 Chromium 40.18 ug/L 1.0 0.34 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium 40.18 ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium 40.18 ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium 40.18 ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium 40.18 ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium 40.18 ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium 40.18 ug/L 740-48-9 Thallium 40.18 ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-28-0 Thallium 40.18 ug/L 740-48-9 Thallium 40.18 ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Thallium 40.18 ug/L 740-48-9 Thallium 740-48-9 Thallium	Lithium	16.8	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 10:12	7439-93-2	
Antimony	Molybdenum	0.53J	ug/L	20.0	0.52	1	05/16/16 15:25	05/20/16 10:12	7439-98-7	
Arsenic	200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Arsenic Co.10 Ug/L 1.0 0.10 1 05/16/16 15:30 05/24/16 12:24 7440-38-2 Cadmium Co.029 Ug/L 0.50 0.029 1 05/16/16 15:30 05/24/16 12:24 7440-43-9 Chromium Co.58J Ug/L 1.0 0.34 1 05/16/16 15:30 05/24/16 12:24 7440-43-9 Chromium Co.18 Ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Chromium Co.18 Ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Chromium Co.50 Ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Chromium Co.50 Ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Chromium Co.50 Ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Chromium Co.50 Ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Chromium Co.50 Ug/L 1.0 0.50 1 05/19/16 10:00 05/19/16 12:24 7440-47-3 Chromium Chromium	Antimony	<0.058	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 12:24	7440-36-0	
Chromium 0.58J ug/L 1.0 0.34 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Thallium <0.50 ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Method: EPA 7470 D5/19/16 10:00 05/19/16 14:07 7439-97-6 L3 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 5.0 1 05/19/16 10:00 05/19/16 14:07 7439-97-6 L3 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 4500-	•	<0.10	ū	1.0	0.10	1	05/16/16 15:30	05/24/16 12:24	7440-38-2	
Chromium 0.58J ug/L 1.0 0.34 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 05/16/16 15:30 05/24/16 12:24 7440-47-3 Thallium <0.50 ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Method: EPA 7470 D5/19/16 10:00 05/19/16 14:07 7439-97-6 L3 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 5.0 1 05/19/16 10:00 05/19/16 14:07 7439-97-6 L3 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 4500-	Cadmium	<0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 12:24	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 05/16/16 15:30 05/24/16 12:24 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Analytical Method: EPA 7470 D5/19/16 10:00 05/19/16 14:07 7439-97-6 L3 2540C Total Dissolved Solids Analytical Method: SM 2540C SM 254	Chromium	0.58J	ug/L	1.0	0.34	1	05/16/16 15:30			
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 05/19/16 10:00 05/19/16 14:07 7439-97-6 L3 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 465 mg/L 5.0 5.0 1 05/16/16 08:40 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.5 mg/L 1.0 0.50 1 05/25/16 23:18 16887-00-6 Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	Selenium	<0.18	ug/L	1.0	0.18	1	05/16/16 15:30	05/24/16 12:24	7782-49-2	
Mercury < 0.039 ug/L 0.20 0.039 1 05/19/16 10:00 05/19/16 14:07 7439-97-6 L3 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 465 mg/L 5.0 5.0 1 05/16/16 08:40 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.5 mg/L 1.0 0.50 1 05/25/16 23:18 16887-00-6 Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30	05/24/16 12:24	7440-28-0	
2540C Total Dissolved Solids	7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EP/	A 7470			
Total Dissolved Solids 465 mg/L 5.0 5.0 1 05/16/16 08:40 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.5 mg/L 1.0 0.50 1 05/25/16 23:18 16887-00-6 Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 14:07	7439-97-6	L3
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.5 mg/L 1.0 0.50 1 05/25/16 23:18 16887-00-6 Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	2540C Total Dissolved Solids	Analytica	Method: SM 25	540C						
pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 05/13/16 13:45 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.5 mg/L 1.0 0.50 1 05/25/16 23:18 16887-00-6 Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	Total Dissolved Solids	465	mg/L	5.0	5.0	1		05/16/16 08:40		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.5 mg/L 1.0 0.50 1 05/25/16 23:18 16887-00-6 Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	4500H+ pH, Electrometric	Analytica	Method: SM 45	500-H+B						
Chloride 5.5 mg/L 1.0 0.50 1 05/25/16 23:18 16887-00-6 Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Fluoride 0.35 mg/L 0.20 0.073 1 05/25/16 23:18 16984-48-8	Chloride	5.5	mg/L	1.0	0.50	1		05/25/16 23:18	16887-00-6	
š			Ū							
	Sulfate	39.9	mg/L	5.0	1.2	5				



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Sample: S-UMW-DUP-1	Lab ID:	60219054009	Collecte	d: 05/10/10	08:00	Received: 05/	/13/16 03:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytica	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	80.4	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 10:17	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 10:17	7440-41-7	
Boron	26800	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 10:17	7440-42-8	
Calcium	183000	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 10:17	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 10:17	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 10:17	7439-92-1	
Lithium	39.3	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 10:17	7439-93-2	
Molybdenum	7380	ug/L	20.0	0.52	1		05/20/16 10:17		
200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 12:37	7440-36-0	
Arsenic	0.71J	ug/L	1.0	0.10	1	05/16/16 15:30			
Cadmium	< 0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 12:37	7440-43-9	
Chromium	0.53J	ug/L	1.0	0.34	1	05/16/16 15:30	05/24/16 12:37	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	05/16/16 15:30			
Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30			
7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 14:12	7439-97-6	L3
2540C Total Dissolved Solids	Analytica	Method: SM 25	40C						
Total Dissolved Solids	989	mg/L	5.0	5.0	1		05/17/16 10:00		
4500H+ pH, Electrometric	Analytica	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Chloride	26.3	mg/L	2.0	1.0	2		05/27/16 18:26	16887-00-6	
Fluoride	0.88	mg/L	0.20	0.073	1		05/25/16 23:46	16984-48-8	
Sulfate	484	mg/L	50.0	12.4	50		05/27/16 18:41	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Sample: S-UMW-FB-1	Lab ID:	60219054010	Collecte	d: 05/10/10	6 12:52	Received: 05/	/13/16 03:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytica	Method: EPA 20	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Barium	<0.58	ug/L	10.0	0.58	1	05/16/16 15:25	05/20/16 10:19	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	05/16/16 15:25	05/20/16 10:19	7440-41-7	
Boron	51.1J	ug/L	100	50.0	1	05/16/16 15:25	05/20/16 10:19	7440-42-8	
Calcium	58.9J	ug/L	100	8.1	1	05/16/16 15:25	05/20/16 10:19	7440-70-2	В
Cobalt	<0.72	ug/L	5.0	0.72	1	05/16/16 15:25	05/20/16 10:19	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	05/16/16 15:25	05/20/16 10:19	7439-92-1	
Lithium	<4.9	ug/L	10.0	4.9	1	05/16/16 15:25	05/20/16 10:19	7439-93-2	
Molybdenum	4.3J	ug/L	20.0	0.52	1	05/16/16 15:25	05/20/16 10:19	7439-98-7	
200.8 MET ICPMS	Analytica	Method: EPA 20	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	05/16/16 15:30	05/24/16 12:20	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1	05/16/16 15:30			
Cadmium	< 0.029	ug/L	0.50	0.029	1	05/16/16 15:30	05/24/16 12:20	7440-43-9	
Chromium	0.56J	ug/L	1.0	0.34	1	05/16/16 15:30	05/24/16 12:20	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	05/16/16 15:30	05/24/16 12:20	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	05/16/16 15:30	05/24/16 12:20	7440-28-0	
7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EP/	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	05/19/16 10:00	05/19/16 14:14	7439-97-6	L3
2540C Total Dissolved Solids	Analytica	Method: SM 25	40C						
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		05/17/16 10:00		
4500H+ pH, Electrometric	Analytica	Method: SM 45	00-H+B						
pH at 25 Degrees C	6.1	Std. Units	0.10	0.10	1		05/13/16 13:45		H6
300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Chloride	<0.50	mg/L	1.0	0.50	1		05/26/16 00:00	16887-00-6	
Fluoride	< 0.073	mg/L	0.20	0.073	1		05/26/16 00:00	16984-48-8	
Sulfate	0.39J	mg/L	1.0	0.25	1		05/26/16 00:00	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

QC Batch: 431064 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010

METHOD BLANK: 1761311 Matrix: Water

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010

Blank Reporting Units MDL Qualifiers Parameter Result Limit Analyzed Mercury ug/L < 0.039 0.20 0.039 05/19/16 13:38 LABORATORY CONTROL SAMPLE: 1761312 LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers 80-120 L0 5 133 Mercury 6.6 ug/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1761314 1761313 MS MSD MSD 60219054001 Spike Spike MS MS MSD % Rec Max Result RPD RPD Parameter Units Conc. Result Result % Rec % Rec Limits Conc. Qual Mercury ug/L < 0.039 5 5 5.3 5.3 106 106 75-125 0 20

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

QC Batch: 430503 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010

METHOD BLANK: 1759373 Matrix: Water

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	05/20/16 09:45	
Beryllium	ug/L	< 0.26	1.0	0.26	05/20/16 09:45	
Boron	ug/L	<50.0	100	50.0	05/20/16 09:45	
Calcium	ug/L	11.4J	100	8.1	05/20/16 09:45	
Cobalt	ug/L	< 0.72	5.0	0.72	05/20/16 09:45	
Lead	ug/L	<2.5	5.0	2.5	05/20/16 09:45	
Lithium	ug/L	<4.9	10.0	4.9	05/20/16 09:45	
Molybdenum	ug/L	< 0.52	20.0	0.52	05/20/16 09:45	

LABORATORY CONTROL SAMPLE:	1759374					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1030	103	85-115	
Beryllium	ug/L	1000	1050	105	85-115	
Boron	ug/L	1000	1010	101	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Cobalt	ug/L	1000	1030	103	85-115	
Lead	ug/L	1000	1030	103	85-115	
Lithium	ug/L	1000	1010	101	85-115	
Molybdenum	ug/L	1000	1060	106	85-115	

MATRIX SPIKE & MATRIX SPIR	KE DUPLICA	TE: 17593	75		1759376							
			MS	MSD								
	6	0219054001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	120	1000	1000	1160	1150	104	103	70-130	1	20	
Beryllium	ug/L	< 0.26	1000	1000	1050	1040	105	104	70-130	1	20	
Boron	ug/L	614	1000	1000	1680	1670	106	105	70-130	1	20	
Calcium	ug/L	62700	10000	10000	74600	72700	119	100	70-130	3	20	
Cobalt	ug/L	< 0.72	1000	1000	1020	1030	102	103	70-130	1	20	
Lead	ug/L	3.0J	1000	1000	1020	1030	102	103	70-130	1	20	
Lithium	ug/L	14.6	1000	1000	1030	1030	102	102	70-130	0	20	
Molybdenum	ug/L	38.3	1000	1000	1110	1120	107	108	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

MATRIX SPIKE SAMPLE:	1759377						
		60219075003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	 ug/L	181	1000	1240	106	70-130	
Beryllium	ug/L	<0.26	1000	1080	108	70-130	
Boron	ug/L	116	1000	1190	107	70-130	
Calcium	ug/L	111000	10000	121000	98	70-130	
Cobalt	ug/L	0.75J	1000	1030	103	70-130	
Lead	ug/L	<2.5	1000	1030	103	70-130	
Lithium	ug/L	33.9	1000	1070	104	70-130	
Molybdenum	ug/L	7.4J	1000	1090	108	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

QC Batch: 430505 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010

METHOD BLANK: 1759384 Matrix: Water

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	05/24/16 11:28	
Arsenic	ug/L	<0.10	1.0	0.10	05/24/16 11:28	
Cadmium	ug/L	< 0.029	0.50	0.029	05/24/16 11:28	
Chromium	ug/L	< 0.34	1.0	0.34	05/24/16 11:28	
Selenium	ug/L	<0.18	1.0	0.18	05/24/16 11:28	
Thallium	ug/L	< 0.50	1.0	0.50	05/24/16 11:28	

LABORATORY CONTROL SAMPLE:	1759385					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	41.2	103	85-115	
Arsenic	ug/L	40	41.2	103	85-115	
Cadmium	ug/L	40	41.1	103	85-115	
Chromium	ug/L	40	40.3	101	85-115	
Selenium	ug/L	40	42.3	106	85-115	
Thallium	ug/L	40	37.4	94	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 17593	36		1759387							
Parameter	6 Units	60219054001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.11J	40	40	42.3	41.5	105	104	70-130	2	20	
Arsenic	ug/L	0.90J	40	40	43.8	44.0	107	108	70-130	0	20	
Cadmium	ug/L	< 0.029	40	40	40.9	40.8	102	102	70-130	0	20	
Chromium	ug/L	0.62J	40	40	41.8	41.1	103	101	70-130	2	20	
Selenium	ug/L	<0.18	40	40	42.3	41.6	106	104	70-130	2	20	
Thallium	ug/L	<0.50	40	40	38.7	38.2	97	95	70-130	1	20	

MATRIX SPIKE SAMPLE:	1759388	00040054007	0 "	140	140	0/ D	
Parameter	Units	60219054007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	<0.058	40	41.9	105	70-130	
Arsenic	ug/L	<0.10	40	42.9	107	70-130	
Cadmium	ug/L	< 0.029	40	39.7	99	70-130	
Chromium	ug/L	0.58J	40	41.5	102	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

MATRIX SPIKE SAMPLE:	1759388						
		60219054007	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Selenium	ug/L	<0.18	40	41.5	104	70-130	
Thallium	ug/L	<0.50	40	38.0	95	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

QC Batch: 430413 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007

METHOD BLANK: 1759175 Matrix: Water

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007

Blank Reporting

ParameterUnitsResultLimitMDLAnalyzedQualifiersTotal Dissolved Solidsmg/L<5.0</td>5.05.005/16/16 08:38

LABORATORY CONTROL SAMPLE: 1759176

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 1150 115 80-120

SAMPLE DUPLICATE: 1759177

60219086004 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 626 **Total Dissolved Solids** 621 1 10 mg/L

SAMPLE DUPLICATE: 1759178

Date: 01/02/2018 02:32 PM

60219054001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 321 **Total Dissolved Solids** mg/L 312 3 10

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

QC Batch: 430619 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60219054009, 60219054010

METHOD BLANK: 1759725 Matrix: Water

Associated Lab Samples: 60219054009, 60219054010

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 05/17/16 09:59

LABORATORY CONTROL SAMPLE: 1759726

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 1190 119 80-120

SAMPLE DUPLICATE: 1759727

60218977003 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 13800 2 10 **Total Dissolved Solids** 13500 mg/L

SAMPLE DUPLICATE: 1759728

Date: 01/02/2018 02:32 PM

60219075001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 368 **Total Dissolved Solids** mg/L 400 8 10

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

QC Batch: 430313 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010

SAMPLE DUPLICATE: 1758395

60219086004 Dup Max Parameter Units Result Result **RPD RPD** Qualifiers 7.1 0 5 H6 pH at 25 Degrees C Std. Units 7.1

SAMPLE DUPLICATE: 1758396

Date: 01/02/2018 02:32 PM

		60219054001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.6	0		5 H6

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

QC Batch: 431968 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054007, 60219054009,

60219054010

METHOD BLANK: 1765145 Matrix: Water

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054007, 60219054009,

60219054010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	05/25/16 19:59	
Fluoride	mg/L	< 0.073	0.20	0.073	05/25/16 19:59	
Sulfate	mg/L	<0.25	1.0	0.25	05/25/16 19:59	

LABORATORY CONTROL SAMPLE:	1700140					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		4.8	97	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPI	KE DUPLIC	ATE: 17651	47		1765148							
			MS	MSD								
	(60219054001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	20.0	10	10	29.2	29.1	92	92	80-120	0	15	
Fluoride	mg/L	0.31	5	5	5.1	5.1	96	95	80-120	0	15	

MATRIX SPIKE SAMPLE:	1765149						
		60219054002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Fluoride	mg/L	1.3	2.5	3.9	106	80-120	

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



AMEREN SIOUX ENERGY CTR-BOTTOM Project:

Pace Project No.: 60219054

Sulfate

Date: 01/02/2018 02:32 PM

QC Batch: 432356 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054007, 60219054009

METHOD BLANK: 1766802 Matrix: Water

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054007, 60219054009

Blank Reporting Limit MDL Qualifiers Parameter Units Result Analyzed Chloride < 0.50 1.0 05/27/16 13:13 mg/L 0.50 mg/L < 0.25 1.0 0.25 05/27/16 13:13

LABORATORY CONTROL SAMPLE: 1766803 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.9 98 90-110 mg/L Sulfate 5 5.2 104 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1766804 1766805 MSD MS 60219054001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Sulfate mg/L 61.1 25 25 87.6 87.7 106 106 80-120 0 15

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

QC Batch: 432449 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60219054006

METHOD BLANK: 1767357 Matrix: Water

Associated Lab Samples: 60219054006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	05/28/16 14:00	
Fluoride	mg/L	< 0.073	0.20	0.073	05/28/16 14:00	
Sulfate	mg/L	<0.25	1.0	0.25	05/28/16 14:00	

LABORATORY CONTROL SAMPLE: 1767358 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride mg/L 5 4.9 98 90-110 Fluoride mg/L 2.5 2.7 107 90-110 Sulfate mg/L 5 5.4 108 90-110

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-1D Lab ID: 60219054001 Collected: 05/10/16 10:19 Received: 05/13/16 03:30 Matrix: Water

PWS: Site ID: Sample Type

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.247 ± 0.344 (0.574) C:NA T:99%	pCi/L	06/07/16 13:15	13982-63-3	
Radium-228	EPA 904.0	0.939 ± 0.493 (0.879) C:81% T:87%	pCi/L	06/13/16 19:33	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-2D Lab ID: 60219054002 Collected: 05/10/16 14:45 Received: 05/13/16 03:30 Matrix: Water

PWS: Site ID: Sample Type

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0653 ± 0.424 (0.856) C:NA T:93%	pCi/L	06/07/16 13:09	13982-63-3	
Radium-228	EPA 904.0	0.432 ± 0.450 (0.935) C:75% T:72%	pCi/L	06/02/16 12:11	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-3D Collected: 05/10/16 13:17 Received: 05/13/16 03:30 Matrix: Water Lab ID: 60219054003

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.068 ± 0.312 (0.735) C:NA T:92%	pCi/L	06/07/16 13:46	13982-63-3	
Radium-228	EPA 904.0	0.775 ± 0.437 (0.804) C:80% T:82%	pCi/L	06/02/16 12:12	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-4D Lab ID: 60219054004 Collected: 05/10/16 11:55 Received: 05/13/16 03:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.351 ± 0.415 (0.653) C:NA T:95%	pCi/L	06/07/16 14:10	13982-63-3	
Radium-228	EPA 904.0	0.385 ± 0.338 (0.681) C:80% T:80%	pCi/L	06/02/16 12:04	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-5D Lab ID: 60219054005 Collected: 05/10/16 14:17 Received: 05/13/16 03:30 Matrix: Water

PWS: Site ID: Sample Type:

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.864 ± 0.499 (0.195) C:NA T:92%	pCi/L	06/07/16 19:14	13982-63-3	
Radium-228	EPA 904.0	0.671 ± 0.353 (0.609) C:76% T:86%	pCi/L	06/02/16 12:05	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-6D Lab ID: 60219054006 Collected: 05/10/16 13:02 Received: 05/13/16 03:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.203 ± 0.399 (0.730) C:NA T:91%	pCi/L	06/07/16 19:31	13982-63-3	
Radium-228	EPA 904.0	0.594 ± 0.382 (0.713) C:79% T:75%	pCi/L	06/02/16 12:04	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-BMW-1D Lab ID: 60219054007 Collected: 05/09/16 11:15 Received: 05/13/16 03:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.264 ± 0.410 (0.709) C:NA T:94%	pCi/L	06/07/16 19:13	13982-63-3	
Radium-228	EPA 904.0	0.785 ± 0.422 (0.761) C:77% T:85%	pCi/L	06/02/16 12:07	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-DUP-1 Lab ID: 60219054009 Collected: 05/10/16 08:00 Received: 05/13/16 03:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.662 ± 0.491 (0.615) C:NA T:93%	pCi/L	06/07/16 19:29	13982-63-3	
Radium-228	EPA 904.0	0.572 ± 0.394 (0.759) C:78% T:80%	pCi/L	06/02/16 12:04	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-FB-1 Lab ID: 60219054010 Collected: 05/10/16 12:52 Received: 05/13/16 03:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.388 (0.820) C:NA T:98%	pCi/L	06/07/16 19:43	13982-63-3	
Radium-228	EPA 904.0	0.831 ± 0.424 (0.751) C:79% T:86%	pCi/L	06/02/16 12:04	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-1D MS Lab ID: 60219054011 Collected: 05/10/13 10:19 Received: 05/13/16 03:30 Matrix: Water

PWS: Site ID: Sample Type

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	110.2 %REC ± NA (NA) C:NA T:NA	pCi/L	06/07/16 19:13	13982-63-3	
Radium-228	EPA 904.0	88.8 %REC +/- NA (NA) C:NA T:NA	pCi/L	06/13/16 19:34	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Sample: S-UMW-1D MSD Lab ID: 60219054012 Collected: 05/10/13 10:19 Received: 05/13/16 03:30 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac Units **Parameters** Analyzed CAS No. Qual EPA 903.1 95.17 %REC 14.68 RPD ± Radium-226 pCi/L 06/07/16 19:55 13982-63-3 NA (NA) C:NA T:NA 106 %REC 18.1 RPD +/- NA EPA 904.0 pCi/L Radium-228 06/13/16 21:06 15262-20-1 (NA) C:NA T:NA



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

QC Batch: 221102 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010, 60219054011, 60219054012

METHOD BLANK: 1081799 Matrix: Water

Associated Lab Samples: 60219054001, 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007,

60219054009, 60219054010, 60219054011, 60219054012

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

QC Batch: 221116 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007, 60219054009,

60219054010

METHOD BLANK: 1081826 Matrix: Water

Associated Lab Samples: 60219054002, 60219054003, 60219054004, 60219054005, 60219054006, 60219054007, 60219054009,

60219054010

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 -0.0584 ± 0.321 (0.762) C:77% T:83%
 pCi/L
 06/02/16 12:11

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

QC Batch: 222601 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60219054001, 60219054011, 60219054012

METHOD BLANK: 1088745 Matrix: Water

Associated Lab Samples: 60219054001, 60219054011, 60219054012

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-228 0.554 \pm 0.425 (0.838) C:82% T:77% pCi/L 06/13/16 19:33

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 01/02/2018 02:32 PM

B Analyte was detected in the associated method blank.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

LO Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

L3 Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60219054001	S-UMW-1D	EPA 200.7	430503	EPA 200.7	430607
60219054002	S-UMW-2D	EPA 200.7	430503	EPA 200.7	430607
60219054003	S-UMW-3D	EPA 200.7	430503	EPA 200.7	430607
60219054004	S-UMW-4D	EPA 200.7	430503	EPA 200.7	430607
60219054005	S-UMW-5D	EPA 200.7	430503	EPA 200.7	430607
60219054006	S-UMW-6D	EPA 200.7	430503	EPA 200.7	430607
60219054007	S-BMW-1D	EPA 200.7	430503	EPA 200.7	430607
60219054009	S-UMW-DUP-1	EPA 200.7	430503	EPA 200.7	430607
60219054010	S-UMW-FB-1	EPA 200.7	430503	EPA 200.7	430607
60219054001	S-UMW-1D	EPA 200.8	430505	EPA 200.8	430611
60219054002	S-UMW-2D	EPA 200.8	430505	EPA 200.8	430611
60219054003	S-UMW-3D	EPA 200.8	430505	EPA 200.8	430611
60219054004	S-UMW-4D	EPA 200.8	430505	EPA 200.8	430611
60219054005	S-UMW-5D	EPA 200.8	430505	EPA 200.8	430611
60219054006	S-UMW-6D	EPA 200.8	430505	EPA 200.8	430611
60219054007	S-BMW-1D	EPA 200.8	430505	EPA 200.8	430611
60219054009	S-UMW-DUP-1	EPA 200.8	430505	EPA 200.8	430611
60219054010	S-UMW-FB-1	EPA 200.8	430505	EPA 200.8	430611
60219054001	S-UMW-1D	EPA 7470	431064	EPA 7470	431138
60219054002	S-UMW-2D	EPA 7470	431064	EPA 7470	431138
60219054003	S-UMW-3D	EPA 7470	431064	EPA 7470	431138
60219054004	S-UMW-4D	EPA 7470	431064	EPA 7470	431138
60219054005	S-UMW-5D	EPA 7470	431064	EPA 7470	431138
60219054006	S-UMW-6D	EPA 7470	431064	EPA 7470	431138
60219054007	S-BMW-1D	EPA 7470	431064	EPA 7470	431138
60219054009	S-UMW-DUP-1	EPA 7470	431064	EPA 7470	431138
60219054010	S-UMW-FB-1	EPA 7470	431064	EPA 7470	431138
60219054001	S-UMW-1D	EPA 903.1	221102		
60219054002	S-UMW-2D	EPA 903.1	221102		
60219054003	S-UMW-3D	EPA 903.1	221102		
60219054004	S-UMW-4D	EPA 903.1	221102		
60219054005	S-UMW-5D	EPA 903.1	221102		
60219054006	S-UMW-6D	EPA 903.1	221102		
60219054007	S-BMW-1D	EPA 903.1	221102		
60219054009	S-UMW-DUP-1	EPA 903.1	221102		
60219054010	S-UMW-FB-1	EPA 903.1	221102		
60219054011	S-UMW-1D MS	EPA 903.1	221102		
60219054012	S-UMW-1D MSD	EPA 903.1	221102		
60219054001	S-UMW-1D	EPA 904.0	222601		
60219054002	S-UMW-2D	EPA 904.0	221116		
60219054003	S-UMW-3D	EPA 904.0	221116		
60219054004	S-UMW-4D	EPA 904.0	221116		
60219054005	S-UMW-5D	EPA 904.0	221116		
60219054006	S-UMW-6D	EPA 904.0	221116		
60219054007	S-BMW-1D	EPA 904.0	221116		
60219054009	S-UMW-DUP-1	EPA 904.0	221116		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60219054

Date: 01/02/2018 02:32 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60219054010	S-UMW-FB-1	EPA 904.0	221116		
60219054011	S-UMW-1D MS	EPA 904.0	222601		
60219054012	S-UMW-1D MSD	EPA 904.0	222601		
60219054001	S-UMW-1D	SM 2540C	430413		
60219054002	S-UMW-2D	SM 2540C	430413		
60219054003	S-UMW-3D	SM 2540C	430413		
0219054004	S-UMW-4D	SM 2540C	430413		
0219054005	S-UMW-5D	SM 2540C	430413		
0219054006	S-UMW-6D	SM 2540C	430413		
0219054007	S-BMW-1D	SM 2540C	430413		
0219054009	S-UMW-DUP-1	SM 2540C	430619		
60219054010	S-UMW-FB-1	SM 2540C	430619		
60219054001	S-UMW-1D	SM 4500-H+B	430313		
60219054002	S-UMW-2D	SM 4500-H+B	430313		
0219054003	S-UMW-3D	SM 4500-H+B	430313		
60219054004	S-UMW-4D	SM 4500-H+B	430313		
0219054005	S-UMW-5D	SM 4500-H+B	430313		
0219054006	S-UMW-6D	SM 4500-H+B	430313		
0219054007	S-BMW-1D	SM 4500-H+B	430313		
0219054009	S-UMW-DUP-1	SM 4500-H+B	430313		
0219054010	S-UMW-FB-1	SM 4500-H+B	430313		
0219054001	S-UMW-1D	EPA 300.0	431968		
0219054001	S-UMW-1D	EPA 300.0	432356		
60219054002	S-UMW-2D	EPA 300.0	431968		
60219054002	S-UMW-2D	EPA 300.0	432356		
0219054003	S-UMW-3D	EPA 300.0	431968		
60219054003	S-UMW-3D	EPA 300.0	432356		
0219054004	S-UMW-4D	EPA 300.0	431968		
0219054004	S-UMW-4D	EPA 300.0	432356		
60219054005	S-UMW-5D	EPA 300.0	431968		
0219054005	S-UMW-5D	EPA 300.0	432356		
0219054006	S-UMW-6D	EPA 300.0	432449		
0219054007	S-BMW-1D	EPA 300.0	431968		
0219054007	S-BMW-1D	EPA 300.0	432356		
0219054009	S-UMW-DUP-1	EPA 300.0	431968		
0219054009	S-UMW-DUP-1	EPA 300.0	432356		
0219054010	S-UMW-FB-1	EPA 300.0	431968		



Sample Condition Upon Receipt



Client Name: Goldes Associates yn Optional
Courier: FedEx □ UPS □ VIA □ Clay □ PEX □ ECI □ Pace □ Other □ Client □ Proj Due Date:
Tracking #: Pace Shipping Label Used? Yes □ No Proj Name:
Custody Seal on Cooler/Box Present: Yes ✓ No □ Seals intact: Yes ✓ No □
Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None Ø Other ☐
Thermometer Used: T-239 / T-262 Type of Ice: Well Blue (None) Samples received on ice, cooling process has begun.
Cooler Temperature: 2,0,19,4,15.4
Temperature should be above freezing to 6°C contents: 38 5/13/1/6
Chain of Custody present: ∠Yes □No □N/A 1.
Chain of Custody filled out: ☐Yes ☐No ☐N/A 2.
Chain of Custody relinquished: ☐Yes ☐No ☐N/A 3,
Sampler name & signature on COC:
Samples arrived within holding time:
Short Hold Time analyses (<72hr):
Rush Turn Around Time requested:
Sufficient volume: Yes No N/A 8.
Correct containers used: ✓es □No □N/A
Pace containers used: Pace containers used:
Containers intact:
Unpreserved 5035A soils frozen w/in 48hrs?
Filtered volume received for dissolved tests?
Sample labels match COC:
Includes date/time/ID/analyses Matrix: W 13.
All containers needing preservation have been checked.
All containers needing preservation are found to be in compliance with EPA recommendation.
Exceptions: VOA, Coliform, O&G, WI-DRO (water) Initial when completed preservative
Trip Blank present:
Pace Trip Blank lot # (if purchased): 15.
Headspace in VOA vials (>6mm): □Yes □No ☑N/A
16.
Project sampled in USDA Regulated Area:
Additional labels attached to 5035A vials in the field?
Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N
Person Contacted: Date/Time:
Comments/ Resolution:
fami Church 5/13/16
Project Manager Review: Date:

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

33 A as 010 3 8 an Pace Project No./ Lab I.D. (N/Y) Samples Intact DRINKING WATER SAMPLE CONDITIONS 220 ho 38634 Cooler (Y/N) OTHER > ğ Sustody Seale (N/Y) epi Received on GROUND WATER 201 14.4 Residual Chlorine (Y/N) 250 Page: O° ni qmeT 0550 9 4 REGULATORY AGENCY RCRA TIME Requested Analysis Filtered (Y/N) و Site Location STATE: DATE NPDES UST (MM/DD/YY): 5/12 Radium 226 & 228 و z Hd ACCEPTED BY / AFFICIATION D2 Chloride/Fluoride/Sulfate z /letals* t Analysis Test N/A **Teht**C れのととい Methanol Jamie Church Na₂S₂O₃ 2 Preservatives HCI 9285 EONH Invoice Information John Company Name POS2H lanager. ace Profile #: 000 Section C TIME ace Project Unpreserved Pace Quot Address: # OF CONTAINERS SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER: 5/2/16 SAMPLE TEMP AT COLLECTION Ameren Sioux Energy Center - Bottom Ash 0 DATE 1445 カラ 252 317 1302 5/4/16/1540 $\overline{\aleph}$ 10/01/10/10/9 TIME 21116 1115 Report To: Mark Haddock (mhaddock@golder.com) 5/10/16 DATE COLLECTED 本科 (20 de RELINQUISHED BY / AFFILIATION TIME COMPOSITE 153-1406.0003A DATE Jeffrey Ingram Required Project Information: O O ഗ O ഗ O O O O SAMPLE TYPE (G=GRAB C=COMP) urchase Order No. ₹ M Ż Š Ş ¥ ž ¥ Ş 5 (see valid codes to left) MATRIX CODE Project Number. Project Name: Section B Copy To: /alid Matrix Codes § ¥ § SL QL AR OT TS DRINKING WATER
WASTE WATER
PRODUCT
SOIL/SOLID
OIL . Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg As, Cd, Cr, Se, Tl Fax: 636-724-9323 820 South Main Street, Suite 100 S-UMW-DUP-1 S-UMW-FB-1 S-UMW-6D S-BMW-1D S-BMW-2D S-UMW-2D S-UMW-3D S-UMW-4D S-UMW-5D S-UMW-1D ADDITIONAL COMMENTS (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE maddock@golder.com St Charles, MO 63301 SAMPLE ID Golder Associates Required Citent Information Required Client Information: Requested Due Date/TAT: 636-724-9191 Section D Sb *EPA 200 7: E EPA 200 8: S Page 45 of 45 ddress: 9 Ξ 12 ILEW #

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 involves not paid withinf 30

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



January 02, 2018

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on July 09, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

REV-1, 1/2/18: Revision

Jami Church

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 Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates







CERTIFICATIONS

AMEREN SIOUX ENERGY CTR-BOTTOM Project:

Pace Project No.: 60223196

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 17-016-0

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212018-1 Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60223196001	S-UMW-1D	Water	07/05/16 16:54	07/09/16 04:45
60223196002	S-UMW-2D	Water	07/06/16 11:53	07/09/16 04:45
60223196003	S-UMW-3D	Water	07/06/16 10:35	07/09/16 04:45
60223196004	S-UMW-4D	Water	07/06/16 09:30	07/09/16 04:45
60223196005	S-UMW-5D	Water	07/07/16 13:01	07/09/16 04:45
60223196006	S-UMW-6D	Water	07/07/16 11:59	07/09/16 04:45
60223196007	S-BMW-1D	Water	07/05/16 13:35	07/09/16 04:45
60223196009	S-UMW-DUP-1	Water	07/06/16 08:00	07/09/16 04:45
60223196010	S-UMW-FB-1	Water	07/06/16 10:01	07/09/16 04:45
60223196011	S-UMW-1D MS	Water	07/05/16 16:54	07/09/16 04:45
60223196012	S-UMW-1D MSD	Water	07/05/16 16:54	07/09/16 04:45



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

_ab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60223196001	S-UMW-1D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196002	S-UMW-2D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196003	S-UMW-3D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196004	S-UMW-4D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196005	S-UMW-5D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196006	S-UMW-6D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196007	S-BMW-1D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196009	S-UMW-DUP-1	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196010	S-UMW-FB-1	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0223196011	S-UMW-1D MS	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

(913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
			———	———	Laboratory
60223196012	S-UMW-1D MSD	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Sample: S-UMW-1D	Lab ID:	60223196001	Collecte	d: 07/05/10	6 16:54	Received: 07/	/09/16 04:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytica	l Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Barium	138	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:02	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:02	7440-41-7	
Boron	810	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:02	7440-42-8	
Calcium	68600	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:02	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:02	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:02	7439-92-1	
Lithium	13.7	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:02	7439-93-2	
Molybdenum	40.3	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:02	7439-98-7	
200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Antimony	0.078J	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 17:40	7440-36-0	
Arsenic	1.1	ug/L	1.0	0.10	1	07/13/16 12:10	07/21/16 17:40	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	07/13/16 12:10	07/21/16 17:40	7440-43-9	
Chromium	< 0.34	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 17:40	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 17:40	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 17:40	7440-28-0	
7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	٦ 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 10:32	7439-97-6	
2540C Total Dissolved Solids	Analytica	Method: SM 25	540C						
Total Dissolved Solids	376	mg/L	5.0	5.0	1		07/11/16 16:11		
4500H+ pH, Electrometric	Analytica	Method: SM 45	500-H+B						
pH at 25 Degrees C	7.6	Std. Units	0.10	0.10	1		07/11/16 11:40		H6
300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Chloride	21.2	mg/L	2.0	1.0	2		07/23/16 18:26	16887-00-6	
Fluoride	0.22	mg/L	0.20	0.073	1		07/20/16 19:45	16984-48-8	
Sulfate	65.1	mg/L	5.0	1.2	5		07/23/16 19:36	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Sample: S-UMW-2D	Lab ID:	60223196002	Collecte	d: 07/06/16	3 11:53	Received: 07/	09/16 04:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	119	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:08	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:08	7440-41-7	
Boron	16800	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:08	7440-42-8	
Calcium	209000	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:08	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:08	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:08	7439-92-1	
Lithium	28.7	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:08	7439-93-2	
Molybdenum	1360	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:08	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 17:50	7440-36-0	
Arsenic	1.4	ug/L	1.0	0.10	1	07/13/16 12:10	07/21/16 17:50	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	07/13/16 12:10	07/21/16 17:50	7440-43-9	
Chromium	<0.34	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 17:50	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 17:50	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 17:50	7440-28-0	
7470 Mercury	Analytical	Method: EPA 74	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 10:43	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1090	mg/L	5.0	5.0	1		07/12/16 11:27		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.4	Std. Units	0.10	0.10	1		07/11/16 11:40		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00						
Chloride	19.9	mg/L	2.0	1.0	2		07/23/16 20:19	16887-00-6	
Fluoride	1.1	mg/L	0.20	0.073	1		07/20/16 20:30	16984-48-8	
Sulfate	594	mg/L	50.0	12.4	50		07/23/16 20:33	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Barium 70.1 ug/L 10.0 0.58 1 07/13/16 12:10 07/15/16 17:11 7440-39-3 Beryllium co.26 ug/L 1.00 0.58 1 07/13/16 12:10 07/15/16 17:11 7440-41-7 Boron 24000 ug/L 100 5.0 1 07/13/16 12:10 07/15/16 17:11 7440-42-8 Calcium 21900 ug/L 100 8.1 1 07/13/16 12:10 07/15/16 17:11 7440-42-8 Cobalt ch.72 ug/L 5.0 0.72 1 07/13/16 12:10 07/15/16 17:11 7440-42-8 Cobalt ch.91 ug/L 5.0 0.2.5 1 07/13/16 12:10 07/15/16 17:11 7440-42-8 Lead 2.7J ug/L 5.0 0.2.5 1 07/13/16 12:10 07/15/16 17:11 7439-93-2 Wholybdenum 3.770 ug/L 1.0 0.058 1 07/13/16 12:10 07/15/16	Sample: S-UMW-3D	Lab ID: (60223196003	Collecte	d: 07/06/16	5 10:35	Received: 07/	/09/16 04:45 Ma	atrix: Water	
Barium 70.1 ug/L 10.0 0.58 1 07/13/16 12:10 07/15/16 17:11 7440-39-3 Beryllium 40.26 ug/L 1.0 0.26 1 07/13/16 12:10 07/15/16 17:11 7440-41-7 Boron 24000 ug/L 100 50.0 1 07/13/16 12:10 07/15/16 17:11 7440-42-8 Calcium 21900 ug/L 100 8.1 1 07/13/16 12:10 07/15/16 17:11 7440-42-8 Cobalt 40.72 ug/L 5.0 0.72 1 07/13/16 12:10 07/15/16 17:11 7440-48-4 Lead 2.73 ug/L 5.0 0.75 1 07/13/16 12:10 07/15/16 17:11 7439-93-2 Lithium 26.0 ug/L 20.0 0.52 1 07/13/16 12:10 07/15/16 17:11 7439-93-2 200.8 MET ICPMS Analytical body 1.0 0.058 1 07/13/16 12:10 07/15/16 17:11 7439-98-7 Antimony < 0.058	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Renyllium	200.7 Metals, Total	Analytical N	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron 24000 ug/L 100 50.0 1 07/13/16 12:10 07/15/16 17:11 7440-42-8 Calcium 219000 ug/L 100 8.1 1 07/13/16 12:10 07/15/16 17:11 7440-70-2 Cobalt 4.0.72 ug/L 5.0 0.72 1 07/13/16 12:10 07/15/16 17:11 7440-48-4 Lead 2.7J ug/L 10.0 4.9 1 07/13/16 12:10 07/15/16 17:11 7439-93-2 Molybdenum 3770 ug/L 10.0 4.9 1 07/13/16 12:10 07/15/16 17:11 7439-93-2 Molybdenum 3770 ug/L 10.0 0.52 1 07/13/16 12:10 07/15/16 17:11 7439-93-2 Molybdenum 40.058 ug/L 1.0 0.058 1 07/13/16 12:10 07/15/16 17:11 7440-38-2 Ansing ug/L 1.0 0.058 1 07/13/16 12:10 07/21/16 17:53 7440-38-2 Cadmium 40.034 ug/L 1.0 0.13	Barium	70.1	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:11	7440-39-3	
Calcium 219000 ug/L 100 8.1 1 07/13/16 12:10 07/15/16 17:11 7440-70-2 Cobalt 40.72 ug/L 5.0 0.72 1 07/13/16 12:10 07/15/16 17:11 7440-84 Lead 2.7 ug/L 5.0 0.75 1 07/13/16 12:10 07/15/16 17:11 7440-70-2 1 7440-71 07/13/16 12:10 07/15/16 17:11 7440-70-2 1 7440-71 1 7440-71 1 7440-71 7440-71 7440-84 1 7440-71 1 7439-93-2 1 1 07/13/16 12:10 07/15/16 17:11 7439-93-2 2 1 1 07/13/16 12:10 07/15/16 17:11 7439-93-2 2 2 2 0	Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:11	7440-41-7	
Cobalt Lead 40.72 Lug/L 5.0 0.72 Lug/L 5.0 0.72 Lug/L 1 07/13/16 12:10 07/15/16 17:11 7440-48-4 12-10 12-10 07/15/16 17:11 7439-92-1 12-10 12-10 07/15/16 17:11 7439-92-1 12-10 12-10 07/15/16 17:11 7439-92-1 12-10 12-10 07/15/16 17:11 7439-93-2 12-10 12-10 07/13/16 12:10 07/15/16 17:53 7440-36-2 12-10 07/13/16 12:	Boron	24000	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:11	7440-42-8	
Lead 2.7J ug/L 5.0 2.5 1 07/13/16 12:10 07/15/16 17:11 7439-92-1 1439-92-1 1439-93-2	Calcium	219000	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:11	7440-70-2	
Lithium Molybdenum 26.0 Molybdenum ug/L application of the properties of the prop	Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:11	7440-48-4	
Molybdenum 3770 ug/L 20.0 0.52 1 07/13/16 12:10 07/15/16 17:11 7439-98-7 Head 200.8 MET ICPMS Analytical Victor EPA 200.8 Preparation Very Note of Paramonic	Lead	2.7J	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:11	7439-92-1	
200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 07/13/16 12:10 07/21/16 17:53 7440-36-0 Aresonic 0.44J ug/L 1.0 0.010 1 07/13/16 12:10 07/21/16 17:53 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 07/13/16 12:10 07/21/16 17:53 7440-38-2 Cadmium <0.034 ug/L 1.0 0.034 1 07/13/16 12:10 07/21/16 17:53 7440-38-2 Cadmium <0.34 ug/L 1.0 0.034 1 07/13/16 12:10 07/21/16 17:53 7440-43-3 Selenium 0.30J ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 17:53 7440-47-3 Selenium 0.30J ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 17:53 7440-48-3 7440-48-3 7440-48-3 1 07/13/16 12:10 07/21/16 17:53 7440-48-3 7440-48-3 1 07/13/16 12:10 07/11/16 17:53 7440-48-3	Lithium	26.0	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:11	7439-93-2	
Antimony	Molybdenum	3770	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:11	7439-98-7	
Arsenic 0.44J ug/L 1.0 0.10 1 07/13/16 12:10 07/21/16 17:53 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 07/13/16 12:10 07/21/16 17:53 7440-43-9 Chromium <0.34 ug/L 1.0 0.34 1 07/13/16 12:10 07/21/16 17:53 7440-43-9 Selenium 0.30J ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 17:53 7440-47-3 Thallium 0.30J ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 17:53 7440-47-3 Thallium Analytical Wethod: EPA 7470 Preparation Method: EPA 7470 Thallium 07/11/16 16:00 07/12/16 10:45 7439-97-6 2540C Total Dissolved Solids Analytical Wethod: SM 2540C 5.0 5.0 1 07/11/16 16:00 07/12/16 11:28 439-97-6 4500H+ pH, Electrometric Analytical Wethod: SM 450U-H+B 0.10 0.1 0.10 0.0 0.0 0.0 0.0 0.0 <td>200.8 MET ICPMS</td> <td>Analytical N</td> <td>Method: EPA 20</td> <td>00.8 Prepa</td> <td>aration Meth</td> <td>od: EP</td> <td>A 200.8</td> <td></td> <td></td> <td></td>	200.8 MET ICPMS	Analytical N	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Cadmium <0.029 ug/L 0.50 0.029 1 07/13/16 12:10 07/22/16 13:36 7440-43-9 Chromium <0.34 ug/L 1.0 0.34 1 07/13/16 12:10 07/21/16 17:53 7440-47-3 Selenium 0.30J ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 17:53 7440-47-3 Thallium <0.50 ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 17:53 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 07/11/16 16:00 07/12/16 10:45 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 07/11/16 16:00 07/12/16 11:28 7439-97-6 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 9.10 0.10 1 07/12/16 11:40 16 46 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 0.10 0.10 1 07/23/16 20:47 16887-00-6 168887-00-	Antimony	<0.058	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 17:53	7440-36-0	
Chromium <0.34 ug/L 1.0 0.34 1 07/13/16 12:10 07/21/16 17:53 7440-47-3 Selenium 0.30J ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 17:53 7782-49-2 7782-49-2 7782-49-2 7782-49-2 779 77	Arsenic	0.44J	ug/L	1.0	0.10	1	07/13/16 12:10	07/21/16 17:53	7440-38-2	
Selenium 0.30J ug/L 1.0 0.18 by ug/L 1 07/13/16 12:10 07/21/16 17:53 7782-49-2 07/21/16 17:53 7440-28-0 7782-49-2 07/21/16 17:53 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury c.0.039 ug/L 0.20 0.039 1 07/11/16 16:00 07/12/16 10:45 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1150 mg/L 5.0 5.0 1 07/11/16 16:00 07/12/16 10:45 7439-97-6 2540C Total Dissolved Solids 1150 mg/L 5.0 5.0 1 07/11/16 16:00 07/12/16 11:28 07/12/16 11:28 Helbertometric 4500H+ pH, Electrometric Analytical Method: SM 450U-H+B Distriction of the proper result of the prop	Cadmium	<0.029	ug/L	0.50	0.029	1	07/13/16 12:10	07/22/16 13:36	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 07/13/16 12:10 07/21/16 17:53 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 07/11/16 16:00 07/12/16 10:45 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C SM 2540C 5.0 5.0 5.0 1 07/12/16 11:28 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 4500H+B 0.10 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.6 mg/L 2.0 1.0 2 07/23/16 20:47 16887-00-6 16984-48-8 Fluoride 0.20 0.073 1 07/20/16 20:44 16984-48-8	Chromium	< 0.34	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 17:53	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 07/11/16 16:00 07/12/16 10:45 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1150 mg/L 5.0 5.0 1 07/12/16 11:28 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 0.10 1 07/11/16 11:40 PH6 300.0 IC Anions 28 Days Analytical Method: EPA 300.C Chloride 1.0 mg/L 0.20 0.073 1 07/23/16 20:47 16887-00-6 07/20/16 20:44 16984-48-8	Selenium	0.30J	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 17:53	7782-49-2	
Mercury	Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 17:53	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1150 mg/L 5.0 5.0 1 07/12/16 11:28 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.6 mg/L 2.0 1.0 2 07/23/16 20:47 16887-00-6 16984-48-8 Fluoride 1.0 mg/L 0.20 0.073 1 07/20/16 20:44 16984-48-8	7470 Mercury	Analytical N	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Total Dissolved Solids 1150 mg/L 5.0 5.0 1 07/12/16 11:28 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.6 mg/L 2.0 1.0 2 07/23/16 20:47 16887-00-6 Fluoride 1.0 mg/L 0.20 0.073 1 07/20/16 20:44 16984-48-8	Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 10:45	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 0.7/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.6 mg/L 2.0 1.0 2 07/23/16 20:47 16887-00-6 Fluoride Fluoride 1.0 mg/L 0.20 0.073 1 07/20/16 20:44 16984-48-8	2540C Total Dissolved Solids	Analytical N	Method: SM 25	40C						
pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.6 mg/L 2.0 1.0 2 07/23/16 20:47 16887-00-6 Fluoride 1.0 mg/L 0.20 0.073 1 07/20/16 20:44 16984-48-8	Total Dissolved Solids	1150	mg/L	5.0	5.0	1		07/12/16 11:28		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.6 mg/L 2.0 1.0 2 07/23/16 20:47 16887-00-6 Fluoride 1.0 mg/L 0.20 0.073 1 07/20/16 20:44 16984-48-8	4500H+ pH, Electrometric	Analytical N	Method: SM 45	00-H+B						
Chloride 24.6 mg/L 2.0 1.0 2 07/23/16 20:47 16887-00-6 Fluoride 1.0 mg/L 0.20 0.073 1 07/20/16 20:44 16984-48-8	pH at 25 Degrees C	7.7	Std. Units	0.10	0.10	1		07/11/16 11:40		H6
Fluoride 1.0 mg/L 0.20 0.073 1 07/20/16 20:44 16984-48-8	300.0 IC Anions 28 Days	Analytical N	Method: EPA 30	0.00						
Fluoride 1.0 mg/L 0.20 0.073 1 07/20/16 20:44 16984-48-8	Chloride	24.6	mg/L	2.0	1.0	2		07/23/16 20:47	16887-00-6	
•	Fluoride	1.0	ū					07/20/16 20:44	16984-48-8	
Sulfate 565 mg/L 50.0 12.4 50 07/23/16 21:01 14808-79-8	Sulfate	565	mg/L		12.4					



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Sample: S-UMW-4D	Lab ID:	60223196004	Collecte	d: 07/06/1	6 09:30	Received: 07/	/09/16 04:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Barium	83.4	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:13	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:13	7440-41-7	
Boron	26500	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:13	7440-42-8	
Calcium	178000	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:13	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:13	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:13	7439-92-1	
Lithium	37.9	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:13	7439-93-2	
Molybdenum	7550	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:13	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 17:56	7440-36-0	
Arsenic	0.27J	ug/L	1.0	0.10	1	07/13/16 12:10			
Cadmium	<0.058	ug/L	1.0	0.058	2	07/13/16 12:10	07/22/16 13:41	7440-43-9	D3
Chromium	<0.34	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 17:56	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 17:56	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 17:56	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 10:48	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1100	mg/L	5.0	5.0	1		07/12/16 11:29		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		07/11/16 11:40		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	25.5	mg/L	2.0	1.0	2		07/23/16 21:15	16887-00-6	
Fluoride	0.86	mg/L	0.20	0.073	1		07/20/16 20:59	16984-48-8	
Sulfate	522	mg/L	50.0	12.4	50		07/23/16 21:57	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Sample: S-UMW-5D	Lab ID:	60223196005	Collecte	d: 07/07/16	3 13:01	Received: 07/	/09/16 04:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	312	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:15	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:15	7440-41-7	
Boron	12900	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:15	7440-42-8	
Calcium	94600	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:15	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:15	7440-48-4	
Lead	3.0J	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:15	7439-92-1	
Lithium	29.8	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:15	7439-93-2	
Molybdenum	280	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:15	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 17:59	7440-36-0	
Arsenic	0.65J	ug/L	1.0	0.10	1	07/13/16 12:10	07/21/16 17:59	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	07/13/16 12:10	07/21/16 17:59	7440-43-9	
Chromium	0.46J	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 17:59	7440-47-3	
Selenium	0.22J	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 17:59	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 17:59	7440-28-0	
7470 Mercury	Analytical	Method: EPA 74	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 10:54	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	461	mg/L	5.0	5.0	1		07/12/16 14:19		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.2	Std. Units	0.10	0.10	1		07/12/16 09:00		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00						
Chloride	24.7	mg/L	2.0	1.0	2		07/23/16 22:12	16887-00-6	
Fluoride	0.66	mg/L	0.20	0.073	1		07/20/16 21:14	16984-48-8	
Sulfate	40.4	mg/L	5.0	1.2	5		07/23/16 22:26	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Sample: S-UMW-6D	Lab ID:	Lab ID: 60223196006 Collected: 07/07/16 11:59 Received: 07/09/16 04:45 Matrix: Water									
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual		
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7					
Barium	118	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:17	7440-39-3			
Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:17	7440-41-7			
Boron	760	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:17	7440-42-8			
Calcium	76500	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:17	7440-70-2			
Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:17	7440-48-4			
Lead	<2.5	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:17	7439-92-1			
Lithium	12.1	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:17	7439-93-2			
Molybdenum	109	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:17	7439-98-7			
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8					
Antimony	<0.058	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 18:02	7440-36-0			
Arsenic	0.32J	ug/L	1.0	0.10	1	07/13/16 12:10	07/21/16 18:02	7440-38-2			
Cadmium	<0.029	ug/L	0.50	0.029	1	07/13/16 12:10	07/21/16 18:02	7440-43-9			
Chromium	0.67J	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 18:02	7440-47-3			
Selenium	<0.18	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 18:02	7782-49-2			
Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 18:02	7440-28-0			
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470					
Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 10:56	7439-97-6			
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C								
Total Dissolved Solids	364	mg/L	5.0	5.0	1		07/12/16 14:20				
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B								
pH at 25 Degrees C	7.8	Std. Units	0.10	0.10	1		07/12/16 09:00		H6		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00								
Chloride	21.7	mg/L	2.0	1.0	2		07/23/16 22:40	16887-00-6			
Fluoride	0.34	mg/L	0.20	0.073	1		07/20/16 21:28	16984-48-8			
Sulfate	77.8	mg/L	5.0	1.2	5		07/23/16 22:54				



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Barium 261 ug/L 1 0.0 0.58 1 07/13/16 12:10 07/15/16 17:24 7440-39-3 Beryllium <0.26	Sample: S-BMW-1D	Lab ID:	60223196007	Collecte	d: 07/05/1	6 13:35	Received: 07/	/09/16 04:45 Ma	atrix: Water	
Barium 261 ug/L 1 0.0 0.58 1 07/13/16 12:10 07/15/16 17:24 7440-39-3 Beryllium <0.26	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium	200.7 Metals, Total	Analytica	l Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Boron 236	Barium	261	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:24	7440-39-3	
Calcium 121000 ug/L 100 8.1 1 07/13/16 12:10 07/15/16 17:24 7440-70-2 CObalt <0.72 ug/L 5.0 0.72 1 07/13/16 12:10 07/15/16 17:24 7440-70-2 7440-48-4 Lead <2.5 ug/L 5.0 2.5 1 07/13/16 12:10 07/15/16 17:24 7430-92-1 7430-92-1 Lithium 12.8 ug/L 10.0 4.9 1 07/13/16 12:10 07/15/16 17:24 7439-93-2 7439-93-2 B 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 0.52 1 07/13/16 12:10 07/21/16 18:12 7440-38-9 B 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 0.020.8 0.020.8 0.020.8 0.020.8 0.021/13/16 12:10 07/21/16 18:12 7440-36-0 A A A A 07/13/16 12:10 07/21/16 18:12 7440-36-0 A A A 07/13/16 12:10 07/21/16 18:12 7440-36-0 A A 0 0 0	Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:24	7440-41-7	
Cobalt <0.72 ug/L 5.0 0.72 1 07/13/16 12:10 07/15/16 17:24 7440-48-4 42-8 42-8 42-8 ug/L 5.0 2.5 1 07/13/16 12:10 07/15/16 17:24 7439-92-1 439-92-1 439-92-1 439-93-2 439-93-2 439-93-2 439-98-7 B 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 1 07/13/16 12:10 07/21/16 18:12 7440-36-0 A739-98-7 B 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 1 07/13/16 12:10 07/21/16 18:12 7440-36-0 A739-98-7 B Antimony <0.058	Boron	236	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:24	7440-42-8	
Lead	Calcium	121000	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:24	7440-70-2	
Lithium 12.8 ug/L 10.0 4.9 1 07/13/16 12:10 07/15/16 17:24 7439-93-2 Molybdenum 1.1J ug/L 20.0 0.52 1 07/13/16 12:10 07/15/16 17:24 7439-93-2 B 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 07/13/16 12:10 07/21/16 18:12 7440-36-0 Arsenic 0.17J ug/L 1.0 0.058 1 07/13/16 12:10 07/21/16 18:12 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 07/13/16 12:10 07/21/16 18:12 7440-38-2 Cadmium 0.35J ug/L 1.0 0.34 1 07/13/16 12:10 07/21/16 18:12 7440-38-2 Cadmium <0.18 ug/L 1.0 0.34 1 07/13/16 12:10 07/21/16 18:12 7440-43-9 Selenium <0.18 ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 18:12 7440-43-9 Thallium <0.18 ug/L 1.0 0.50 1 07/13/16 12:10 07/21/16 18:12 7440-28-0 Thallium <0.18 ug/L 1.0 0.50 1 07/13/16 12:10 07/21/16 18:12 7440-28-0 Thallium <0.18 ug/L 1.0 0.50 1 07/13/16 12:10 07/21/16 18:12 7440-28-0 Thallium <0.18 ug/L 1.0 0.50 1 07/13/16 12:10 07/21/16 18:12 7440-28-0 Thallium <0.18 ug/L 1.0 0.50 1 07/13/16 12:10 07/21/16 18:12 7440-28-0 Thallium <0.18 ug/L 0.10 0.50 1 07/13/16 12:10 07/21/16 18:12 7440-28-0 Thallium <0.18 ug/L 0.00 0.50 1 07/13/16 12:10 07/21/16 18:12 7440-28-0 Thallium Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.1 Std. Units 0.10 0.10 0.10 1 07/11/16 16:00 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:24	7440-48-4	
Molybdenum	Lead	<2.5	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:24	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058	Lithium	12.8	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:24	7439-93-2	
Antimony	Molybdenum	1.1J	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:24	7439-98-7	В
Arsenic 0.17J ug/L 1.0 0.10 1 07/13/16 12:10 07/21/16 18:12 7440-38-2 Cadmium	200.8 MET ICPMS	Analytica	l Method: EPA 2	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Arsenic 0.17J ug/L 1.0 0.10 1 07/13/16 12:10 07/21/16 18:12 7440-38-2 Cadmium	Antimony	<0.058	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 18:12	7440-36-0	
Chromium O.35J ug/L 1.0 0.34 1 07/13/16 12:10 07/21/16 18:12 7440-47-3 Selenium O.18 ug/L 1.0 0.18 1 07/13/16 12:10 07/21/16 18:12 7782-49-2 Thallium O.50 ug/L 1.0 0.50 1 07/13/16 12:10 07/21/16 18:12 7782-49-2 Thallium Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.1 Std. Units O.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	Arsenic	0.17J	ū			1	07/13/16 12:10	07/21/16 18:12	7440-38-2	
Selenium	Cadmium	<0.029	ug/L	0.50	0.029	1	07/13/16 12:10	07/21/16 18:12	7440-43-9	
Thallium	Chromium	0.35J	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 18:12	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 07/11/16 16:00 07/12/16 10:59 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 475 mg/L 5.0 5.0 1 07/11/16 16:12 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	Selenium	<0.18	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 18:12	7782-49-2	
Mercury <0.039 ug/L 0.20 0.039 1 07/11/16 16:00 07/12/16 10:59 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 475 mg/L 5.0 5.0 1 07/11/16 16:12 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 18:12	7440-28-0	
2540C Total Dissolved Solids	7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EP/	A 7470			
Total Dissolved Solids 475 mg/L 5.0 5.0 1 07/11/16 16:12 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 10:59	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	2540C Total Dissolved Solids	Analytica	Method: SM 25	540C						
pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	Total Dissolved Solids	475	mg/L	5.0	5.0	1		07/11/16 16:12		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	4500H+ pH, Electrometric	Analytica	Method: SM 45	500-H+B						
Chloride 5.8 mg/L 1.0 0.50 1 07/20/16 21:43 16887-00-6 Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		07/11/16 11:40		H6
Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Fluoride 0.26 mg/L 0.20 0.073 1 07/20/16 21:43 16984-48-8	Chloride	5.8	mg/L	1.0	0.50	1		07/20/16 21:43	16887-00-6	
· · · · · · · · · · · · · · · · · · ·	Fluoride		Ū			1		07/20/16 21:43	16984-48-8	
	Sulfate	41.1	mg/L	5.0	1.2	5				



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Sample: S-UMW-DUP-1	Lab ID:	60223196009	Collecte	d: 07/06/10	08:00	Received: 07/	/09/16 04:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	118	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:28	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:28	7440-41-7	
Boron	17000	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:28	7440-42-8	
Calcium	216000	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:28	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:28	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:28	7439-92-1	
Lithium	26.3	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:28	7439-93-2	
Molybdenum	1360	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:28	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 18:18	7440-36-0	
Arsenic	1.4	ug/L	1.0	0.10	1	07/13/16 12:10	07/21/16 18:18	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	07/13/16 12:10	07/21/16 18:18	7440-43-9	
Chromium	< 0.34	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 18:18	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 18:18	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 18:18	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 11:08	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1090	mg/L	5.0	5.0	1		07/12/16 11:30		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.9	Std. Units	0.10	0.10	1		07/11/16 11:40		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	19.7	mg/L	2.0	1.0	2		07/23/16 23:50	16887-00-6	
Fluoride	1.1	mg/L	0.20	0.073	1		07/20/16 22:42	16984-48-8	
Sulfate	595	mg/L	50.0	12.4	50		07/24/16 00:04	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Barium	Sample: S-UMW-FB-1	Lab ID:	60223196010	Collecte	d: 07/06/10	6 10:01	Received: 07/	09/16 04:45 Ma	atrix: Water	
Barium <0.58	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium	200.7 Metals, Total	Analytica	l Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron <50.0 ug/L 100 50.0 1 07/13/16 12:10 07/15/16 17:31 7440-42-8 B Calcium 50.1J ug/L 100 8.1 1 07/13/16 12:10 07/15/16 17:31 7440-70-2 B B Cobalt 40.72 ug/L 5.0 0.72 1 07/13/16 12:10 07/15/16 17:31 7440-70-2 B B Cobalt 40.71 40.70 2.5 0.72 1 07/13/16 12:10 07/15/16 17:31 7440-70-2 B B Cobalt 40.71 40.71 7439-92-1 40.71 40.71 40.71 7439-92-1 40.71 7439-92-1 40.71 7439-92-1 7439-92-1 40.71 7439-93-2 80.71 7439-93-2 80.71 7439-93-2 80.71 7439-93-2 80.71 80.71 7439-93-2 80.71 80.71 7439-93-2 90.71 7439-93-2 90.71 7439-93-2 90.71 7439-93-2 90.71 7439-93-2 90.71 7439-93-2 90.71 7439-93-2 90.71 74316 12:10 07/13/16 12:10 07/13/16 12:10 07/13/16 12:10	Barium	<0.58	ug/L	10.0	0.58	1	07/13/16 12:10	07/15/16 17:31	7440-39-3	
Calcium 50.1J ug/L 100 8.1 1 07/13/16 12:10 07/15/16 17:31 7440-70-2 B Cobalt <0.72	Beryllium	<0.26	ug/L	1.0	0.26	1	07/13/16 12:10	07/15/16 17:31	7440-41-7	
Cobalt <0.72 ug/L 5.0 0.72 1 07/13/16 12:10 07/15/16 17:31 7440-48-4 Lead <2.5 ug/L 5.0 2.5 1 07/13/16 12:10 07/15/16 17:31 7439-92-1 1 1 07/13/16 12:10 07/15/16 17:31 7439-92-1 2 1 07/13/16 12:10 07/15/16 17:31 7439-93-2 2 1 07/13/16 12:10 07/15/16 17:31 7439-93-2 2 1 07/13/16 12:10 07/15/16 17:31 7439-93-2 2 2 0.0 0.0 0.0 1 07/13/16 12:10 07/15/16 17:31 7439-93-2 B 2 200.8 MET ICPMS Analytical Ethod: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 1 07/13/16 12:10 07/11/16 18:21 7440-36-0 4 </td <td>Boron</td> <td><50.0</td> <td>ug/L</td> <td>100</td> <td>50.0</td> <td>1</td> <td>07/13/16 12:10</td> <td>07/15/16 17:31</td> <td>7440-42-8</td> <td></td>	Boron	<50.0	ug/L	100	50.0	1	07/13/16 12:10	07/15/16 17:31	7440-42-8	
Lead	Calcium	50.1J	ug/L	100	8.1	1	07/13/16 12:10	07/15/16 17:31	7440-70-2	В
Lithium A4.9 ug/L 20.0 0.52 1 07/13/16 12:10 07/15/16 17:31 7439-93-2 B	Cobalt	<0.72	ug/L	5.0	0.72	1	07/13/16 12:10	07/15/16 17:31	7440-48-4	
Molybdenum 0.85J ug/L 20.0 0.52 l 0.7/13/16 12:10 07/15/16 17:31 7439-98-7 l B 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 EPA 200.8 Preparation Method: EPA 200.8	Lead	<2.5	ug/L	5.0	2.5	1	07/13/16 12:10	07/15/16 17:31	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.058	Lithium	<4.9	ug/L	10.0	4.9	1	07/13/16 12:10	07/15/16 17:31	7439-93-2	
Antimony	Molybdenum	0.85J	ug/L	20.0	0.52	1	07/13/16 12:10	07/15/16 17:31	7439-98-7	В
Arsenic	200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Arsenic	Antimony	<0.058	ug/L	1.0	0.058	1	07/13/16 12:10	07/21/16 18:21	7440-36-0	
Chromium -0.34	•	<0.10	•	1.0	0.10	1	07/13/16 12:10	07/21/16 18:21	7440-38-2	
Selenium	Cadmium	<0.029	ug/L	0.50	0.029	1	07/13/16 12:10	07/21/16 18:21	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 07/13/16 12:10 07/21/16 18:21 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 07/11/16 16:00 07/12/16 11:10 7439-97-6 2540C Total Dissolved Solids 6.0 mg/L 5.0 5.0 1 07/12/16 11:31 97/12/16 11:31 97/12/16 11:31 97/12/16 11:31 97/12/16 11:31 97/11/16 11:40	Chromium	< 0.34	ug/L	1.0	0.34	1	07/13/16 12:10	07/21/16 18:21	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 07/11/16 16:00 07/12/16 11:10 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 6.0 mg/L 5.0 5.0 1 07/12/16 11:31 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 6.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 40.50 mg/L 1.0 0.50 1 07/20/16 22:57 16887-00-6 Fluoride 40.073 mg/L 0.20 0.073 1 07/20/16 22:57 16984-48-8	Selenium	<0.18	ug/L	1.0	0.18	1	07/13/16 12:10	07/21/16 18:21	7782-49-2	
Mercury <0.039 ug/L 0.20 0.039 1 07/11/16 16:00 07/12/16 11:10 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 6.0 mg/L 5.0 5.0 1 07/12/16 11:31 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 6.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride <0.50 mg/L 1.0 0.50 1 07/20/16 22:57 16887-00-6 Fluoride <0.073 mg/L 0.20 0.073 1 07/20/16 22:57 16984-48-8	Thallium	<0.50	ug/L	1.0	0.50	1	07/13/16 12:10	07/21/16 18:21	7440-28-0	
2540C Total Dissolved Solids	7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Total Dissolved Solids 6.0 mg/L 5.0 5.0 1 07/12/16 11:31 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 6.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride <0.50 mg/L 1.0 0.50 1 07/20/16 22:57 16887-00-6 Fluoride <0.073 mg/L 0.20 0.073 1 07/20/16 22:57 16984-48-8	Mercury	<0.039	ug/L	0.20	0.039	1	07/11/16 16:00	07/12/16 11:10	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 6.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride <0.50 mg/L 1.0 0.50 1 07/20/16 22:57 16887-00-6 Fluoride <0.073 mg/L 0.20 0.073 1 07/20/16 22:57 16984-48-8	2540C Total Dissolved Solids	Analytica	Method: SM 25	540C						
pH at 25 Degrees C 6.1 Std. Units 0.10 0.10 1 07/11/16 11:40 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride <0.50 mg/L 1.0 0.50 1 07/20/16 22:57 16887-00-6 Fluoride <0.073 mg/L 0.20 0.073 1 07/20/16 22:57 16984-48-8	Total Dissolved Solids	6.0	mg/L	5.0	5.0	1		07/12/16 11:31		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride <0.50 mg/L 1.0 0.50 1 07/20/16 22:57 16887-00-6 Fluoride <0.073 mg/L 0.20 0.073 1 07/20/16 22:57 16984-48-8	4500H+ pH, Electrometric	Analytica	Method: SM 45	500-H+B						
Chloride	pH at 25 Degrees C	6.1	Std. Units	0.10	0.10	1		07/11/16 11:40		H6
Fluoride <0.073 mg/L 0.20 0.073 1 07/20/16 22:57 16984-48-8	300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Fluoride <0.073 mg/L 0.20 0.073 1 07/20/16 22:57 16984-48-8	Chloride	<0.50	mg/L	1.0	0.50	1		07/20/16 22:57	16887-00-6	
• • • • • • • • • • • • • • • • • • • •	Fluoride		Ū							
Sulfate <0.25 mg/L 1.0 0.25 1 07/20/16 22:57 14808-79-8	Sulfate	<0.25	mg/L	1.0	0.25	1				



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

QC Batch: 438034 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004

METHOD BLANK: 1791509 Matrix: Water
Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004

Blank Reporting

Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L <0.039 0.20 0.039 07/12/16 09:45

LABORATORY CONTROL SAMPLE: 1791510

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 4.7 95 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1791511 1791512

MS MSD 60223195001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 5 5 75-125 5 20 Mercury ug/L < 0.039 4.8 5.0 96 101

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1791513 1791514

MS MSD 60223196001 MS MSD MS MSD Spike Spike % Rec Max RPD Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD Qual Mercury ug/L < 0.039 5 5 5.3 5.8 106 115 75-125 9 20

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

 QC Batch:
 438036
 Analysis Method:
 EPA 7470

 QC Batch Method:
 EPA 7470
 Analysis Description:
 7470 Mercury

 Associated Lab Samples:
 60223196005, 60223196006, 60223196007, 60223196009, 60223196001

METHOD BLANK: 1791515 Matrix: Water

Associated Lab Samples: 60223196005, 60223196006, 60223196007, 60223196009, 60223196010

Blank Reporting

 Parameter
 Units
 Result
 Limit
 MDL
 Analyzed
 Qualifiers

 Mercury
 ug/L
 <0.039</td>
 0.20
 0.039
 07/12/16 10:50

LABORATORY CONTROL SAMPLE: 1791516

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 5.0 99 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1791517 1791518

MS MSD 60223199002 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 5 5 75-125 20 Mercury ug/L < 0.039 5.1 4.9 102 98

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

QC Batch: 438289 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009, 60223196010

METHOD BLANK: 1792560 Matrix: Water

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009, 60223196010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	07/15/16 17:00	
Beryllium	ug/L	<0.26	1.0	0.26	07/15/16 17:00	
Boron	ug/L	<50.0	100	50.0	07/15/16 17:00	
Calcium	ug/L	22.9J	100	8.1	07/15/16 17:00	
Cobalt	ug/L	< 0.72	5.0	0.72	07/15/16 17:00	
Lead	ug/L	<2.5	5.0	2.5	07/15/16 17:00	
Lithium	ug/L	<4.9	10.0	4.9	07/15/16 17:00	
Molybdenum	ug/L	0.74J	20.0	0.52	07/15/16 17:00	

LABORATORY CONTROL SAMPLE:	1792561					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	1000	1010	101	85-115	
Beryllium	ug/L	1000	981	98	85-115	
Boron	ug/L	1000	978	98	85-115	
Calcium	ug/L	10000	9680	97	85-115	
Cobalt	ug/L	1000	1020	102	85-115	
Lead	ug/L	1000	1020	102	85-115	
Lithium	ug/L	1000	962	96	85-115	
Molybdenum	ug/L	1000	1060	106	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 17925	62		1792563							
Parameter	6 Units	0223196001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Max RPD	Qual
Barium	ug/L	138	1000	1000	1150	1140	101	101	70-130			
Beryllium	ug/L	<0.26	1000	1000	992	984	99	98	70-130	-	20	
Boron	ug/L	810	1000	1000	1810	1770	100	96	70-130	2	20	
Calcium	ug/L	68600	10000	10000	78300	76400	97	78	70-130	2	20	
Cobalt	ug/L	< 0.72	1000	1000	1010	997	101	100	70-130	1	20	
Lead	ug/L	<2.5	1000	1000	1000	994	100	99	70-130	1	20	
Lithium	ug/L	13.7	1000	1000	1010	1000	99	99	70-130	1	20	
Molybdenum	ug/L	40.3	1000	1000	1110	1100	107	106	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	TE: 17925	64		1792565							
	0	0000400000	MS	MSD		MOD	140	MOD	0/ D			
	_	0223199002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	246	1000	1000	1240	1270	99	102	70-130	2	20	
Beryllium	ug/L	<0.26	1000	1000	997	1020	100	102	70-130	2	20	
Boron	ug/L	116	1000	1000	1110	1140	99	102	70-130	2	20	
Calcium	ug/L	128000	10000	10000	140000	142000	114	135	70-130	1	20	M1
Cobalt	ug/L	< 0.72	1000	1000	988	1010	99	101	70-130	3	20	
Lead	ug/L	<2.5	1000	1000	991	1010	99	101	70-130	2	20	
Lithium	ug/L	32.8	1000	1000	1020	1030	98	100	70-130	2	20	
Molybdenum	ug/L	1.5J	1000	1000	1050	1080	105	107	70-130	2	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

QC Batch: 438290 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009, 60223196010

METHOD BLANK: 1792566 Matrix: Water

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009, 60223196010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	07/21/16 17:34	
Arsenic	ug/L	<0.10	1.0	0.10	07/21/16 17:34	
Cadmium	ug/L	< 0.029	0.50	0.029	07/21/16 17:34	
Chromium	ug/L	< 0.34	1.0	0.34	07/21/16 17:34	
Selenium	ug/L	<0.18	1.0	0.18	07/21/16 17:34	
Thallium	ug/L	< 0.50	1.0	0.50	07/21/16 17:34	

LABORATORY CONTROL SAMPLE:	1792567					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	41.2	103	85-115	
Arsenic	ug/L	40	41.6	104	85-115	
Cadmium	ug/L	40	40.9	102	85-115	
Chromium	ug/L	40	41.7	104	85-115	
Selenium	ug/L	40	40.8	102	85-115	
Thallium	ug/L	40	37.4	93	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 179256	68		1792569							
Parameter	6 Units	0223196001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.078J	40	40	41.2	41.7	103	104	70-130	1	20	
Arsenic	ug/L	1.1	40	40	42.3	42.1	103	102	70-130	1	20	
Cadmium	ug/L	< 0.029	40	40	40.3	40.5	101	101	70-130	0	20	
Chromium	ug/L	< 0.34	40	40	40.6	41.6	101	104	70-130	3	20	
Selenium	ug/L	<0.18	40	40	38.8	39.1	97	97	70-130	1	20	
Thallium	ug/L	<0.50	40	40	38.3	38.7	96	97	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1792570 1792571												
Parameter	6 Units	0223199002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Max RPD	Qual
Farameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Kec	LIIIIIIS	KFD	KFD.	Quai
Antimony	ug/L	0.11J	40	40	41.3	41.2	103	103	70-130	0	20	
Arsenic	ug/L	0.44J	40	40	41.3	42.3	102	105	70-130	2	20	
Cadmium	ug/L	0.042J	40	40	39.5	40.4	99	101	70-130	2	20	

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(913)599-5665



QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 17925	70		1792571							
		0223199002	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chromium	ug/L	<0.34	40	40	41.3	41.4	103	103	70-130	0	20	
Selenium	ug/L	3.2	40	40	41.4	41.8	96	97	70-130	1	20	
Thallium	ug/L	< 0.50	40	40	38.2	38.7	95	97	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

QC Batch: 438032 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60223196001, 60223196007

METHOD BLANK: 1791505 Matrix: Water

Associated Lab Samples: 60223196001, 60223196007

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 07/11/16 16:06

LABORATORY CONTROL SAMPLE: 1791506

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

SAMPLE DUPLICATE: 1791507

60223195001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 915 0 10 **Total Dissolved Solids** 911 mg/L

SAMPLE DUPLICATE: 1791508

Date: 01/02/2018 02:40 PM

ParameterUnits60223196001 ResultDup ResultRPDMax RPDQualifiersTotal Dissolved Solidsmg/L376373110

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

QC Batch: 438068 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60223196002, 60223196003, 60223196004, 60223196009, 60223196010

METHOD BLANK: 1791594 Matrix: Water

Associated Lab Samples: 60223196002, 60223196003, 60223196004, 60223196009, 60223196010

Blank Reporting

ParameterUnitsResultLimitMDLAnalyzedQualifiersTotal Dissolved Solidsmg/L<5.0</td>5.007/12/16 11:26

LABORATORY CONTROL SAMPLE: 1791595

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

SAMPLE DUPLICATE: 1791596

60222988001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 767 10 **Total Dissolved Solids** 771 1 mg/L

SAMPLE DUPLICATE: 1791597

Date: 01/02/2018 02:40 PM

ParameterUnits60222988005 ResultDup ResultRPDMax RPDQualifiersTotal Dissolved Solidsmg/L365368110

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

QC Batch: 438069 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60223196005, 60223196006

METHOD BLANK: 1791598 Matrix: Water

Associated Lab Samples: 60223196005, 60223196006

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 07/12/16 14:08

LABORATORY CONTROL SAMPLE: 1791599

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

SAMPLE DUPLICATE: 1791600

60223065001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 385 10 **Total Dissolved Solids** 388 1 mg/L

SAMPLE DUPLICATE: 1791601

Date: 01/02/2018 02:40 PM

60223199002 Dup Max RPD RPD Parameter Units Result Result Qualifiers 489 **Total Dissolved Solids** mg/L 497 2 10

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

QC Batch: 437868 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196007, 60223196009, 60223196010

SAMPLE DUPLICATE: 1791140

60223195001 Dup Max Parameter Units Result Result **RPD RPD** Qualifiers 7.4 pH at 25 Degrees C 5 H6 Std. Units 7.4 0

SAMPLE DUPLICATE: 1791141

Date: 01/02/2018 02:40 PM

		60223196001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.6	0		5 H6

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

QC Batch: 437870 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60223196005, 60223196006

SAMPLE DUPLICATE: 1791144

Date: 01/02/2018 02:40 PM

 Parameter
 Units
 60222963003 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.2
 7.2
 0
 5 H6

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

QC Batch: 439323 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009, 60223196010

METHOD BLANK: 1796773 Matrix: Water

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009, 60223196010

Ь	0223196009	9, 60223196010											
Parameter		Units	Blank Result		Reporting Limit	MD	L	Ar	nalyzed	Qua	alifiers		
Chloride		mg/L		 :0.50	1	.0	0.50	07/20)/16 18:47	,		_	
Fluoride		mg/L		0.027	0.2	-	0.027)/16 18:47				
Sulfate		mg/L	<	0.15	1	.0	0.15	07/20)/16 18:47	7			
LABORATORY CONTROL SA	MPLE: 17	796774											
			Spike	LCS	S	LCS	•	% Rec					
Parameter		Units	Conc.	Resi	ult	% Rec		Limits	Qι	ualifiers			
Chloride		mg/L	5		4.7	9	4	90-	110		-		
Fluoride		mg/L	2.5		2.4	9	7	90-1	110				
Sulfate		mg/L	5		4.8	9	6	90-1	110				
MATRIX SPIKE & MATRIX SP	IKE DI IPI IC	CATE: 17967	 75		1796770	<u> </u>							
WATRIX OF IRE & WATRIX OF	INC DOI LIC	JAIL. 17507	MS	MSD	173077	J							
Parameter	Units	60223196001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	M % F	_	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
													- Quui
Fluoride	mg/L	0.22	2.5	2.5	2.	5 2.0	5	93	96	80-120	3	15	
MATRIX SPIKE SAMPLE:	17	796777											
			6022319	99002	Spike	MS		MS	i	% Rec			
Parameter		Units	Resu	ult	Conc.	Result		% Re	ес	Limits		Quali	fiers
Chloride	-	mg/L	-	7.5	5		12.2		94	80-	120		
Fluoride		mg/L		0.28	2.5		2.6		94	80-	120		

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

QC Batch: 439703 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009

METHOD BLANK: 1798953 Matrix: Water

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	07/23/16 17:58	
Sulfate	mg/L	<0.15	1.0	0.15	07/23/16 17:58	

LABORATORY CONTROL SAMPLE:	1798954					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	10	9.7	97	90-110	
Sulfate	mg/L	10	9.6	96	90-110	

MATRIX S	PIKE & MATRIX SPIKI	E DUPLIC	ATE: 17989	55		1798956							
				MS	MSD								
		(60223196001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
I	Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride		mg/L	21.2	10	10	30.5	30.1	93	89	80-120	1	15	
Sulfate		mg/L	65.1	25	25	89.3	89.0	97	96	80-120	0	15	

MATRIX SPIKE SAMPLE:	1798957						
		60223199002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	7.5		31.2			
Sulfate	mg/L	36.5	25	61.0	98	80-120	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-1D Lab ID: 60223196001 Collected: 07/05/16 16:54 Received: 07/09/16 04:45 Matrix: Water

PWS: Site ID: Sample Type:

1 443.	Site ib.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0581 ± 0.410 (0.819) C:NA T:92%	pCi/L	08/05/16 00:27	13982-63-3	
Radium-228	EPA 904.0	1.22 ± 0.447 (0.651) C:75% T:83%	pCi/L	08/01/16 21:17	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-2D Lab ID: 60223196002 Collected: 07/06/16 11:53 Received: 07/09/16 04:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.226 ± 0.444 (0.797) C:NA T:94%	pCi/L	08/05/16 01:07	13982-63-3	
Radium-228	EPA 904.0	1.48 ± 0.488 (0.664) C:78% T:80%	pCi/L	08/01/16 21:17	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-3D Lab ID: 60223196003 Collected: 07/06/16 10:35 Received: 07/09/16 04:45 Matrix: Water

PWS: Site ID: Sample Type:

1 445.	Site ib.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.396 (0.801) C:NA T:96%	pCi/L	08/05/16 00:53	13982-63-3	
Radium-228	EPA 904.0	1.24 ± 0.454 (0.654) C:75% T:80%	pCi/L	08/01/16 21:17	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-4D Lab ID: 60223196004 Collected: 07/06/16 09:30 Received: 07/09/16 04:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0561 ± 0.256 (0.413) C:NA T:91%	pCi/L	08/05/16 00:30	13982-63-3	
Radium-228	EPA 904.0	1.34 ± 0.448 (0.586) C:74% T:82%	pCi/L	08/01/16 21:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-5D Lab ID: 60223196005 Collected: 07/07/16 13:01 Received: 07/09/16 04:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0523 ± 0.239 (0.485) C:NA T:97%	pCi/L	08/05/16 00:54	13982-63-3	
Radium-228	EPA 904.0	1.05 ± 0.407 (0.619) C:77% T:87%	pCi/L	08/01/16 21:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-6D Lab ID: 60223196006 Collected: 07/07/16 11:59 Received: 07/09/16 04:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0536 ± 0.245 (0.394) C:NA T:94%	pCi/L	08/05/16 00:53	13982-63-3	
Radium-228	EPA 904.0	0.683 ± 0.377 (0.676) C:75% T:83%	pCi/L	08/01/16 21:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-BMW-1D Lab ID: 60223196007 Collected: 07/05/16 13:35 Received: 07/09/16 04:45 Matrix: Water

PWS: Site ID: Sample Type:

FWS.	Site ID.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.213 ± 0.443 (0.799) C:NA T:94%	pCi/L	08/05/16 01:19	13982-63-3	
Radium-228	EPA 904.0	1.07 ± 0.406 (0.606) C:78% T:86%	pCi/L	08/01/16 21:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-DUP-1 Lab ID: 60223196009 Collected: 07/06/16 08:00 Received: 07/09/16 04:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.185 ± 0.363 (0.664) C:NA T:90%	pCi/L	08/04/16 11:34	13982-63-3	
Radium-228	EPA 904.0	0.588 ± 0.332 (0.589) C:80% T:81%	pCi/L	08/01/16 21:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-FB-1 Lab ID: 60223196010 Collected: 07/06/16 10:01 Received: 07/09/16 04:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.124 ± 0.284 (0.168) C:NA T:93%	pCi/L	08/04/16 11:59	13982-63-3	
Radium-228	EPA 904.0	0.661 ± 0.356 (0.631) C:77% T:88%	pCi/L	08/01/16 21:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-1D MS Lab ID: 60223196011 Collected: 07/05/16 16:54 Received: 07/09/16 04:45 Matrix: Water

PWS: Site ID: Sample Type:

1 445.	Site ib.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	91.0 %REC +/- NA (NA) C:NA T:NA	pCi/L	08/05/16 01:00	13982-63-3	
Radium-228	EPA 904.0	82.1 %REC +/- NA (NA) C:NA T:NA	pCi/L	08/01/16 21:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Sample: S-UMW-1D MSD Lab ID: 60223196012 Collected: 07/05/16 16:54 Received: 07/09/16 04:45 Matrix: Water

PWS: Site ID: Sample Type: Method Act ± Unc (MDC) Carr Trac Units **Parameters** Analyzed CAS No. Qual EPA 903.1 92.7 %REC 1.80 RPD +/-Radium-226 pCi/L 08/05/16 01:13 13982-63-3 NA (NA) C:NA T:NA 96.7 %REC 16.3 RPD +/-EPA 904.0 pCi/L Radium-228 08/01/16 21:19 15262-20-1 NA (NA) C:NA T:NA



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

QC Batch: 227042 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009, 60223196010, 60223196011, 60223196012

METHOD BLANK: 1112344 Matrix: Water

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196009, 60223196010, 60223196011, 60223196012

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.103 ± 0.284 (0.621) C:80% T:82%
 pCi/L
 08/01/16 21:16

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



QUALITY CONTROL - RADIOCHEMISTRY

pCi/L

08/04/16 23:51

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Radium-226

QC Batch: 227063 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

0.000 ± 0.266 (0.429) C:NA T:98%

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196011, 60223196012

METHOD BLANK: 1112380 Matrix: Water

Associated Lab Samples: 60223196001, 60223196002, 60223196003, 60223196004, 60223196005, 60223196006, 60223196007,

60223196011, 60223196012

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

QC Batch: 227765 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60223196009, 60223196010

METHOD BLANK: 1115869 Matrix: Water

Associated Lab Samples: 60223196009, 60223196010

ParameterAct \pm Unc (MDC) Carr TracUnitsAnalyzedQualifiersRadium-226-0.210 \pm 0.320 (0.840) C:NA T:85%pCi/L08/03/16 11:54

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 01/02/2018 02:40 PM

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

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



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60223196001	S-UMW-1D	EPA 200.7	438289	EPA 200.7	438335
60223196002	S-UMW-2D	EPA 200.7	438289	EPA 200.7	438335
0223196003	S-UMW-3D	EPA 200.7	438289	EPA 200.7	438335
0223196004	S-UMW-4D	EPA 200.7	438289	EPA 200.7	438335
0223196005	S-UMW-5D	EPA 200.7	438289	EPA 200.7	438335
0223196006	S-UMW-6D	EPA 200.7	438289	EPA 200.7	438335
0223196007	S-BMW-1D	EPA 200.7	438289	EPA 200.7	438335
0223196009	S-UMW-DUP-1	EPA 200.7	438289	EPA 200.7	438335
0223196010	S-UMW-FB-1	EPA 200.7	438289	EPA 200.7	438335
0223196001	S-UMW-1D	EPA 200.8	438290	EPA 200.8	438336
0223196002	S-UMW-2D	EPA 200.8	438290	EPA 200.8	438336
0223196003	S-UMW-3D	EPA 200.8	438290	EPA 200.8	438336
0223196004	S-UMW-4D	EPA 200.8	438290	EPA 200.8	438336
0223196005	S-UMW-5D	EPA 200.8	438290	EPA 200.8	438336
0223196006	S-UMW-6D	EPA 200.8	438290	EPA 200.8	438336
0223196007	S-BMW-1D	EPA 200.8	438290	EPA 200.8	438336
0223196009	S-UMW-DUP-1	EPA 200.8	438290	EPA 200.8	438336
0223196010	S-UMW-FB-1	EPA 200.8	438290	EPA 200.8	438336
0223196001	S-UMW-1D	EPA 7470	438034	EPA 7470	438049
0223196002	S-UMW-2D	EPA 7470	438034	EPA 7470	438049
0223196003	S-UMW-3D	EPA 7470	438034	EPA 7470	438049
0223196004	S-UMW-4D	EPA 7470	438034	EPA 7470	438049
0223196005	S-UMW-5D	EPA 7470	438036	EPA 7470	438050
0223196006	S-UMW-6D	EPA 7470	438036	EPA 7470	438050
0223196007	S-BMW-1D	EPA 7470	438036	EPA 7470	438050
0223196009	S-UMW-DUP-1	EPA 7470	438036	EPA 7470	438050
0223196010	S-UMW-FB-1	EPA 7470	438036	EPA 7470	438050
0223196001	S-UMW-1D	EPA 903.1	227063		
0223196002	S-UMW-2D	EPA 903.1	227063		
0223196003	S-UMW-3D	EPA 903.1	227063		
0223196004	S-UMW-4D	EPA 903.1	227063		
0223196005	S-UMW-5D	EPA 903.1	227063		
0223196006	S-UMW-6D	EPA 903.1	227063		
0223196007	S-BMW-1D	EPA 903.1	227063		
0223196009	S-UMW-DUP-1	EPA 903.1	227765		
0223196010	S-UMW-FB-1	EPA 903.1	227765		
0223196011	S-UMW-1D MS	EPA 903.1	227063		
0223196012	S-UMW-1D MSD	EPA 903.1	227063		
0223196001	S-UMW-1D	EPA 904.0	227042		
0223196002	S-UMW-2D	EPA 904.0	227042		
0223196003	S-UMW-3D	EPA 904.0	227042		
0223196004	S-UMW-4D	EPA 904.0	227042		
0223196005	S-UMW-5D	EPA 904.0	227042		
0223196006	S-UMW-6D	EPA 904.0	227042		
0223196007	S-BMW-1D	EPA 904.0	227042		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60223196009	S-UMW-DUP-1	EPA 904.0	227042	_	
0223196010	S-UMW-FB-1	EPA 904.0	227042		
0223196011	S-UMW-1D MS	EPA 904.0	227042		
0223196012	S-UMW-1D MSD	EPA 904.0	227042		
0223196001	S-UMW-1D	SM 2540C	438032		
0223196002	S-UMW-2D	SM 2540C	438068		
0223196003	S-UMW-3D	SM 2540C	438068		
0223196004	S-UMW-4D	SM 2540C	438068		
0223196005	S-UMW-5D	SM 2540C	438069		
0223196006	S-UMW-6D	SM 2540C	438069		
0223196007	S-BMW-1D	SM 2540C	438032		
0223196009	S-UMW-DUP-1	SM 2540C	438068		
0223196010	S-UMW-FB-1	SM 2540C	438068		
0223196001	S-UMW-1D	SM 4500-H+B	437868		
0223196002	S-UMW-2D	SM 4500-H+B	437868		
0223196003	S-UMW-3D	SM 4500-H+B	437868		
0223196004	S-UMW-4D	SM 4500-H+B	437868		
0223196005	S-UMW-5D	SM 4500-H+B	437870		
0223196006	S-UMW-6D	SM 4500-H+B	437870		
0223196007	S-BMW-1D	SM 4500-H+B	437868		
0223196009	S-UMW-DUP-1	SM 4500-H+B	437868		
0223196010	S-UMW-FB-1	SM 4500-H+B	437868		
0223196001	S-UMW-1D	EPA 300.0	439323		
0223196001	S-UMW-1D	EPA 300.0	439703		
0223196002	S-UMW-2D	EPA 300.0	439323		
0223196002	S-UMW-2D	EPA 300.0	439703		
0223196003	S-UMW-3D	EPA 300.0	439323		
60223196003	S-UMW-3D	EPA 300.0	439703		
0223196004	S-UMW-4D	EPA 300.0	439323		
0223196004	S-UMW-4D	EPA 300.0	439703		
0223196005	S-UMW-5D	EPA 300.0	439323		
0223196005	S-UMW-5D	EPA 300.0	439703		
0223196006	S-UMW-6D	EPA 300.0	439323		
0223196006	S-UMW-6D	EPA 300.0	439703		
0223196007	S-BMW-1D	EPA 300.0	439323		
0223196007	S-BMW-1D	EPA 300.0	439703		
0223196009	S-UMW-DUP-1	EPA 300.0	439323		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60223196

Date: 01/02/2018 02:40 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60223196009	S-UMW-DUP-1	EPA 300.0	439703		
60223196010	S-UMW-FB-1	EPA 300.0	439323		



Sample Condition Upon Receipt

WO#:60223196

Client Name:	(20/gm	Affociones					7	locks	Optional
Courier: FedEx □	UPS 🗆 🕦	VIA □ Clay □	PEX 🗆	EC		Pace □	• • • • • • • • • • • • • • • • • • • •		Proj Due Date:
Tracking #:		F	Pace Sh	ipping	Label L	Jsed? `	Yes □	No □	Proj Name:
Custody Seal on Coole	r/Box Prese	ent: Yes 💆 No	□ Se	eals in	tact: Y	es 🗗	No □		
Packing Material:	Bubble Wra		gs □		Foam [None 🗗	Other []
Thermometer Used:	CF +1.1 T-266	CF-0.1 T-239 Ty	pe of lo	:e: (V			e 🗆 San	ples received	on ice, cooling process has begun.
Cooler Temperature:		8 25.6			(circle	one)		Date and init	ials of person examining
Temperature should be about	ove freezing to	6°C				I		contents.	167[9
Chain of Custody preser	nt:		Yes	□No	□N/A	1.			
Chain of Custody filled of	out:		Yes	□No	□N/A	2.	7,		
Chain of Custody relinqu	uished;		Yes	□No	□n/a	3.			
Sampler name & signatu	re on COC:		∦ Yes	□No	□N/A	4.			
Samples arrived within h	nolding time;		Yes	□No	□N/A	5,			
Short Hold Time analys	ses (<72hr):		Yes	□No	□n/a	6. pH			
Rush Turn Around Tim	ne requested	f;	□Yes	M No	□N/A	7.			
Sufficient volume:			Yes	□No	□N/A	8.			
Correct containers used			K Yes	□No	□n/a				
Pace containers used:			∭TYes	□No	□n/a	9.			
Containers intact:			¥∫Yes	□No	□n/a	10.			
Unpreserved 5035A soil	ls frozen w/in	48hrs?	□Yes	□No	ME N/A	11.			
Filtered volume received	d for dissolve	d tests?	□Yes	□No	ŒN/A	12.			
Sample labels match CO	OC:		Yes	□No	□n/A				N .
Includes date/time/ID/a	nalyses	Matrix:	WT			13.			
All containers needing pres	ervation have	been checked.	Yes	□No	□n/a				
All containers needing preswith EPA recommendation.		ound to be in compliance	Yes	□No	□n/a	14.			
Exceptions: VOA, Coliforn	ı, O&G, WI-DF	RO (water)	□Yes	Ø⁄No		Initial who			ot # of added reservative
Trip Blank present:			□Yes	□No	ØN/A				
Pace Trip Blank lot # (if	purchased):					15.			
Headspace in VOA vials	s (>6mm):		□Yes	□No	DN/A				
						16.			
Project sampled in USD	A Regulated	Area:	□Yes	□No	₫ N/A	17. List	State:		
Additional labels attache	ed to 5035A	vials in the field?	□Yes	□No	ØN/A	18.			
Client Notification/ Res		Copy Co			Y / N	-	Field Data	a Required?	Y / N
Person Contacted:	·	Da	ate/Time	e:			2		
Comments/ Resolution:	2								
P=======		01 1							
-		mi Church					7/11/16		
Project Manager Review	v:					Date:			

Pace Analytical "

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

Company: Golder Associates Report To: M.	Report To: Mark Haddock (mhaddock@golder.com)	ddock (mh		1	Attention:										
s, MO 63301 @golder.com Fax: 636-724-9323			addock@goid	er.com)											ľ
©golder.com Fax: 636-724-9323		ngram			Company Name	ame:			<u> </u>	EGULATOR	REGULATORY AGENCY	ano			
©golder.com Fax: 636-724-9323		Copp			Address:				_	NPDES	☐ GROUNI	GROUND WATER	ᆫ	DRINKING WATER	Ī
Fax: 636-724-9323	Purchase Order No.:	2	A		Pace Quote Reference:					_ UST	☐ RCRA		☐ OTHER	R.	
Standard		eren Sioux	Ameren Sioux Energy Center - B	er - Bottom Ash	Pace Project Manager.	Jamie Church	hurch			Site Location					
	Project Number: 153-1406.0003A	-1406.0003	3A		Pace Profile #	# 9285		0:		STATE	2				
100	u.		6 () (6) (6)			it T		Rec	Requested Ar	Analysis Filtered (Y/N)	red (Y/N)				
Section D Valid Matrix Codes Required Client Information MATRIX CODE	(fiel ci	m	COLLECTED	0		Preservatives	ıtives	z Z N/A	z	z					
DRINKING WATER DW WATER WT WASTEWATER WW PRODUCT P SOLLSOLID SL OIL	ee valld codes t	COMPOSITE		COMPOSITE TO COMPO		7		100		07		(N/X) €			
Sample IDS MUST BE UNIQUE		DATE	TIME DATE	THE TEMP ST C	# OF CONTAINER:	HOI HOS ² HSO ⁴	NaOH Na ₂ S ₂ O ₃ Methanol Other	↓ Analysis Test Metals* Chloride/Fluoride	TDS	S & 3SS mulbsЯ		Residual Chlorine	(OOL)	(JOJZ 3196	Ö.
S-UMW-1D	. MT		75	4591 9115	123	Of-		33	33	6 98	BAN (3) JAPANS	0	(P) BOW	7	(C)
S-UMW-2D	WT		7/6/15	15 1153	4 1	N		1 1	1 1 1	2 / 购	W 002		S)BPIN	9	80
S-UMW-3D	WT G		17/0/16			1						3		0	603
S-UMW-4D	WT G		7/6/16	116 6930				11111						ਤ	3
S-UMW-5D	WT		1/4/6	29	7 [~		7	77	- 4		9		2	4
S-UMW-6D	WT G		E/E		-	~	717	1	-	2			П	0	B
S-BMW-1D	WT G		7/5/16	-	7	2			1 -	7				3	43
S-BMW-2D	WT		7/5/16	16 1508	_	W.			1	7	-71			3	34
S-UMW-DUP-1	WT G		3/19/15	161	_ _	M		-	1	2				3	63
S-UMW-FB-1	. M⊤		1/9/1	1001 9/	<u>-</u>	N		-		2	*			0	C)o
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ADVITIONAL COMMENTS	NON ISA	REI INOLITISHED BY / AFEII IATION	VEEL IATION	DATE	TIME		ACCEPTE	ACCEPTED BY / AFFILIATION	NOTTA	DATE	TARE	-	SAMPI E CONDITIONS	SNOTHUNG	T
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January 12, 2018

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between September 16, 2016 and October 21, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Due to Lab Error sample S-BMW-1D required recollection for anions.

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

Sincerely,

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

Pami Church

Project Manager

Enclosures

cc: Ryan Feldmann, Golder Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates







CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification

Hawaii Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868 West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01

Arkansas Certification #: 2456.01

Allinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1 Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60227403018	S-UMW-1D	Water	09/15/16 15:25	09/16/16 04:30
60227403019	S-UMW-2D	Water	09/14/16 15:50	09/16/16 04:30
60227403021	S-UMW-4D	Water	09/14/16 14:33	09/16/16 04:30
60227403022	S-BMW-1D	Water	09/14/16 13:13	09/16/16 04:30
60227403023	S-UMW-DUP-1	Water	09/14/16 08:00	09/16/16 04:30
60227403020	S-UMW-3D	Water	09/14/16 14:22	09/16/16 04:30
60227900008	S-UMW-FB-1	Water	09/14/16 14:15	09/16/16 04:30
60227900009	S-UMW-5D	Water	09/16/16 09:55	09/16/16 20:45
60227900010	S-UMW-6D	Water	09/16/16 10:35	09/16/16 20:45
60227900011	S-UMW-5D MS	Water	09/16/16 09:55	09/16/16 20:45
60227900012	S-UMW-5D MSD	Water	09/16/16 09:55	09/16/16 20:45
60227900013	S-BMW-1D	Water	10/20/16 10:17	10/21/16 03:50



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60227403018	S-UMW-1D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JMC1	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0227403019	S-UMW-2D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0227403021	S-UMW-4D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0227403022	S-BMW-1D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
0227403023	S-UMW-DUP-1	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60227403020	S-UMW-3D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60227900008	S-UMW-FB-1	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60227900009	S-UMW-5D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JMC1	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60227900010	S-UMW-6D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JMC1	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60227900011	S-UMW-5D MS	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60227900012	S-UMW-5D MSD	EPA 903.1	WRR	1	PASI-PA





SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 904.0	JLW	1	PASI-PA
60227900013	S-BMW-1D	EPA 300.0	OL	3	PASI-K



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

200.7 Metals, Total	Sample: S-UMW-1D	Lab ID: 60227403018		Collected: 09/15/16 15:25			Received: 09/16/16 04:30 Matrix: Water			
Barium 195 ug/L 10.0 0.58 1 09/19/16 16:10 09/20/16 15:23 7440-39-3 Beryllium 40.26 ug/L 10.0 0.26 1 09/19/16 16:10 09/20/16 15:23 7440-41-7 Boron 318 ug/L 100 50.0 1 09/19/16 16:10 09/20/16 15:23 7440-42-8 Calcium 9900 ug/L 100 8.0 1 09/19/16 16:10 09/20/16 15:23 7440-42-8 Cobalt 40.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:23 7440-48-4 Lead 42.5 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:23 7440-48-4 Lead 42.5 ug/L 1.0 0.52 1 09/19/16 16:10 09/20/16 15:23 7440-48-4 Lead 42.5 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:24 7440-36-0 Assistance 0.98J ug/L 1.0 0.10	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Benyllium	200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron 318 ug/L 100 50.0 1 09/19/16 16:10 09/20/16 15:23 7440-42-8 Add-70-2 Calcium 99000 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:23 7440-70-2 Calcium 40.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:23 7440-48-4 440-80-4 42.5 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:23 7440-48-4 440-80-4 42.5 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:23 7439-93-2 440-93-2 40/10/16 16:10 09/20/16 15:23 7439-93-2 440-93-2 40/10/16 16:10 09/20/16 15:23 7439-93-2 440-93-2 40/10/16 16:10 09/20/16 15:23 7439-93-2 440-34-3 41 09/19/16 16:10 09/20/16 15:23 7439-93-2 440-34-3 41 09/19/16 16:10 09/20/16 19:24 7440-38-2 440-34-3 440-34-3 440-34-3 440-34-3 440-34-3 440-34-3 440-34-3 440-34-3 440-34-3 440-34-3 4	Barium	195	ug/L	10.0	0.58	1	09/19/16 16:10	09/20/16 15:23	7440-39-3	
Calcium	Beryllium	<0.26	ug/L	1.0	0.26	1	09/19/16 16:10	09/20/16 15:23	7440-41-7	
Cobalt Lead <0.72 bug/L 5.0 bug/L 0.72 bug/L 5.0 bug/L 0.72 bug/L 1 bug/19/16 16:10 bug/19/16 16:10 bug/19/16 16:23 bug/L 7440-48-4 bug/L 7430-99-1 bug/L 7430-99-1 bug/L 7430-99-2 bug/L 7430-99-2 bug/L 7430-99-2 bug/L 7430-99-2 bug/L 7430-99-2 bug/L 7440-36-0 bug/L <th< td=""><td>Boron</td><td>318</td><td>ug/L</td><td>100</td><td>50.0</td><td>1</td><td>09/19/16 16:10</td><td>09/20/16 15:23</td><td>7440-42-8</td><td></td></th<>	Boron	318	ug/L	100	50.0	1	09/19/16 16:10	09/20/16 15:23	7440-42-8	
Lead 42.5 ug/L 5.0 2.5 1 09/19/16 16:10 09/20/16 15:23 7439-92-1 1439-92-1 1410 4.9 1 09/19/16 16:10 09/20/16 15:23 7439-92-1 7439-93-2 7440-33-2 7439-93-2 7440-33-2 7439-93-2 7440-33-2 7440-33-2 7440-33-2 7440-33-2 7440-33-2 7440-33-2 7440-33-2 7440-33-2 7440-33-2 7440-43-3 7440-43-3 7440-43-3 7440-43-3 7440-43-3 7440-43-3 7440-43-3 7440-43-3 7440	Calcium	99000	ug/L	100	8.1	1	09/19/16 16:10	09/20/16 15:23	7440-70-2	
Lithium Molybdenum 14.2 27.9 ug/L 10.0 20.0 0.52 ug/L 4.9 0.52 ug/l 20.0 0.008 To 09/19/16 16:10 09/29/16 19:24 0.40-36-0 0.98J 20.0 0.009 ug/l 20.0 0.0 0.009 ug/l 20.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Cobalt	<0.72	ug/L	5.0	0.72	1	09/19/16 16:10	09/20/16 15:23	7440-48-4	
Molybdenum 27.9 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 15:23 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparative Method: EPA 200.8 Antimony 0.066.J ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:24 7440-36-0 Arsenic 0.98.J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 19:24 7440-38-2 Cadmium <0.029 ug/L 1.0 0.010 1 09/19/16 16:10 09/29/16 19:24 7440-38-2 Cadmium <0.029 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:24 7440-38-2 Cadmium <0.036.J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:24 7440-43-9 Preparative Method: Preparative Method: 0.0 0.1 0.9/19/16 16:10 09/29/16 19:24 7440-43-9 Preparative Method: Preparat	Lead	<2.5	ug/L	5.0	2.5	1	09/19/16 16:10	09/20/16 15:23	7439-92-1	
200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Antimony 0.066J ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:24 7440-36-0 Ar40-36-0 Ar5enic 0.98J ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:24 7440-38-2 CACHOMIUM 0.060 0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:24 7440-38-2 CACHOMIUM 0.36J ug/L 1.0 0.034 1 09/19/16 16:10 09/29/16 19:24 7440-43-3 CACHOMIUM 0.0 0.34 1 09/19/16 16:10 09/29/16 19:24 7440-43-3 CACHOMIUM 0.0 0.0 0.0 0.0 0.0 0.0 09/19/16 16:10 09/29/16 19:24 7440-440-47-3 CACHOMIUM 0.0 0	Lithium	14.2	ug/L	10.0	4.9	1	09/19/16 16:10	09/20/16 15:23	7439-93-2	
Antimony	Molybdenum	27.9	ug/L	20.0	0.52	1	09/19/16 16:10	09/20/16 15:23	7439-98-7	
Arsenic 0.98J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 19:24 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:24 7440-43-9 Chromium 0.36J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:24 7440-43-9 Selenium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:24 7440-47-3 Thallium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:24 7440-47-3 Thallium Analytical Wethod: EPA 7470 Preparation Method: EP	200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:24 7440-43-9 Chromium 0.36J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:24 7440-43-9 Selenium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:24 748-49-2 7782-49-2 Thallium <0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:24 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 13:43 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 09/20/16 08:30 09/20/16 13:43 7439-97-6 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 0.10 0.10 1 09/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0	Antimony	0.066J	ug/L	1.0	0.058	1	09/19/16 16:10	09/29/16 19:24	7440-36-0	
Chromium 0.36J ug/L 1.0 0.34 I 09/91/6 16:10 09/29/16 19:24 7440-47-3 7440-47-47-47-47-47-47-47-47-47-47-47-47-47-	Arsenic	0.98J	ug/L	1.0	0.10	1	09/19/16 16:10	09/29/16 19:24	7440-38-2	
Selenium <0.18 ug/L 1.0 0.18 ug/L 1.0 0.50 ug/L 0.18 0.50 ug/L 1.0 0.50 ug/L 0.9/19/16 16:10 09/29/16 19:24 7782-49-2 7440-28-0 7782-49-2 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Very 3-7470 0.039 ug/L 0.00 0.039 ug/L 1 09/20/16 08:30 09/20/16 13:43 7439-97-6 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 4500-H+B 5.0 5.0 5.0 1 0.9/22/16 16:59 09/22/16 16:59 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B H6 Bugon of Canions 28 Days Analytical Method: EPA 300.0 1.0 2 10/10/16 00:42 16887-00-6 10/08/16 17:08 16984-48-8 16887-00-6 10/08/16 17:08 16984-48-8	Cadmium	< 0.029	ug/L	0.50	0.029	1	09/19/16 16:10	09/29/16 19:24	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:24 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 13:43 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 5.0 1 99/22/16 16:59 4509/22/16 16:59 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B H6 4500H+ pH, Electrometric Analytical Method: EPA 300.0 0.10 0.10 1 99/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 1.0 2 10/10/16 00:42 16887-00-6 10/10/16 00:42 16887-00-6 10/10/16 00:42 16984-48-8	Chromium	0.36J	ug/L	1.0	0.34	1	09/19/16 16:10	09/29/16 19:24	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 13:43 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 588 mg/L 5.0 5.0 1 09/22/16 16:59 4500H 1	Selenium	<0.18	ug/L	1.0	0.18	1	09/19/16 16:10	09/29/16 19:24	7782-49-2	
Mercury										



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

200.7 Metals, Total	Sample: S-UMW-2D	Lab ID: 60227403019		Collected: 09/14/16 15:50			Received: 09/16/16 04:30 Matrix: Water			
Barium 105 ug/L 10.0 0.58 1 09/19/16 16:10 09/20/16 15:25 7440-39-3 Perplitum 40.26 ug/L 10.0 0.26 1 09/19/16 16:10 09/20/16 15:25 7440-17-7 Perport Perport 14700 ug/L 100 50.0 1 09/19/16 16:10 09/20/16 15:25 7440-42-8 Calcium 192000 ug/L 100 50.0 1 09/19/16 16:10 09/20/16 15:25 7440-42-8 Calcium 0.0 0.0 1 09/19/16 16:10 09/20/16 15:25 7440-42-8 Calcium 0.0 0.0 0.0 0.0 09/19/16 16:10 09/20/16 15:25 7440-48-4 Calcium 0.0 0.0 0.0 0.0 09/19/16 16:10 09/20/16 15:25 7440-48-4 Calcium 0.0 <	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium 40.26 ug/L 1.0 0.26 1 09/19/16 16:10 09/20/16 15:25 7440-41-7 Parameter	200.7 Metals, Total	Analytical N	Method: EPA 20	00.7 Prepa	ration Meth	od: EP	A 200.7			
Boron 14700 ug/L 100 50.0 1 09/19/16 16:10 09/20/16 15:25 7440-42-8 Add-70-2 Calcium 129000 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:25 7440-470-2 Calcium 40.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:25 7440-740-8 440-70-2 4	Barium	105	ug/L	10.0	0.58	1	09/19/16 16:10	09/20/16 15:25	7440-39-3	
Calcium 192000 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:25 7440-70-2 Cobalt 40.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:25 7440-70-2 7440-84-4 Lead 42.5 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:25 7439-92-1 Lithium 28.0 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:25 7439-93-2 Lithium 200.8 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:25 7439-93-2 10.0 10.0 10.0 10.9 19/19/16 16:10 09/20/16 15:25 7439-93-2 200.8 Molybdenum 1270 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 19:27 7440-38-98-7 200.8 10.0 0.058 1 09/19/16 16:10 09/29/16 19:27 7440-36-0 20.0 20.0 0.029 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 20.0 20.0 0.039 1 09/19/16 16:10	Beryllium	<0.26	ug/L	1.0	0.26	1	09/19/16 16:10	09/20/16 15:25	7440-41-7	
Cobalt Lead 40.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:25 7440-48-4 Lead 42.5 ug/L 5.0 2.5 1 09/19/16 16:10 09/20/16 15:25 7439-92-1 7439-93-2 7439-	Boron	14700	ug/L	100	50.0	1	09/19/16 16:10	09/20/16 15:25	7440-42-8	
Lead 42.5 ug/L 5.0 2.5 1 09/19/16 16:10 09/20/16 15:25 7439-92·1 Lithium 28.0 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:25 7439-93·2 7439-93·2 Molybdenum 1270 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 15:25 7439-98·7 7439-98·7 200.8 MET ICPMS Analytical Verbod: EPA 200.8 Preparation Preparation 200.8 0.9/19/16 16:10 09/29/16 19:27 7440-36-0 4 4 4 0.9/19/16 16:10 09/29/16 19:27 7440-36-0 4 4 0.0<	Calcium	192000	ug/L	100	8.1	1	09/19/16 16:10	09/20/16 15:25	7440-70-2	
Lithium Molybdenum 28.0 ug/L ug/L 10.0 20.0 0.52 4.9 1 09/19/16 16:10 09/20/16 15:25 7439-93-2 09/20/16 15:25 7439-98-7 7439-98-7 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 1 09/19/16 16:10 09/29/16 19:27 7440-36-0 09/29/16 19:27 7440-36-0 09/29/16 19:27 7440-38-2 02/29/20/20/20/20/20/20/20/20/20/20/20/20/20/	Cobalt	<0.72	ug/L	5.0	0.72	1	09/19/16 16:10	09/20/16 15:25	7440-48-4	
Molybdenum 1270 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 15:25 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparative Method: EPA 200.8 Antimony 40.058 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:27 7440-36-0 Arsenic 1.3 ug/L 1.0 0.050 0.029 1 09/19/16 16:10 09/29/16 19:27 7440-38-2 7440-38-2 7440-38-2 7440-38-2 7440-38-2 7440-43-9 7440-4	Lead	<2.5	ug/L	5.0	2.5	1	09/19/16 16:10	09/20/16 15:25	7439-92-1	
200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.058 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:27 7440-36-0 Aresonic 1.3 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:27 7440-38-2 Cadmium 40.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:27 7440-38-2 Cadmium 40.034 ug/L 1.0 0.034 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 Selenium 40.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 Selenium 40.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 Selenium 40.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 Celenium 40.02 0.039 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 Celenium 40.02 0.039 1 09/20/16 08:30	Lithium	28.0	ug/L	10.0	4.9	1	09/19/16 16:10	09/20/16 15:25	7439-93-2	
Antimony	Molybdenum	1270	ug/L	20.0	0.52	1	09/19/16 16:10	09/20/16 15:25	7439-98-7	
Arsenic 1.3 ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 19:27 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:27 7440-43-9 Chromium <0.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:27 7420-42-2 Thallium <0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:27 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 09/20/16 08:30 09/20/16 13:45 7439-97-6 2540C Total Dissolved Solids 1010 mg/L 5.0 5.0 1 99/20/16 08:30 09/21/16 16:01 99/21/16 16:01 99/21/16 16:01 99/21/16 16:01 9	200.8 MET ICPMS	Analytical N	Method: EPA 20	00.8 Prepa	ration Meth	od: EP	A 200.8			
Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:27 7440-43-9 Chromium <0.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:27 7782-49-2 7782-49-2 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Preparation Method: EPA 7470	Antimony	<0.058	ug/L	1.0	0.058	1	09/19/16 16:10	09/29/16 19:27	7440-36-0	
Chromium <0.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:27 7440-47-3 782-49-2 7470 7782-49-2 7440-28-0 7440-28-0 7440-28-0 7492-49-2 7490-28-2 7490-28-2 7490-28-2 7490-28-2 7490-28-2 7490-28-2 7490-28-2 7490-28-2 7490-28-2 7490-28-2 7490-28-2	Arsenic	1.3	ug/L	1.0	0.10	1	09/19/16 16:10	09/29/16 19:27	7440-38-2	
Selenium	Cadmium	<0.029	ug/L	0.50	0.029	1	09/19/16 16:10	09/29/16 19:27	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:27 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 13:45 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 09/21/16 16:01 09/21/16 16:01 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B HB 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 1.0 2 10/10/16 01:11 16887-00-6 10/08/16 17:22 16984-48-8	Chromium	< 0.34	ug/L	1.0	0.34	1	09/19/16 16:10	09/29/16 19:27	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 13:45 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1010 mg/L 5.0 5.0 1 09/21/16 16:01 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 0.9/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.7 mg/L 2.0 1.0 2 10/10/16 01:11 16887-00-6 Fluoride 1.0 mg/L 0.20 0.027 1 10/08/16 17:22 16984-48-8	Selenium	<0.18	ug/L	1.0	0.18	1	09/19/16 16:10	09/29/16 19:27	7782-49-2	
Mercury docs.org/10.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 13:45 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1010 mg/L 5.0 5.0 1 09/21/16 16:01 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.7 mg/L 2.0 1.0 2 10/10/16 01:11 16887-00-6 Fluoride 1.0 mg/L 0.20 0.027 1 10/08/16 17:22 16984-48-8	Thallium	<0.50	ug/L	1.0	0.50	1	09/19/16 16:10	09/29/16 19:27	7440-28-0	
2540C Total Dissolved Solids	7470 Mercury	Analytical N	/lethod: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Total Dissolved Solids 1010 mg/L 5.0 5.0 1 09/21/16 16:01 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.7 mg/L 2.0 1.0 2 10/10/16 01:11 16887-00-6 Fluoride 1.0 mg/L 0.20 0.027 1 10/08/16 17:22 16984-48-8	Mercury	<0.039	ug/L	0.20	0.039	1	09/20/16 08:30	09/20/16 13:45	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 0.9/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.7 mg/L 2.0 1.0 2 10/10/16 01:11 16887-00-6 10/08/16 17:22 16984-48-8 Fluoride 1.0 mg/L 0.20 0.027 1 1 10/08/16 17:22 16984-48-8	2540C Total Dissolved Solids	Analytical N	Method: SM 25	40C						
pH at 25 Degrees C 8.1 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.7 mg/L 2.0 1.0 2 10/10/16 01:11 16887-00-6 Fluoride 1.0 mg/L 0.20 0.027 1 10/08/16 17:22 16984-48-8	Total Dissolved Solids	1010	mg/L	5.0	5.0	1		09/21/16 16:01		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.7 mg/L 2.0 1.0 2 10/10/16 01:11 16887-00-6 Fluoride 1.0 mg/L 0.20 0.027 1 10/08/16 17:22 16984-48-8	4500H+ pH, Electrometric	Analytical N	Method: SM 45	00-H+B						
Chloride 19.7 mg/L 2.0 1.0 2 10/10/16 01:11 16887-00-6 Fluoride 1.0 mg/L 0.20 0.027 1 10/08/16 17:22 16984-48-8	pH at 25 Degrees C	8.1	Std. Units	0.10	0.10	1		09/23/16 11:25		H6
Fluoride 1.0 mg/L 0.20 0.027 1 10/08/16 17:22 16984-48-8	300.0 IC Anions 28 Days	Analytical N	Method: EPA 30	0.00						
Fluoride 1.0 mg/L 0.20 0.027 1 10/08/16 17:22 16984-48-8	Chloride	19.7	mg/L	2.0	1.0	2		10/10/16 01:11	16887-00-6	
Ç	Fluoride	1.0	J	0.20	0.027			10/08/16 17:22	16984-48-8	
Juliate 320 IIIQ/L JU.U 1.1 JU 10/10/16 01:33 14808-79-8	Sulfate	528	mg/L	50.0	7.7	50		10/10/16 01:53	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

200.7 Metals, Total	Sample: S-UMW-4D	Lab ID: 60227403021		Collected: 09/14/16 14:33			Received: 09/16/16 04:30 Matrix: Water			
Barium 81.2 ug/L 10.0 0.58 1 09/19/16 16:10 09/20/16 15:29 7440-39-3 Perplitum 40.26 ug/L 10.0 0.26 1 09/19/16 16:10 09/20/16 15:29 7440-41-7 Perport Perport <th< th=""><th>Parameters</th><th>Results</th><th>Units</th><th>PQL</th><th>MDL</th><th>DF</th><th>Prepared</th><th>Analyzed</th><th>CAS No.</th><th>Qual</th></th<>	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Renyllium	200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron 24100 ug/L 100 50.0 1 09/19/16 16:10 09/20/16 15:29 7440-42-8 Calcium 176000 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:29 7440-70-2 Calcium 40,72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:29 7440-48-4 Lead 6.3 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:29 7439-92-1 1 09/19/16 16:10 09/20/16 15:29 7439-92-1 1 09/19/16 16:10 09/20/16 15:29 7439-93-2 1 09/19/16 16:10 09/20/16 15:29 7439-93-2 1 09/19/16 16:10 09/20/16 15:29 7439-93-2 1 09/19/16 16:10 09/20/16 15:29 7439-93-2 1 09/19/16 16:10 09/20/16 15:29 7439-93-2 1 09/19/16 16:10 09/20/16 15:29 7439-93-2 1 09/19/16 16:10 09/20/16 19:33 7440-38-2 2 2 1 09/19/16 16:10 09/20/16 19:33 7440-38-2 2 2 0 09/20/16 16:10 09/20/16 19:33	Barium	81.2	ug/L	10.0	0.58	1	09/19/16 16:10	09/20/16 15:29	7440-39-3	
Calcium 176000 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:29 7440-70-2 Chall 40.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:29 7440-70-2 7440-48-4 Lead 6.3 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:29 7440-99-2 140-99-14 140-99-19/16 16:10 09/20/16 15:29 7440-99-2 140-99-14 140-99-19/16 16:10 09/20/16 15:29 7430-99-2 140-99-19/16 16:10 09/20/16 15:29 7439-99-2 140-99-19/16 16:10 09/20/16 15:29 7439-99-2 140-99-19/16 16:10 09/20/16 15:29 7439-99-2 140-99-19/16 16:10 09/20/16 15:29 7439-99-2 140-99-19/16 16:10 09/20/16 15:29 7439-99-2 140-99-19/16 16:10 09/20/16 15:29 7439-99-2 140-99-19/16 16:10 09/20/16 15:29 7439-99-2 140-99-19/16 16:10 09/20/16 16:10 09/20/16 19:33 7440-36-0 140-99-19/16 16:10 09/20/16 19:33 7440-36-0 140-99-19/16 16:10 09/20/16 19:33 7440-38-0 140-99-19/16 16:10 09/20/16 19:33 7440-38-0 140-99/19/16	Beryllium	<0.26	ug/L	1.0	0.26	1	09/19/16 16:10	09/20/16 15:29	7440-41-7	
Cobalt Lead 40.72 (B.3) ug/L (B.3) 5.0 (B.3) 0.72 (B.3) 1 (B.3) 09/19/16 16:10 (B.10) 09/20/16 15:29 (B.12) 7440-48-4 (B.12) 7430-93-2 (B.12) 7440-36-2 (B.12) 7430-93-2 (B.12) 7440-36-2 (B.12) 7440-43-3	Boron	24100	ug/L	100	50.0	1	09/19/16 16:10	09/20/16 15:29	7440-42-8	
Lead 6.3 ug/L 5.0 2.5 1 09/19/16 16:10 09/20/16 15:29 7439-92-1 1439-93-2 1439-93-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3 1440-33-3	Calcium	176000	ug/L	100	8.1	1	09/19/16 16:10	09/20/16 15:29	7440-70-2	
Lithium Molybdenum 38.0 ug/L vg/L vg/L 10.0 vg/L vg/L vg/L 1 vg/L vg/L vg/L vg/L vg/L vg/L vg/L vg/L	Cobalt	<0.72	ug/L	5.0	0.72	1	09/19/16 16:10	09/20/16 15:29	7440-48-4	
Molybdenum 7200 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 15:29 7439-98-7 HG 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 0.059 0.059 <t< td=""><td>Lead</td><td>6.3</td><td>ug/L</td><td>5.0</td><td>2.5</td><td>1</td><td>09/19/16 16:10</td><td>09/20/16 15:29</td><td>7439-92-1</td><td></td></t<>	Lead	6.3	ug/L	5.0	2.5	1	09/19/16 16:10	09/20/16 15:29	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony Arsenic 0.20J ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:33 7440-38-2 Cadmium 0.45J ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:33 7440-38-2 Chromium 0.034 ug/L 1.0 0.034 1 09/19/16 16:10 09/29/16 19:33 7440-38-2 Cadmium 0.27J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.050 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.050 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.050 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.050 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.050 1 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 0.27J ug/L 0.20 0.39 1 09/20/16 08:30 09/20/16 19:30 7440-48-1 Selenium 0.27J ug/L 0.27J ug/L 0.27J ug/	Lithium	38.0	ug/L	10.0	4.9	1	09/19/16 16:10	09/20/16 15:29	7439-93-2	
Antimony Antimony Antimony Antimony Arsenic 0.20J ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:33 7440-36-0 Arsenic 0.20J ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:33 7440-38-2 Cadmium 0.45J ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:33 7440-38-2 Cadmium 40.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-38-9 Chromium 40.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Chromium 40.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Chromium 40.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Selenium 40.50 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Selenium 40.50 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Selenium 40.50 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Selenium 40.50 ug/L 470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Method: SM 2540C 2540C Total Dissolved Solids Analytical Method: SM 2540C Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.7 mg/L 2.0 1.0 2 10/10/16 02:36 16887-00-6 Fluoride 0.84 mg/L 0.20 0.027 1 1 10/08/16 17:51 16984-48-8	Molybdenum	7200	ug/L	20.0	0.52	1	09/19/16 16:10	09/20/16 15:29	7439-98-7	
Arsenic 0.20J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 19:33 7440-38-2 Cadmium 0.45J ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Chromium 40.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Selenium 0.250 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Selenium 0.250 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Thailium Analytical Wethod: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 09/20/16 08:30 09/20/16 14:05 7439-97-6 2540C Total Dissolved Solids 1110 mg/L 5.0 5.0 1 09/20/16 08:30	200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Cadmium 0.45J ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:33 7440-43-9 Chromium 40.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Selenium 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 Thallium 40.50 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 TATO Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1110 mg/L 5.0 5.0 1 9/20/16 08:30 09/20/16 14:05 7439-97-6 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 <td>Antimony</td> <td><0.058</td> <td>ug/L</td> <td>1.0</td> <td>0.058</td> <td>1</td> <td>09/19/16 16:10</td> <td>09/29/16 19:33</td> <td>7440-36-0</td> <td></td>	Antimony	<0.058	ug/L	1.0	0.058	1	09/19/16 16:10	09/29/16 19:33	7440-36-0	
Chromium <0.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:33 7440-47-3 7582-49-2 7470 Mercury 0.27J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:33 7782-49-2 7782-49-2 77470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 0.039 1 09/20/16 08:30 09/20/16 19:33 7440-28-0 7440-28-0 7440 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 0.039 1 09/20/16 08:30 09/20/16 14:05 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 09/20/16 08:30 09/20/16 14:05 7439-97-6 7450-97-6 <td>Arsenic</td> <td>0.20J</td> <td>ug/L</td> <td>1.0</td> <td>0.10</td> <td>1</td> <td>09/19/16 16:10</td> <td>09/29/16 19:33</td> <td>7440-38-2</td> <td></td>	Arsenic	0.20J	ug/L	1.0	0.10	1	09/19/16 16:10	09/29/16 19:33	7440-38-2	
Selenium 0.27J ug/L 1.0 0.18 b 1 09/19/16 16:10 b 09/29/16 19:33 b 7782-49-2 b Thallium 40.50 ug/L 1.0 0.50 ug/L 1.0 09/19/16 16:10 b 09/29/16 19:33 b 7440-28-0 7470 Mercury Analytical Method: EPA 7470 b Preparation Method: EPA 7470 b EPA 7470 b 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s	Cadmium	0.45J	ug/L	0.50	0.029	1	09/19/16 16:10	09/29/16 19:33	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:33 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 14:05 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 5.0 1 09/21/16 16:02 99/21/16 16:02 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B H6 PH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 1.0 2 10/10/16 02:36 16887-00-6 10/08/16 17:51 16984-48-8	Chromium	< 0.34	ug/L	1.0	0.34	1	09/19/16 16:10	09/29/16 19:33	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 14:05 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1110 mg/L 5.0 5.0 1 09/21/16 16:02 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride Fluoride 0.84 mg/L 0.20 0.027 1 10/10/16 02:36 16887-00-6 16884-48-8	Selenium	0.27J	ug/L	1.0	0.18	1	09/19/16 16:10	09/29/16 19:33	7782-49-2	
Mercury	Thallium	<0.50	ug/L	1.0	0.50	1	09/19/16 16:10	09/29/16 19:33	7440-28-0	
2540C Total Dissolved Solids	7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Total Dissolved Solids 1110 mg/L 5.0 5.0 1 09/21/16 16:02 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.7 mg/L 2.0 1.0 2 10/10/16 02:36 16887-00-6 Fluoride 0.84 mg/L 0.20 0.027 1 10/08/16 17:51 16984-48-8	Mercury	<0.039	ug/L	0.20	0.039	1	09/20/16 08:30	09/20/16 14:05	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.7 mg/L 2.0 1.0 2 10/10/16 02:36 16887-00-6 Fluoride 0.84 mg/L 0.20 0.027 1 10/08/16 17:51 16984-48-8	2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
pH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/23/16 11:25 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.7 mg/L 2.0 1.0 2 10/10/16 02:36 16887-00-6 Fluoride 0.84 mg/L 0.20 0.027 1 10/08/16 17:51 16984-48-8	Total Dissolved Solids	1110	mg/L	5.0	5.0	1		09/21/16 16:02		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 24.7 mg/L 2.0 1.0 2 10/10/16 02:36 16887-00-6 Fluoride 0.84 mg/L 0.20 0.027 1 10/08/16 17:51 16984-48-8	4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
Chloride 24.7 mg/L 2.0 1.0 2 10/10/16 02:36 16887-00-6 Fluoride 0.84 mg/L 0.20 0.027 1 10/08/16 17:51 16984-48-8	pH at 25 Degrees C	7.4	Std. Units	0.10	0.10	1		09/23/16 11:25		H6
Fluoride 0.84 mg/L 0.20 0.027 1 10/08/16 17:51 16984-48-8	300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Fluoride 0.84 mg/L 0.20 0.027 1 10/08/16 17:51 16984-48-8	Chloride	24.7	mg/L	2.0	1.0	2		10/10/16 02:36	16887-00-6	
3	Fluoride	0.84	J		0.027			10/08/16 17:51	16984-48-8	
Sulfate 624 mg/L 50.0 7.7 50 10/10/16 02:50 14808-79-8	Sulfate	624	mg/L	50.0	7.7	50				



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Sample: S-BMW-1D	Lab ID:	60227403022	Collected	d: 09/14/16	3 13:13	Received: 09/	16/16 04:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	ration Meth	od: EP	A 200.7			
Barium	309	ug/L	10.0	0.58	1	09/19/16 16:10	09/20/16 15:32	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	09/19/16 16:10	09/20/16 15:32	7440-41-7	
Boron	240	ug/L	100	50.0	1	09/19/16 16:10	09/20/16 15:32	7440-42-8	
Calcium	123000	ug/L	100	8.1	1	09/19/16 16:10	09/20/16 15:32	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	09/19/16 16:10	09/20/16 15:32	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	09/19/16 16:10	09/20/16 15:32	7439-92-1	
Lithium	12.9	ug/L	10.0	4.9	1	09/19/16 16:10	09/20/16 15:32	7439-93-2	
Molybdenum	6.4J	ug/L	20.0	0.52	1	09/19/16 16:10	09/20/16 15:32	7439-98-7	В
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	ration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	09/19/16 16:10	09/29/16 19:36	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1	09/19/16 16:10	09/29/16 19:36	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	09/19/16 16:10	09/29/16 19:36	7440-43-9	
Chromium	0.41J	ug/L	1.0	0.34	1	09/19/16 16:10	09/29/16 19:36	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	09/19/16 16:10	09/29/16 19:36	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	09/19/16 16:10	09/29/16 19:36	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepai	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	09/20/16 08:30	09/20/16 14:07	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	506	mg/L	5.0	5.0	1		09/21/16 16:03		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		09/23/16 11:25		H6



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Sample: S-UMW-DUP-1	Lab ID: 6	0227403023	Collected	d: 09/14/16	08:00	Received: 09/	/16/16 04:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical M	lethod: EPA 20	00.7 Prepa	ration Meth	od: EP	A 200.7			
Barium	102	ug/L	10.0	0.58	1	09/19/16 16:10	09/20/16 15:39	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	09/19/16 16:10	09/20/16 15:39	7440-41-7	
Boron	14200	ug/L	100	50.0	1	09/19/16 16:10	09/20/16 15:39	7440-42-8	
Calcium	188000	ug/L	100	8.1	1	09/19/16 16:10	09/20/16 15:39	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	09/19/16 16:10	09/20/16 15:39	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	09/19/16 16:10	09/20/16 15:39	7439-92-1	
Lithium	28.1	ug/L	10.0	4.9	1	09/19/16 16:10	09/20/16 15:39	7439-93-2	
Molybdenum	1250	ug/L	20.0	0.52	1	09/19/16 16:10	09/20/16 15:39	7439-98-7	
200.8 MET ICPMS	Analytical M	lethod: EPA 20	00.8 Prepa	ration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	09/19/16 16:10	09/29/16 19:39	7440-36-0	
Arsenic	1.4	ug/L	1.0	0.10	1	09/19/16 16:10	09/29/16 19:39	7440-38-2	
Cadmium	0.061J	ug/L	0.50	0.029	1	09/19/16 16:10	09/29/16 19:39	7440-43-9	
Chromium	0.77J	ug/L	1.0	0.34	1	09/19/16 16:10	09/29/16 19:39	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	09/19/16 16:10	09/29/16 19:39	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	09/19/16 16:10	09/29/16 19:39	7440-28-0	
7470 Mercury	Analytical M	1ethod: EPA 74	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	09/20/16 08:30	09/20/16 14:10	7439-97-6	
2540C Total Dissolved Solids	Analytical M	lethod: SM 25	40C						
Total Dissolved Solids	978	mg/L	5.0	5.0	1		09/21/16 16:04		
4500H+ pH, Electrometric	Analytical M	lethod: SM 45	00-H+B						
pH at 25 Degrees C	8.0	Std. Units	0.10	0.10	1		09/20/16 10:55		H6
300.0 IC Anions 28 Days	Analytical M	1ethod: EPA 30	0.00						
Chloride	20.1	mg/L	2.0	1.0	2		10/10/16 03:04	16887-00-6	
Fluoride	1.1	mg/L	0.20	0.027	1		10/08/16 18:05	16984-48-8	
Sulfate	516	mg/L	50.0	7.7	50		10/10/16 03:18	14808-79-8	
Conato	310	111g/L	50.0	1.1	50		10/10/10 00.10	1-7000-73-0	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Sample: S-UMW-3D	Lab ID: 60227403020		Collected: 09/14/16 14:22			Received: 09/16/16 04:30 Matrix: Water			
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical I	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	71.8	ug/L	10.0	0.58	1	09/19/16 16:10	09/20/16 15:27	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	09/19/16 16:10	09/20/16 15:27	7440-41-7	
Boron	25200	ug/L	100	50.0	1	09/19/16 16:10	09/20/16 15:27	7440-42-8	
Calcium	220000	ug/L	100	8.1	1	09/19/16 16:10	09/20/16 15:27	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	09/19/16 16:10	09/20/16 15:27	7440-48-4	
Lead	3.1J	ug/L	5.0	2.5	1	09/19/16 16:10	09/20/16 15:27	7439-92-1	
Lithium	18.4	ug/L	10.0	4.9	1	09/19/16 16:10	09/20/16 15:27	7439-93-2	
Molybdenum	4280	ug/L	20.0	0.52	1	09/19/16 16:10	09/20/16 15:27	7439-98-7	
200.8 MET ICPMS	Analytical I	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	09/19/16 16:10	09/29/16 19:30	7440-36-0	
Arsenic	0.29J	ug/L	1.0	0.10	1	09/19/16 16:10	09/29/16 19:30	7440-38-2	
Cadmium	0.25J	ug/L	0.50	0.029	1	09/19/16 16:10	09/29/16 19:30	7440-43-9	
Chromium	<0.34	ug/L	1.0	0.34	1	09/19/16 16:10	09/29/16 19:30	7440-47-3	
Selenium	0.30J	ug/L	1.0	0.18	1	09/19/16 16:10	09/29/16 19:30	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	09/19/16 16:10	09/29/16 19:30	7440-28-0	
7470 Mercury	Analytical I	Method: EPA 74	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	09/20/16 08:30	09/20/16 13:59	7439-97-6	
2540C Total Dissolved Solids	Analytical I	Method: SM 25	40C						
Total Dissolved Solids	1170	mg/L	5.0	5.0	1		09/21/16 16:02		
4500H+ pH, Electrometric	Analytical I	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.9	Std. Units	0.10	0.10	1		09/23/16 11:25		H6
300.0 IC Anions 28 Days	Analytical I	Method: EPA 30	0.00						
Chloride	22.4	mg/L	2.0	1.0	2		10/10/16 02:07	16887-00-6	
Fluoride	1.0	mg/L	0.20	0.027	1		10/08/16 17:36	16984-48-8	
Sulfate	684	mg/L	50.0	7.7	50		10/10/16 02:21		
		g/ =	30.0				. 5, 15, 10 02.21	. 1000 70 0	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Sample: S-UMW-FB-1	Lab ID: 60	0227900008	Collected	d: 09/14/10	6 14:15	Received: 09/	16/16 04:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	ethod: EPA 20	00.7 Prepa	ration Meth	nod: EP/	A 200.7			
Barium	<0.58	ug/L	10.0	0.58	1	09/19/16 16:10	09/20/16 15:41	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	09/19/16 16:10	09/20/16 15:41	7440-41-7	
Boron	<50.0	ug/L	100	50.0	1	09/19/16 16:10	09/20/16 15:41	7440-42-8	
Calcium	34.0J	ug/L	100	8.1	1	09/19/16 16:10	09/20/16 15:41	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	09/19/16 16:10	09/20/16 15:41	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	09/19/16 16:10	09/20/16 15:41	7439-92-1	
Lithium	<4.9	ug/L	10.0	4.9	1	09/19/16 16:10	09/20/16 15:41	7439-93-2	
Molybdenum	1.2J	ug/L	20.0	0.52	1	09/19/16 16:10	09/20/16 15:41	7439-98-7	В
200.8 MET ICPMS	Analytical Me	ethod: EPA 20	00.8 Prepa	ration Meth	nod: EP/	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	09/19/16 16:10	09/29/16 19:55	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1	09/19/16 16:10	09/29/16 19:55	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	09/19/16 16:10	09/29/16 19:55	7440-43-9	
Chromium	< 0.34	ug/L	1.0	0.34	1	09/19/16 16:10	09/29/16 19:55	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	09/19/16 16:10	09/29/16 19:55	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	09/19/16 16:10	09/29/16 19:55	7440-28-0	
7470 Mercury	Analytical Me	ethod: EPA 74	470 Prepar	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	09/20/16 08:30	09/20/16 14:12	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	ethod: SM 25	40C						
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		09/21/16 16:04		
4500H+ pH, Electrometric	Analytical Me	ethod: SM 45	00-H+B						
pH at 25 Degrees C	6.0 S	td. Units	0.10	0.10	1		09/23/16 11:25		H6
300.0 IC Anions 28 Days	Analytical Me	ethod: EPA 30	0.00						
Chloride	<0.50	mg/L	1.0	0.50	1		10/08/16 18:19	16887-00-6	
Fluoride	<0.027	mg/L	0.20	0.027	1		10/08/16 18:19		
Sulfate	<0.15	mg/L	1.0	0.15	1		10/08/16 18:19		
	10	<i></i> –		30	•				



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Parameters Results Units PQL MDL DF Prepared Analyzed CAS No. Qrepared CAS No. Qrepar	Sample: S-UMW-5D	Lab ID:	60227900009	Collecte	d: 09/16/1	6 09:55	Received: 09/	16/16 20:45 Ma	atrix: Water	
Barium 300 ug/L 5.0 0.58 1 09/19/16 16:10 09/20/16 15:50 7440-39-3 Perplium 40.26 ug/L 1.0 0.26 1 09/19/16 16:10 09/20/16 15:50 7440-41-7 Perplium 40.0 0.0 0.0 1 09/19/16 16:10 09/20/16 15:50 7440-41-7 Perplium 40.0 0.0 0.0 1 09/19/16 16:10 09/20/16 15:50 7440-42-8 Perplium 40.0 0.0	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Benyllium	200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Boron 11400 ug/L 100 50.0 1 09/19/16 16:10 09/20/16 15:50 7440-42-8 Add-42-8 Calcium 90400 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:50 7440-70-2 Add-048-8 Add-048-8 Lead 40.72 ug/L 5.0 0.25 1 09/19/16 16:10 09/20/16 15:50 7440-78-8 Add-048-8 Lead 42.5 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:50 7439-93-2 Add-048-8 Lead 42.5 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:50 7439-93-2 Add-048-9 1 09/19/16 16:10 09/20/16 15:50 7439-93-2 Add-048-9 1 09/19/16 16:10 09/20/16 15:50 7439-93-2 Add-049-93-93-2 Add-049-93-93-2 <td>Barium</td> <td>300</td> <td>ug/L</td> <td>5.0</td> <td>0.58</td> <td>1</td> <td>09/19/16 16:10</td> <td>09/20/16 15:50</td> <td>7440-39-3</td> <td></td>	Barium	300	ug/L	5.0	0.58	1	09/19/16 16:10	09/20/16 15:50	7440-39-3	
Calcium 90400 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:50 7440-70-2 Cobalt 40.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:50 7440-84-4 Lead 42.5 ug/L 5.0 2.5 1 09/19/16 16:10 09/20/16 15:50 7439-92-1 Lithium 31.0 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:50 7439-98-7 200.8 MET ICPMS Analytical EPA 200.8 Prepartition No.52 1 09/19/16 16:10 09/20/16 15:50 7439-98-7 200.8 MET ICPMS Analytical 1.0 0.058 1 09/19/16 16:10 09/20/16 20:02 7440-36-0 Antimony < 0.058	Beryllium	<0.26	ug/L	1.0	0.26	1	09/19/16 16:10	09/20/16 15:50	7440-41-7	
Cobalt Lead 40.72 kg/l 1.0g/l 5.0 kg/l 1.0g/l 9/19/16 16:10 kg/l 09/20/16 15:50 kg/l 7440-48-4 kg/l 4.0g/l 7439-92-1 kg/l 7440-36-0 kg/l	Boron	11400	ug/L	100	50.0	1	09/19/16 16:10	09/20/16 15:50	7440-42-8	
Lead 42.5 ug/L 5.0 2.5 1 09/19/16 16:10 09/20/16 15:50 7439-92-1 Lithium 31.0 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:50 7439-93-2 Molybdenum 259 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:50 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 20:02 7440-36-0 Arsenic 0.51J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 20:02 7440-38-2 Cadminim <0.029 ug/L 1.0 0.04 1 09/19/16 16:10 09/29/16 20:02 7440-43-3 Selenium 0.64J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 20:02 7440-43-3 Tablium 4.0 0.20J ug/L 1.0 0.039	Calcium	90400	ug/L	100	8.1	1	09/19/16 16:10	09/20/16 15:50	7440-70-2	
Lithium Molybdenum 31.0 259 ug/L 259 10.0 20.0 4.9 20.0 1 09/19/16 16:10 09/20/16 16:50 09/20/16 15:50 7439-93-2 7439-98-7 7439-93-2 7439-93-2 7439-98-7 200.8 MET ICPMS Analytical wethod: EPA 200.8 Prepartor Method: EPA 200.8 Prepartor Method: EPA 200.8 1 09/19/16 16:10 09/29/16 20:02 7440-36-0 09/29/16 20:02 7440-36-0 09/29/16 20:02 7440-38-2 09/29/16 20:	Cobalt	<0.72	ug/L	5.0	0.72	1	09/19/16 16:10	09/20/16 15:50	7440-48-4	
Molybdenum 259 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 15:50 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 2018 Preparation Method: EPA 2018 Ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 20:02 7440-36-0 Antimony <0.058 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 20:02 7440-36-2 Arsenic 0.51 J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 20:02 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 20:02 7440-38-2 Chromium 0.64J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 20:02 7440-43-9 Chromium 0.20J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 20:02 7740-49-2 Tabllium -0.50 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 14:23 7439-97-6	Lead	<2.5	ug/L	5.0	2.5	1	09/19/16 16:10	09/20/16 15:50	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony Arsenic 0.51J ug/L 0.50 0.058 Arsenic 0.51J ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 20:02 7440-36-2 7440-	Lithium	31.0	ug/L	10.0	4.9	1	09/19/16 16:10	09/20/16 15:50	7439-93-2	
Antimony Ansenic O.513	Molybdenum	259	ug/L	20.0	0.52	1	09/19/16 16:10	09/20/16 15:50	7439-98-7	
Arsenic 0.51J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 20:02 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 20:02 7440-43-9 Chromium 0.64J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 20:02 7440-47-3 Selenium 0.20J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 20:02 7440-47-3 Selenium 0.20J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 20:02 7440-47-3 Selenium 0.20J ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 20:02 7440-28-0 Total Mercury Analytical Method: EPA 7470 Preparation Method: SM 2540C 1 09/20/16 08:30 09/20/16 14:23 7439-97-6 Total Dissolved Solids 436 mg/L 5.0 5.0 1 99/20/16 08:30 09/23/16 10:55 1 1 <th< td=""><td>200.8 MET ICPMS</td><td>Analytical</td><td>Method: EPA 20</td><td>00.8 Prepa</td><td>aration Meth</td><td>nod: EP</td><td>A 200.8</td><td></td><td></td><td></td></th<>	200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 20:02 7440-43-9 Chromium 0.64J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 20:02 7440-47-3 Selenium 0.20J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 20:02 7782-49-2 Thallium -0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 20:02 7782-49-2 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Method: SM 2540C 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 4500-H+B 4500H+ pH, Electrometric Analytical Method: EPA 300.0 PH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 2.0 1	Antimony	<0.058	ug/L	1.0	0.058	1	09/19/16 16:10	09/29/16 20:02	7440-36-0	
Chromium 0.64J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 20:02 7440-47-3 Selenium 0.20J ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 20:02 7782-49-2 Thallium 4.050 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 20:02 7440-28-0 7470 Mercury Analytical Wethod: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Wethod: SM 2540C Total Dissolved Solids Analytical Wethod: SM 2540C Total Dissolved Solids Analytical Wethod: SM 4500-H+B PH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	Arsenic	0.51J	ug/L	1.0	0.10	1	09/19/16 16:10	09/29/16 20:02	7440-38-2	
Selenium 0.20J ug/L 1.0 0.18 of policy 1 of policy 09/19/16 16:10 of policy 09/29/16 20:02 of policy 7782-49-2 of policy 7440-28-0 7430-97-6 7450-97-6	Cadmium	< 0.029	ug/L	0.50	0.029	1	09/19/16 16:10	09/29/16 20:02	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 20:02 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 14:23 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 5.0 1 09/23/16 10:55 99/23/16 10:55 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH PH 2000 1C Anions 28 Days Analytical Method: EPA 300.0 1000 1.0 1 09/25/16 20:20 10/09/16 10:33 16887-00-6 Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	Chromium	0.64J	ug/L	1.0	0.34	1	09/19/16 16:10	09/29/16 20:02	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 14:23 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 436 mg/L 5.0 5.0 1 09/23/16 10:55 H 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B DH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.5 Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	Selenium	0.20J	ug/L	1.0	0.18	1	09/19/16 16:10	09/29/16 20:02	7782-49-2	
Mercury c0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 14:23 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 436 mg/L 5.0 5.0 1 09/23/16 10:55 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 0.9/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	Thallium	<0.50	ug/L	1.0	0.50	1	09/19/16 16:10	09/29/16 20:02	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 436 mg/L 5.0 5.0 1 09/23/16 10:55 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	7470 Mercury	Analytical	Method: EPA 74	470 Prepa	ration Meth	od: EPA	7470			
Total Dissolved Solids	Mercury	<0.039	ug/L	0.20	0.039	1	09/20/16 08:30	09/20/16 14:23	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
pH at 25 Degrees C 7.4 Std. Units 0.10 0.10 1 09/25/16 20:20 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	Total Dissolved Solids	436	mg/L	5.0	5.0	1		09/23/16 10:55		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
Chloride 25.5 mg/L 2.0 1.0 2 10/09/16 10:33 16887-00-6	pH at 25 Degrees C	7.4	Std. Units	0.10	0.10	1		09/25/16 20:20		H6
y	300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00						
· · · · · · · · · · · · · · · · · · ·	Chloride	25.5	mg/L	2.0	1.0	2		10/09/16 10:33	16887-00-6	
• • • • • • • • • • • • • • • • • • •	Fluoride	0.63	J		0.027			10/08/16 19:47	16984-48-8	
Sulfate 38.6 mg/L 5.0 0.77 5 10/09/16 11:16 14808-79-8			•							



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Parameters Results Units PQL MDL DF Prepared Analyzed CAS No. 200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Borname 117 ug/L 5.0 0.58 1 09/19/16 16:10 09/20/16 15:43 7440-39-3 Beryllium 40.26 ug/L 1.0 0.26 1 09/19/16 16:10 09/20/16 15:43 7440-41-7 Boron 802 ug/L 100 5.0 1 09/19/16 16:10 09/20/16 15:43 7440-74-28 Calcium 74100 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:43 7440-70-2 Cobalt <0.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:43 7440-70-2 Lead <2.5 ug/L 5.0 0.25 1 09/19/16 16:10 09/20/16 15:43 7440-70-8-4 Lead <2.5 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:43 7439-92-1		atrix: Water	16/16 20:45 Ma	Received: 09/	10:35	: 09/16/16	Collected	60227900010	Lab ID:	Sample: S-UMW-6D	
Barium 117 ug/L 5.0 0.58 1 09/19/16 16:10 09/20/16 15:43 7440-39-3 Beryllium 40.26 ug/L 1.0 0.26 1 09/19/16 16:10 09/20/16 15:43 7440-17-7 Boron 802 ug/L 100 5.0 1 09/19/16 16:10 09/20/16 15:43 7440-42-8 Calcium 74100 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:43 7440-70-2 Cobalt <0.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:43 7440-70-2 Cobalt <0.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:43 7440-70-2 Cobalt <0.72 ug/L 1.0 0.72 1 09/19/16 16:10 09/20/16 15:43 7440-48-8 Lead <2.5 ug/L 1.0 0.1 09/19/16 16:10 09/20/16 15:43 7440-38-2 Lead <2.5 ug/L 1.0 0.058 1	Qual	CAS No.	Analyzed	Prepared	DF	MDL	PQL _	Units	Results	Parameters	
Beryllium				200.7	od: EPA	ation Meth	0.7 Prepai	Method: EPA 20	Analytical	200.7 Metals, Total	
Boron 802 claim ug/L mode 100 mode 50.0 mode 1 mode 09/19/16 16:10 mode 09/20/16 15:43 mode 7440-42-8 mode Calcium 74100 mg/L mode 100 mg/L mode 8.1 mode 1 mode 09/19/16 16:10 mode 09/20/16 15:43 mode 7440-70-2 mode Cobalt clead <0.72 mg/L mode		7440-39-3	09/20/16 15:43	09/19/16 16:10	1	0.58	5.0	ug/L	117	Barium	
Calcium 74100 ug/L 100 8.1 1 09/19/16 16:10 09/20/16 15:43 7440-70-2 Cobalt <0.72		7440-41-7	09/20/16 15:43	09/19/16 16:10	1	0.26	1.0	ug/L	<0.26	Beryllium	
Cobalt <0.72 ug/L 5.0 0.72 1 09/19/16 16:10 09/20/16 15:43 7440-48-4 Lead <2.5 ug/L 5.0 2.5 1 09/19/16 16:10 09/20/16 15:43 7439-92-1 Lithium 12.0 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:43 7439-93-2 Molybdenum 112 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 15:43 7439-93-2 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 0.9/19/16 16:10 09/29/16 19:42 7440-36-0 Arsenic 0.34 J ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:42 7440-38-2 Cadmium <0.029 ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 19:42 7440-43-3 Selenium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:42 7440-43-3 Selenium <0.18		7440-42-8	09/20/16 15:43	09/19/16 16:10	1	50.0	100	ug/L	802	Boron	
Lead <2.5 ug/L 5.0 2.5 1 09/19/16 16:10 09/20/16 15:43 7439-92-1 Lithium 12.0 ug/L 10.0 4.9 1 09/19/16 16:10 09/20/16 15:43 7439-93-2 Molybdenum 112 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 15:43 7439-93-2 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 1 09/19/16 16:10 09/29/16 19:42 7440-36-0 Antimony <0.058 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:42 7440-36-0 Arsenic 0.34J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 19:42 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:42 7440-43-3 Selenium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:42 7440-43-3 Tablium <t< td=""><td>M1</td><td>7440-70-2</td><td>09/20/16 15:43</td><td>09/19/16 16:10</td><td>1</td><td>8.1</td><td>100</td><td>ug/L</td><td>74100</td><td>Calcium</td></t<>	M1	7440-70-2	09/20/16 15:43	09/19/16 16:10	1	8.1	100	ug/L	74100	Calcium	
Lithium Molybdenum 12.0 ug/L ug/L ug/L 10.0 ug/L 20.0 4.9 0.52 ug/l 09/19/16 16:10 09/20/16 15:43 07439-93-2 7439-93-2 7439-93-2 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 200.8 Preparation Method: EPA 200.8 Antimony Arsenic 40.058 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:42 7440-36-0 0.34J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 19:42 7440-38-2 0.34J ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:42 7440-38-2 0.34J ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:42 7440-38-2 0.34J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:42 7440-38-2 0.34J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:42 7440-38-3 0.34J ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:42 7440-38-3 0.34J ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:42 7440-38-3 0.34J ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:42 7440-38-3 0.34J ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:42 7440-38-3 0.34J ug/L 0.50 0.50 1 09/19/16 16:10 09/29/16 19:42 7440-38-3 0.34J ug/L 0.50 0.50 1 09/19/16 16:10 09/29/16 19:42 7440-38-3 0.34J ug/L 0.50 0.50 1 09/19/16 16:10 09/29/16 19:42 7440-38-3 0.34J ug/L 0.50 0.039 1 09/20/16 08:30 09/20/16 14:16 7439-97-6 0.34J ug/L 0.50 0.039 1 09/20/16 08:30 09/20/16 14:16 7439-97-6 0.34J ug/L 0.50 0.039 1 09/20/16 08:30 09/20/16 14:16 7439-97-6 0.34J ug/L 0.50 0.34J ug/L 0.50 0.039 1 09/20/16 08:30 09/20/16 10:55 09/23/1		7440-48-4	09/20/16 15:43	09/19/16 16:10	1	0.72	5.0	ug/L	<0.72	Cobalt	
Molybdenum 112 ug/L 20.0 0.52 1 09/19/16 16:10 09/20/16 15:43 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony < 0.058 ug/L 1.0 0.058 1 09/19/16 16:10 09/29/16 19:42 7440-38-0 0.04 0.1 0.9/19/16 16:10 09/29/16 19:42 7440-38-2 0.04 0.0 0.10 1 09/19/16 16:10 09/29/16 19:42 7440-38-2 0.0		7439-92-1	09/20/16 15:43	09/19/16 16:10	1	2.5	5.0	ug/L	<2.5	Lead	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058	<td></td> <td>7439-93-2</td> <td>09/20/16 15:43</td> <td>09/19/16 16:10</td> <td>1</td> <td>4.9</td> <td>10.0</td> <td>ug/L</td> <td>12.0</td> <td>Lithium</td>		7439-93-2	09/20/16 15:43	09/19/16 16:10	1	4.9	10.0	ug/L	12.0	Lithium
Antimony		7439-98-7	09/20/16 15:43	09/19/16 16:10	1	0.52	20.0	ug/L	112	Molybdenum	
Arsenic 0.34J ug/L 1.0 0.10 1 09/19/16 16:10 09/29/16 19:42 7440-38-2 Cadmium				200.8	od: EPA	ation Meth	0.8 Prepai	Method: EPA 20	Analytical	200.8 MET ICPMS	
Cadmium <0.029 ug/L 0.50 0.029 1 09/19/16 16:10 09/29/16 19:42 7440-43-9 Chromium <0.34		7440-36-0	09/29/16 19:42	09/19/16 16:10	1	0.058	1.0	ug/L	<0.058	Antimony	
Chromium <0.34 ug/L 1.0 0.34 1 09/19/16 16:10 09/29/16 19:42 7440-47-3 Selenium <0.18		7440-38-2	09/29/16 19:42	09/19/16 16:10	1	0.10	1.0	ug/L	0.34J	Arsenic	
Selenium <0.18 ug/L 1.0 0.18 1 09/19/16 16:10 09/29/16 19:42 7782-49-2 Thallium <0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:42 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 09/20/16 08:30 09/20/16 14:16 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 09/23/16 10:55 99/23/16 10:55 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B O.10 0.10 1 09/25/16 20:20		7440-43-9	09/29/16 19:42	09/19/16 16:10	1	0.029	0.50	ug/L	<0.029	Cadmium	
Thallium <0.50 ug/L 1.0 0.50 1 09/19/16 16:10 09/29/16 19:42 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Value		7440-47-3	09/29/16 19:42	09/19/16 16:10	1	0.34	1.0	ug/L	< 0.34	Chromium	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 09/20/16 08:30 09/20/16 14:16 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 347 mg/L 5.0 5.0 1 09/23/16 10:55 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.3 Std. Units 0.10 0.10 1 09/25/16 20:20 09/25/16 20:20		7782-49-2	09/29/16 19:42	09/19/16 16:10	1	0.18	1.0	ug/L	<0.18	Selenium	
Mercury		7440-28-0	09/29/16 19:42	09/19/16 16:10	1	0.50	1.0	ug/L	<0.50	Thallium	
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 347 mg/L 5.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s				7470	od: EPA	ation Metho	70 Prepara	Method: EPA 74	Analytical	7470 Mercury	
Total Dissolved Solids 347 mg/L 5.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s.0 s		7439-97-6	09/20/16 14:16	09/20/16 08:30	1	0.039	0.20	ug/L	<0.039	Mercury	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.3 Std. Units 0.10 0.10 1 09/25/16 20:20							40C	Method: SM 25	Analytical	2540C Total Dissolved Solids	
pH at 25 Degrees C 7.3 Std. Units 0.10 0.10 1 09/25/16 20:20			09/23/16 10:55		1	5.0	5.0	mg/L	347	Total Dissolved Solids	
							00-H+B	Method: SM 450	Analytical	4500H+ pH, Electrometric	
	H6		09/25/16 20:20		1	0.10	0.10	Std. Units	7.3	pH at 25 Degrees C	
300.0 IC Anions 28 Days Analytical Method: EPA 300.0							0.00	Method: EPA 30	Analytical	300.0 IC Anions 28 Days	
Chloride 20.8 mg/L 2.0 1.0 2 10/09/16 15:02 16887-00-6		16887-00-6	10/09/16 15:02		2	1.0	2.0	mg/L	20.8	Chloride	
Fluoride 0.44 mg/L 0.20 0.027 1 10/08/16 21:19 16984-48-8		16984-48-8	10/08/16 21:19			0.027	0.20		0.44	Fluoride	
Sulfate 80.2 mg/L 5.0 0.77 5 10/09/16 15:16 14808-79-8		14808-79-8	10/09/16 15:16		5	0.77	5.0	•	80.2	Sulfate	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Sample: S-BMW-1D	Lab ID:	60227900013	Collecte	d: 10/20/16	10:17	Received: 10			
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	5.9	mg/L	1.0	0.50	1		11/03/16 03:05	16887-00-6	
Fluoride	0.32	mg/L	0.20	0.027	1		11/03/16 03:05	16984-48-8	
Sulfate	41.6	mg/L	5.0	0.77	5		11/03/16 10:11	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 447159 Analysis Method: EPA 7470

QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60227403018, 60227403019

METHOD BLANK: 1828989 Matrix: Water

Associated Lab Samples: 60227403018, 60227403019

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L <0.039 0.20 0.039 09/20/16 12:45

LABORATORY CONTROL SAMPLE: 1828990

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 4.6 92 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1828991 1828992

MS MSD

60227580011 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual < 0.039 5 5 4.8 75-125 10 20 Mercury ug/L 4.3 96 87

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 447160 Analysis Method: EPA 7470

QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60227403020, 60227403021, 60227403022, 60227403023, 60227900008, 60227900009, 60227900010

METHOD BLANK: 1828993 Matrix: Water

Associated Lab Samples: 60227403020, 60227403021, 60227403022, 60227403023, 60227900008, 60227900009, 60227900010

Blank Reporting

 Parameter
 Units
 Result
 Limit
 MDL
 Analyzed
 Qualifiers

 Mercury
 ug/L
 <0.039</td>
 0.20
 0.039
 09/20/16 13:47

LABORATORY CONTROL SAMPLE: 1828994

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 5.2 104 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1828995 1828996

MS MSD 60227900010 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual 5 5 75-125 20 Mercury ug/L < 0.039 4.0 3.9 79 78

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1828997 1828998

MS MSD 60227901011 MS MSD MS MSD Spike Spike % Rec Max Limits RPD Qual Parameter Units Result Conc. Conc. Result Result % Rec % Rec RPD Mercury ug/L < 0.039 5 5 5.2 4.6 104 92 75-125 12 20

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 447059 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008,

60227900009, 60227900010

METHOD BLANK: 1828808 Matrix: Water

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008,

60227900009, 60227900010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	09/20/16 15:20	
Beryllium	ug/L	<0.26	1.0	0.26	09/20/16 15:20	
Boron	ug/L	<50.0	100	50.0	09/20/16 15:20	
Calcium	ug/L	<8.1	100	8.1	09/20/16 15:20	
Cobalt	ug/L	< 0.72	5.0	0.72	09/20/16 15:20	
Lead	ug/L	<2.5	5.0	2.5	09/20/16 15:20	
Lithium	ug/L	<4.9	10.0	4.9	09/20/16 15:20	
Molybdenum	ug/L	1.0J	20.0	0.52	09/20/16 15:20	

LABORATORY CONTROL SAMPLE:	1828809					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
- I didilielei		 _		70 Nec		Qualifiers
Barium	ug/L	1000	1020	102	85-115	
Beryllium	ug/L	1000	995	100	85-115	
Boron	ug/L	1000	983	98	85-115	
Calcium	ug/L	10000	9750	97	85-115	
Cobalt	ug/L	1000	1030	103	85-115	
Lead	ug/L	1000	1030	103	85-115	
Lithium	ug/L	1000	994	99	85-115	
Molybdenum	ug/L	1000	1070	107	85-115	
Molybdenum	ug/L	1000	1070	107	69-119	

MATRIX SPIKE & MATRIX SPIR	KE DUPLICA	TE: 18288	10		1828811							
			MS	MSD								
	6	0227900010	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	117	1000	1000	1120	1130	100	101	70-130	1	20	
Beryllium	ug/L	< 0.26	1000	1000	986	1000	99	100	70-130	2	20	
Boron	ug/L	802	1000	1000	1740	1770	94	97	70-130	2	20	
Calcium	ug/L	74100	10000	10000	81000	82200	69	81	70-130	2	20 N	11
Cobalt	ug/L	< 0.72	1000	1000	991	1000	99	100	70-130	1	20	
Lead	ug/L	<2.5	1000	1000	993	1010	99	101	70-130	2	20	
Lithium	ug/L	12.0	1000	1000	1010	1030	100	101	70-130	1	20	
Molybdenum	ug/L	112	1000	1000	1160	1180	105	107	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 18288	12		1828813							
	6	60227901011	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	99.4	1000	1000	1110	1120	101	102	70-130	1	20	
Beryllium	ug/L	< 0.26	1000	1000	994	997	99	100	70-130	0	20	
Boron	ug/L	5660	1000	1000	6380	6600	73	94	70-130	3	20	
Calcium	ug/L	152000	10000	10000	157000	163000	52	108	70-130	4	20	M1
Cobalt	ug/L	4.1J	1000	1000	1000	1010	100	100	70-130	0	20	
Lead	ug/L	<2.5	1000	1000	994	998	99	100	70-130	0	20	
Lithium	ug/L	20.6	1000	1000	1040	1050	102	103	70-130	1	20	
Molybdenum	ug/L	124	1000	1000	1200	1210	108	109	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 447060 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008,

60227900009, 60227900010

METHOD BLANK: 1828814 Matrix: Water

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008,

60227900009, 60227900010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	09/29/16 19:17	
•	•			0.030	09/29/16 19:17	
Arsenic	ug/L	<0.10	1.0			
Cadmium	ug/L	< 0.029	0.50	0.029	09/29/16 19:17	
Chromium	ug/L	< 0.34	1.0	0.34	09/29/16 19:17	
Selenium	ug/L	<0.18	1.0	0.18	09/29/16 19:17	
Thallium	ug/L	< 0.50	1.0	0.50	09/29/16 19:17	

LABORATORY CONTROL SAMPLE:	1828815					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	40.6	102	85-115	
Arsenic	ug/L	40	40.9	102	85-115	
Cadmium	ug/L	40	40.5	101	85-115	
Chromium	ug/L	40	41.2	103	85-115	
Selenium	ug/L	40	40.2	101	85-115	
Thallium	ug/L	40	38.4	96	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 18288	16		1828817							
Parameter	6 Units	0227900010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	<0.058	40	40	40.2	41.3	101	103	70-130	3	20	
Arsenic	ug/L	0.34J	40	40	40.4	41.5	100	103	70-130	3	20	
Cadmium	ug/L	< 0.029	40	40	39.7	39.5	99	99	70-130	1	20	
Chromium	ug/L	< 0.34	40	40	40.7	41.2	101	102	70-130	1	20	
Selenium	ug/L	<0.18	40	40	37.8	39.3	94	98	70-130	4	20	
Thallium	ug/L	<0.50	40	40	39.8	40.1	100	100	70-130	1	20	

MATRIX SPIKE & MATRIX SPI	IKE DUPLICA	TE: 18288	18		1828819							
	6	0227901011	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	0.19J	40	40	40.8	40.2	101	100	70-130	1	20	
Arsenic	ug/L	1.1	40	40	43.9	43.0	107	105	70-130	2	20	
Cadmium	ug/L	0.082J	40	40	38.6	38.8	96	97	70-130	0	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 18288	18		1828819							
Parameter	6 Units	60227901011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Max RPD	Qual
Chromium	ug/L	0.46J	40	40	42.9	41.8	106	103	70-130	3	20	
Selenium	ug/L	<0.18	40	40	38.6	39.6	96	99	70-130	2	20	
Thallium	ug/L	< 0.50	40	40	41.4	41.6	103	104	70-130	0	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 447478 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008

METHOD BLANK: 1830494 Matrix: Water

Associated Lab Samples: 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008

Blank Reporting

ParameterUnitsResultLimitMDLAnalyzedQualifiersTotal Dissolved Solidsmg/L<5.0</td>5.009/21/16 15:57

LABORATORY CONTROL SAMPLE: 1830495

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

SAMPLE DUPLICATE: 1830496

60227580017 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 580 **Total Dissolved Solids** 575 1 10 mg/L

SAMPLE DUPLICATE: 1830497

Date: 01/12/2018 03:59 PM

60227403022 Dup Max RPD RPD Parameter Units Result Result Qualifiers 506 **Total Dissolved Solids** mg/L 494 2 10

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 447623 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60227403018

METHOD BLANK: 1831074 Matrix: Water

Associated Lab Samples: 60227403018

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 09/22/16 16:57

LABORATORY CONTROL SAMPLE: 1831075

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

SAMPLE DUPLICATE: 1831076

60227881007 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 996 10 **Total Dissolved Solids** 1010 1 mg/L

SAMPLE DUPLICATE: 1831116

Date: 01/12/2018 03:59 PM

60227637016 Dup Max RPD RPD Parameter Units Result Result Qualifiers 824 **Total Dissolved Solids** mg/L 863 5 10

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 447630 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60227900009, 60227900010

METHOD BLANK: 1831112 Matrix: Water

Associated Lab Samples: 60227900009, 60227900010

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 09/23/16 10:54

LABORATORY CONTROL SAMPLE: 1831113

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

SAMPLE DUPLICATE: 1831114

60227900009 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 436 2 10 **Total Dissolved Solids** 443 mg/L

SAMPLE DUPLICATE: 1831115

Date: 01/12/2018 03:59 PM

60227901011 Dup Max RPD RPD Parameter Units Result Result Qualifiers 822 **Total Dissolved Solids** mg/L 842 2 10

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 447131 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60227403023

SAMPLE DUPLICATE: 1828952

Date: 01/12/2018 03:59 PM

60227704003 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 8.0 pH at 25 Degrees C 5 H6 Std. Units 8.0 0

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

 QC Batch:
 447611
 Analysis Method:
 SM 4500-H+B

 QC Batch Method:
 SM 4500-H+B
 Analysis Description:
 4500H+B pH

 Associated Lab Samples:
 60227403019, 60227403020, 60227403021, 60227403022, 60227900008

SAMPLE DUPLICATE: 1831033

Date: 01/12/2018 03:59 PM

60227720002 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.9 pH at 25 Degrees C 7.9 5 H6 Std. Units 0

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 447880 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60227403018, 60227900009, 60227900010

SAMPLE DUPLICATE: 1832509

60227900009 Dup Max Parameter Units Result Result RPD **RPD** Qualifiers 7.4 pH at 25 Degrees C 7.4 5 H6 Std. Units 0

SAMPLE DUPLICATE: 1832510

Date: 01/12/2018 03:59 PM

60227901011 Dup Max RPD RPD Parameter Units Result Result Qualifiers pH at 25 Degrees C Std. Units 7.2 7.2 0 5 H6

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Fluoride

Date: 01/12/2018 03:59 PM

QC Batch: 449693 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60227900010

METHOD BLANK: 1840299 Matrix: Water

Associated Lab Samples: 60227900010

ParameterUnitsBlank Reporting ResultReporting LimitMDLAnalyzedQualifiersFluoridemg/L<0.027</td>0.200.02710/08/16 09:13

LABORATORY CONTROL SAMPLE: 1840300

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Fluoride mg/L 2.6 106 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1840301 1840302

mg/L

MS MSD 60228562001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Fluoride 0.22 80-120 0 mg/L 2.5 2.5 2.8 2.8 102 101 15

 MATRIX SPIKE SAMPLE:
 1840303

 60228563001
 Spike
 MS
 MS
 % Rec

 Parameter
 Units
 Result
 Conc.
 Result
 % Rec
 Limits
 Qualifiers

2.5

2.8

80-120

94

0.41

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 449695 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403023, 60227900008

METHOD BLANK: 1840314 Matrix: Water

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403023, 60227900008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	10/08/16 14:04	
Fluoride	mg/L	< 0.027	0.20	0.027	10/08/16 14:04	
Sulfate	mg/L	<0.15	1.0	0.15	10/08/16 14:04	

LABORATORY CONTROL SAMPLE:	1840315	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		4.6	92	90-110	
Fluoride	mg/L	2.5	2.3	90	90-110	
Sulfate	mg/L	5	4.7	94	90-110	
MATRIX SPIKE & MATRIX SPIKE DUI	PLICATE: 1840		18403°	17		

Parameter	Units	60227402015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Max	Qual
i didilictor	Office	rtoouit	00110.	00110.	rtoodit	rtoouit	70 IXCO	70 I CO	Liiiilo	111 0	IXI D	Quui
Fluoride	mg/L	0.18J	2.5	2.5	2.6	2.7	98	101	80-120	3	15	

MATRIX SPIKE SAMPLE:	1840318	60227402016	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Fluoride	mg/L	0.35	2.5	2.8	97	80-120	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 449698 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60227900009

METHOD BLANK: 1840351 Matrix: Water

Associated Lab Samples: 60227900009

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Fluoride mg/L <0.027 0.20 0.027 10/08/16 16:57

LABORATORY CONTROL SAMPLE: 1840352

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1840353 1840354

MS MSD 60227900009 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Fluoride 80-120 mg/L 0.63 2.5 2.5 3.0 3.1 95 100 3 15

 MATRIX SPIKE SAMPLE:
 1840355

 60227901011
 Spike
 MS
 MS
 % Rec

 Parameter
 Units
 Result
 Conc.
 Result
 % Rec
 Limits
 Qualifiers

Fluoride mg/L 1.0 2.5 3.5 98 80-120

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

 QC Batch:
 449710
 Analysis Method:
 EPA 300.0

 QC Batch Method:
 EPA 300.0
 Analysis Description:
 300.0 IC Anions

 Associated Lab Samples:
 60227403018, 60227403019, 60227403020, 60227403021, 60227403023

METHOD BLANK: 1840645 Matrix: Water

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403023

Blank Reporting Limit MDL Qualifiers Parameter Units Result Analyzed Chloride < 0.50 1.0 10/09/16 19:03 mg/L 0.50 Sulfate mg/L < 0.15 1.0 0.15 10/09/16 19:03

LABORATORY CONTROL SAMPLE: 1840646 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.6 93 90-110 mg/L Sulfate 5 4.7 94 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1840647 1840648 MS MSD 60227580010 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Sulfate mg/L 31.3 10 10 40.0 39.9 87 86 80-120 0 15

MATRIX SPIKE SAMPLE: 1840649 MS MS 60227580011 Spike % Rec Parameter Units Result Conc. Result % Rec Limits Qualifiers 57.5 Sulfate 84.2 107 80-120 25 mg/L

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 449712 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60227900009, 60227900010

METHOD BLANK: 1840654 Matrix: Water

Associated Lab Samples: 60227900009, 60227900010

Reporting Blank MDL Limit Qualifiers Parameter Units Result Analyzed Chloride < 0.50 1.0 0.50 10/09/16 09:54 mg/L Sulfate mg/L < 0.15 1.0 0.15 10/09/16 09:54

LABORATORY CONTROL SAMPLE: 1840655 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.6 93 90-110 mg/L Sulfate 5 4.7 95 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1840656 1840657 MSD MS 60227900009 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 25.5 10 10 34.6 34.7 92 92 80-120 0 15 Sulfate mg/L 38.6 25 25 63.1 64.1 98 102 80-120 2 15

MATRIX SPIKE SAMPLE: 1840658 MS MS 60227901011 % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits Chloride 39.4 65.7 105 80-120 mg/L 25 386 250 647 80-120 Sulfate mg/L 105

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 453075 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60227900013

METHOD BLANK: 1854685 Matrix: Water

Associated Lab Samples: 60227900013

Blank Reporting MDL Parameter Limit Qualifiers Units Result Analyzed Chloride < 0.50 1.0 0.50 11/02/16 21:15 mg/L Fluoride mg/L < 0.027 0.20 0.027 11/02/16 21:15

LABORATORY CONTROL SAMPLE: 1854686 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.8 97 90-110 mg/L Fluoride 2.5 2.5 101 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1854688 1854687 MSD MS 60230483002 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Fluoride mg/L 0.81 2.5 2.5 3.6 3.6 112 113 80-120 15

MATRIX SPIKE SAMPLE: 1854689 60230508001 MS MS Spike % Rec % Rec Parameter Qualifiers Units Result Conc. Result Limits ND Fluoride 2.9 115 80-120 2.5 mg/L

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

QC Batch: 453197 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60227900013

METHOD BLANK: 1855165 Matrix: Water

Associated Lab Samples: 60227900013

ParameterUnitsBlank Reporting ResultReporting LimitMDLAnalyzedQualifiersSulfatemg/L<0.15</td>1.00.1511/03/16 08:05

LABORATORY CONTROL SAMPLE: 1855166

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Sulfate mg/L 5.4 108 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1855168 1855167 MS MSD 60230483002 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Sulfate 100 80-120 0 mg/L 157 100 259 260 103 103 15

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-1D Lab ID: 60227403018 Collected: 09/15/16 15:25 Received: 09/16/16 04:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.126 ± 0.302 (0.583) C:NA T:83%	pCi/L	10/05/16 22:58	13982-63-3	
Radium-228	EPA 904.0	0.786 ± 0.586 (1.15) C:67% T:71%	pCi/L	10/05/16 16:36	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-2D Lab ID: 60227403019 Collected: 09/14/16 15:50 Received: 09/16/16 04:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.154 ± 0.235 (0.378) C:NA T:97%	pCi/L	10/05/16 23:21	13982-63-3	
Radium-228	EPA 904.0	0.598 ± 0.469 (0.926) C:70% T:81%	pCi/L	10/05/16 16:37	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-4D Lab ID: 60227403021 Collected: 09/14/16 14:33 Received: 09/16/16 04:30 Matrix: Water

PWS: Site ID: Sample Type:

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.124 ± 0.284 (0.457) C:NA T:84%	pCi/L	10/05/16 23:58	13982-63-3	
Radium-228	EPA 904.0	0.187 ± 0.435 (0.968) C:71% T:78%	pCi/L	10/05/16 16:37	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-BMW-1D Lab ID: 60227403022 Collected: 09/14/16 13:13 Received: 09/16/16 04:30 Matrix: Water

PWS: Site ID: Sample Type:

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0589 ± 0.306 (0.635) C:NA T:92%	pCi/L	10/05/16 23:27	13982-63-3	
Radium-228	EPA 904.0	0.714 ± 0.392 (0.700) C:73% T:84%	pCi/L	10/05/16 20:45	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-DUP-1 Lab ID: 60227403023 Collected: 09/14/16 08:00 Received: 09/16/16 04:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0531 ± 0.242 (0.493) C:NA T:99%	pCi/L	10/05/16 23:47	13982-63-3	
Radium-228	EPA 904.0	0.305 ± 0.366 (0.751) C:68% T:83%	pCi/L	10/05/16 21:00	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-3D Lab ID: 60227403020 Collected: 09/14/16 14:22 Received: 09/16/16 04:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.418 ± 0.391 (0.554) C:NA T:84%	pCi/L	10/05/16 23:28	13982-63-3	
Radium-228	EPA 904.0	1.88 ± 0.866 (1.44) C:67% T:79%	pCi/L	10/05/16 16:37	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-FB-1 Lab ID: 60227900008 Collected: 09/14/16 14:15 Received: 09/16/16 04:30 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.116 ± 0.280 (0.541) C:NA T:89%	pCi/L	10/05/16 23:27	13982-63-3	
Radium-228	EPA 904.0	-0.0122 ± 0.314 (0.700) C:70% T:88%	pCi/L	10/05/16 21:01	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-5D Lab ID: 60227900009 Collected: 09/16/16 09:55 Received: 09/16/16 20:45 Matrix: Water

PWS: Site ID: Sample Type

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.108 ± 0.246 (0.396) C:NA T:100%	pCi/L	10/06/16 00:09	13982-63-3	
Radium-228	EPA 904.0	0.574 ± 0.373 (0.694) C:73% T:83%	pCi/L	10/05/16 21:01	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-6D Lab ID: 60227900010 Collected: 09/16/16 10:35 Received: 09/16/16 20:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.176 ± 0.269 (0.706) C:NA T:92%	pCi/L	10/05/16 12:52	13982-63-3	
Radium-228	EPA 904.0	0.823 ± 0.345 (0.523) C:73% T:81%	pCi/L	10/05/16 20:42	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-5D MS Lab ID: 60227900011 Collected: 09/16/16 09:55 Received: 09/16/16 20:45 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac Units CAS No. **Parameters** Analyzed Qual EPA 903.1 78.8%REC ± NA (NA) Radium-226 pCi/L 10/05/16 23:51 13982-63-3 Radium-228 EPA 904.0 94.4 %REC +/- NA (NA) pCi/L 10/05/16 20:46 15262-20-1

C:NA T:NA



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Sample: S-UMW-5D MSD Lab ID: 60227900012 Collected: 09/16/16 09:55 Received: 09/16/16 20:45 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac CAS No. **Parameters** Units Analyzed Qual EPA 903.1 103.2%REC 26.83RPD ± Radium-226 pCi/L 10/05/16 23:52 13982-63-3 NA (NA) EPA 904.0 111 %REC 16.0 RPD +/- NA Radium-228 pCi/L 10/05/16 20:45 15262-20-1 (NA) C:NA T:NA



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 234076 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008,

60227900009, 60227900011, 60227900012

METHOD BLANK: 1147973 Matrix: Water

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008,

60227900009, 60227900011, 60227900012

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.359 ± 0.332 (0.672) C:68% T:89%
 pCi/L
 10/05/16 12:05

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 234072 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008,

60227900009, 60227900011, 60227900012

METHOD BLANK: 1147966 Matrix: Water

Associated Lab Samples: 60227403018, 60227403019, 60227403020, 60227403021, 60227403022, 60227403023, 60227900008,

60227900009, 60227900011, 60227900012

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 $-0.054 \pm 0.247 \quad (0.581) \text{ C:NA T:97\%}$ pCi/L $10/05/16 \; 22:22$

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 234074 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60227900010

METHOD BLANK: 1147971 Matrix: Water

Associated Lab Samples: 60227900010

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 0.0610 ± 0.278 (0.449) C:NA T:94%
 pCi/L
 10/05/16 12:30

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

QC Batch: 234081 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60227900010

METHOD BLANK: 1147988 Matrix: Water

Associated Lab Samples: 60227900010

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-228 0.575 \pm 0.292 (0.497) C:83% T:85% pCi/L 10/05/16 20:41

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 01/12/2018 03:59 PM

B Analyte was detected in the associated method blank.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

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



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60227403018	S-UMW-1D	EPA 200.7	447059	EPA 200.7	 447197
60227403019	S-UMW-2D	EPA 200.7	447059	EPA 200.7	447197
0227403020	S-UMW-3D	EPA 200.7	447059	EPA 200.7	447197
0227403021	S-UMW-4D	EPA 200.7	447059	EPA 200.7	447197
0227403022	S-BMW-1D	EPA 200.7	447059	EPA 200.7	447197
0227403023	S-UMW-DUP-1	EPA 200.7	447059	EPA 200.7	447197
0227900008	S-UMW-FB-1	EPA 200.7	447059	EPA 200.7	447197
0227900009	S-UMW-5D	EPA 200.7	447059	EPA 200.7	447197
0227900010	S-UMW-6D	EPA 200.7	447059	EPA 200.7	447197
0227403018	S-UMW-1D	EPA 200.8	447060	EPA 200.8	447199
0227403019	S-UMW-2D	EPA 200.8	447060	EPA 200.8	447199
0227403020	S-UMW-3D	EPA 200.8	447060	EPA 200.8	447199
0227403021	S-UMW-4D	EPA 200.8	447060	EPA 200.8	447199
0227403022	S-BMW-1D	EPA 200.8	447060	EPA 200.8	447199
0227403023	S-UMW-DUP-1	EPA 200.8	447060	EPA 200.8	447199
0227900008	S-UMW-FB-1	EPA 200.8	447060	EPA 200.8	447199
0227900009	S-UMW-5D	EPA 200.8	447060	EPA 200.8	447199
0227900010	S-UMW-6D	EPA 200.8	447060	EPA 200.8	447199
0227403018	S-UMW-1D	EPA 7470	447159	EPA 7470	447212
0227403019	S-UMW-2D	EPA 7470	447159	EPA 7470	447212
0227403020	S-UMW-3D	EPA 7470	447160	EPA 7470	447213
0227403021	S-UMW-4D	EPA 7470	447160	EPA 7470	447213
0227403022	S-BMW-1D	EPA 7470	447160	EPA 7470	447213
0227403023	S-UMW-DUP-1	EPA 7470	447160	EPA 7470	447213
0227900008	S-UMW-FB-1	EPA 7470	447160	EPA 7470	447213
0227900009	S-UMW-5D	EPA 7470	447160	EPA 7470	447213
0227900010	S-UMW-6D	EPA 7470	447160	EPA 7470	447213
0227403018	S-UMW-1D	EPA 903.1	234072		
0227403019	S-UMW-2D	EPA 903.1	234072		
0227403020	S-UMW-3D	EPA 903.1	234072		
0227403021	S-UMW-4D	EPA 903.1	234072		
0227403022	S-BMW-1D	EPA 903.1	234072		
0227403023	S-UMW-DUP-1	EPA 903.1	234072		
0227900008	S-UMW-FB-1	EPA 903.1	234072		
0227900009	S-UMW-5D	EPA 903.1	234072		
0227900010	S-UMW-6D	EPA 903.1	234074		
0227900011	S-UMW-5D MS	EPA 903.1	234072		
0227900012	S-UMW-5D MSD	EPA 903.1	234072		
0227403018	S-UMW-1D	EPA 904.0	234076		
0227403019	S-UMW-2D	EPA 904.0	234076		
0227403020	S-UMW-3D	EPA 904.0	234076		
0227403021	S-UMW-4D	EPA 904.0	234076		
0227403022	S-BMW-1D	EPA 904.0	234076		
0227403023	S-UMW-DUP-1	EPA 904.0	234076		
0227900008	S-UMW-FB-1	EPA 904.0	234076		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60227900009	S-UMW-5D	EPA 904.0	234076		
60227900010	S-UMW-6D	EPA 904.0	234081		
60227900011	S-UMW-5D MS	EPA 904.0	234076		
60227900012	S-UMW-5D MSD	EPA 904.0	234076		
60227403018	S-UMW-1D	SM 2540C	447623		
60227403019	S-UMW-2D	SM 2540C	447478		
0227403020	S-UMW-3D	SM 2540C	447478		
0227403021	S-UMW-4D	SM 2540C	447478		
0227403022	S-BMW-1D	SM 2540C	447478		
0227403023	S-UMW-DUP-1	SM 2540C	447478		
0227900008	S-UMW-FB-1	SM 2540C	447478		
0227900009	S-UMW-5D	SM 2540C	447630		
0227900010	S-UMW-6D	SM 2540C	447630		
0227403018	S-UMW-1D	SM 4500-H+B	447880		
0227403019	S-UMW-2D	SM 4500-H+B	447611		
0227403020	S-UMW-3D	SM 4500-H+B	447611		
0227403021	S-UMW-4D	SM 4500-H+B	447611		
0227403022	S-BMW-1D	SM 4500-H+B	447611		
0227403023	S-UMW-DUP-1	SM 4500-H+B	447131		
0227900008	S-UMW-FB-1	SM 4500-H+B	447611		
0227900009	S-UMW-5D	SM 4500-H+B	447880		
0227900010	S-UMW-6D	SM 4500-H+B	447880		
0227403018	S-UMW-1D	EPA 300.0	449695		
0227403018	S-UMW-1D	EPA 300.0	449710		
0227403019	S-UMW-2D	EPA 300.0	449695		
0227403019	S-UMW-2D	EPA 300.0	449710		
0227403020	S-UMW-3D	EPA 300.0	449695		
0227403020	S-UMW-3D	EPA 300.0	449710		
0227403021	S-UMW-4D	EPA 300.0	449695		
0227403021	S-UMW-4D	EPA 300.0	449710		
0227403023	S-UMW-DUP-1	EPA 300.0	449695		
0227403023	S-UMW-DUP-1	EPA 300.0	449710		
0227900008	S-UMW-FB-1	EPA 300.0	449695		
0227900009	S-UMW-5D	EPA 300.0	449698		
0227900009	S-UMW-5D	EPA 300.0	449712		
0227900010	S-UMW-6D	EPA 300.0	449693		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOT

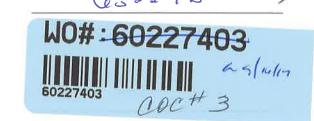
Pace Project No.: 60227900

Date: 01/12/2018 03:59 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60227900010	S-UMW-6D	EPA 300.0	449712		
60227900013	S-BMW-1D	EPA 300.0	453075		
60227900013	S-BMW-1D	EPA 300.0	453197		



Sample Condition Upon Receipt



1			60227403		ant 3
	my (8)			0	0C#3
Client Name: Golder	ما				
Courier: FedEx UPS VIA Clay P	EX 🗆 ECI 🗆	Pace □	Xroads 🖄	Client □	Other □
Tracking #: Pace	Shipping Label Us	sed? Yes □	No 🖾		
Custody Seal on Cooler/Box Present: Yes ♥ No □	Seals intact: Yes	No □			
Packing Material: Bubble Wrap Bubble Bags of +1.1	l Foam □	None	□ Oth	er 🗆	
Thermometer Used: 1-266 / T-239 Type of	Ice: (Ver Blue I		•	Date and in	nitials of person 1005
Cooler Temperature (°C): As-read 2-6,13.6 Corr. Factor	OF CF +1.1 CF -0.1 COFF	ected <u>3.9 1</u>	47		contents: 35 9/14/16
Temperature should be above freezing to 6°C					
Chain of Custody present:	Yes □No □N/	Ά			
Chain of Custody relinquished:	✓Yes □No □N/	Ά			
Samples arrived within holding time:	ZYes □No □N/	/Α			
Short Hold Time analyses (<72hr):	Mary es □No □N/	A PH	-		
Rush Turn Around Time requested:	□Yes ❤️No □N/	/Α			
Sufficient volume:	Ø Yes □No □N	/Α			- 1
Correct containers used:	77Yes □No □N/	/A			
Pace containers used:	/	/A			
Containers intact:	ZÍYes □No □N/				
	□Yes □No ☑N/				
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No ☑N/				
Filtered volume received for dissolved tests?					
Sample labels match COC: Date / time / ID / analyses	ZYes □No □N/				
Samples contain multiple phases? Matrix: 🛶 t 🕏	Yes □No □No				
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)	Yes □No □N	/A			
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)					
Cyanide water sample checks: XN/A Lead acetate strip turns dark? (Record only)	□Yes □No				
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No				
Trip Blank present:	□Yes □No □No	/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 No	/A			
Client Notification/ Resolution: Copy COC to	Client? Y / N	Field C	Data Required	? Y / 1	N
Person Contacted: Date/T	ime:				
Comments/ Resolution:			_		
fami Chel —		9/16/16	3		
Project Manager Review:		9/10/10 Date:	, <u> </u>		

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

288/N) 617 3 3 7 Samples Intact Pace Project No./ Lab I.D. ZBUN) 2/KIN DRINKING WATER SAMPLE CONDITIONS (BBN): / (BBN) (Modern Cooler (Y/N) (892) (BB) OTHER Custody Seale þ (KK) Ice (Y/N) 2 Received on GROUND WATER Residual Chlorine (Y/N) 2.9 Page: Temp in °C 9 REGULATORY AGENCY TIME RCRA 430 Requested Analysis Filtered (Y/N) 8/2/18 STATE: DATE Site Location NPDES UST (MM/DD/YY): 09 Radium 226 & 228 Z Н z ACCEPTED BY / AFFILIATION DS. z Chloride/Fluoride/Sulfate Z ^letals* Z tanalysis Test N/A Other Methanol \S Jamie Church Na₂S₂O₃ Preservatives HOBN IOH 9285 7 له M HNQ3 nvoice Information 7 Company Name POS^ZH 700 TIME Pace Quote Reference: Pace Project Unpreserved Section C Address 7 7 す 7 # OF CONTAINERS 7 SAMPLER NAME AND SIGNATURE SIGNATURE of SAMPLER: PRINT Name of SAMPLER: SAMPLE TEMP AT COLLECTION 9118114 DATE Ameren Sioux Energy Center - Bottom Ash 1427 201 345 1/14/16 1550 (43) 525 55 TIME (COMPOSITE END/GRAB Report To: Mark Haddock (mhaddock@golder.com) 3/(4/16 1/14/16 1115/6 DATE COLLECTED RELINQUISHED BY / AFFILIATION TIME COMPOSITE 153-1406.0003A START DATE Jeffrey Ingram Required Project Information: O O WTG O O O SAMPLE TYPE (G=GRAB C=COMP) urchase Order No. W ¥ Ž ¥ ¥ × ¥ Project Number. MATRIX CODE Project Name: Section B Copy To: CODE Valid Matrix Codes W AR OT WATER WASTE WATER PRODUCT DRINKING WATER EPA 2007: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl SOIL/SOLID Fax: 636-724-9323 820 South Main Street, Suite 100 S-UMW-DUP-1 S-UMW-FB-S-BMW-1D S-BMW-2D S-UMW-3D S-UMW-4D S-UMW-1D S-UMW-2D S-DIMM-SD S-UMWV-6D ADDITIONAL COMMENTS (A-Z, 0-97,-) Sample IDs MUST BE UNIQUE maddock@golder.com St Charles, MO 63301 SAMPLE ID Golder Associates Section D Required Client Information Required Client Information: Requested Due Date/TAT: Phone: 636-724-9191 Page 56 of 60 Section A 10 = 12 Email To: ddress S N # MBTI

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

invoices not paid within 30 days "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



Sample Condition Upon Receipt



Client Name: Golder				
	X □ ECI t Pace □	Xroads □ (Client □ O	ther □
,		No □		uie: 🗆
Custody Seal on Cooler/Box Present: Yes No	Shipping Label Used? Yes ☐ Seals intact: Yes ☑ No ☐	140 🗆		
24270 HOMEN'S	Seals Intact: Tes E No □ Foam □ None	✓ Othe	.r []	
CF+1.1 CF-0.1	e Wet Blue None	er Othe	: L	
121 04	CF+1.1 CF-0.1 Corrected	40	Date and initi	
Cooler Temperature (°C): As-read Corr. Factor Temperature should be above freezing to 6°C	Corrected		examining co	intents: UV 9/17
7	My Du Duu			
Chain of Custody present:	XYes □No □N/A			
Chain of Custody relinquished:	Maryes □No □N/A			
Samples arrived within holding time;	Maryes □No □N/A			
Short Hold Time analyses (<72hr):	X Yes □No □N/A PH			
Rush Turn Around Time requested:	□Yes M No □N/A			
Sufficient volume:	MÉYes □No □N/A			
Correct containers used:	ÉYes □No □N/A			
Pace containers used:	E Yes □No □N/A			
Containers intact:	Ú Yes □No □N/A			
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No I ØN/A			
Filtered volume received for dissolved tests?	□Yes □No I ŽIN/A			
Sample labels match COC: Date / time / ID / analyses	MCYes □No □N/A			
Samples contain multiple phases? Matrix:	□Yes ⊠ No □N/A			
Containers requiring pH preservation in compliance?	M Yes □No □N/A			
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)				
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Cyanide water sample checks: (N/A				
Lead acetate strip turns dark? (Record only)	□Yes □No			
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No			
Trip Blank present:	□Yes □No ØN/A			
Headspace in VOA vials (>6mm):	□Yes □No ⊠ N/A			
Samples from USDA Regulated Area: State:	□Yes □No I ÓN/A			
Additional labels attached to 5035A / TX1005 vials in the field?	□Yes □No ⊠ N/A			
Client Notification/ Resolution: Copy COC to		ata Required?	Y / N	
Person Contacted: Date/Tin	ie:			
Comments/ Resolution:				
	9/19/16			
- Jami Chuck	<u> </u>			
Project Manager Review:	Date:			

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

Pace Analytical

Control Cont	Section A		Required Project Information:	HAGICE IIIIQIIII atiqui.				
Stronger Street Street Street Street To Develop the Street Street Street To Develop the Street Street Street To Develop the Street Street To Develop the Street S	impany: Golder Assoc	iates	Report To: Mark Haddock (mhaddock@golder.com)	Attention:		i		
St. Carlotte, No. 36001		iin Street, Suite 100		Сопрялу Name:	REGULATORY AGENC	\		
Septiment Sept	St Charles, M	0 63301		Address:	×	IND WATER	DRINKING	VATER
Section 12 1 1 1 1 1 1 1 1		older com	Purchase Order No.:	Pace Quote Reference	<u></u>		OTHER	
Settlement Set	636-	Fax 636-724-9323	Ameren Sioux Energy Center - Botto	Pace Project Manager.	7			
Samples Filtered (YN) 1	equested Due Date/TAT:	Standard	Project Number: 153-1406.0003A	9285	STATE:			
2000 200				Requ	ested Analysis Filtered (Y/N)			
Samples Infance 1	Section D		(네에) (네에)	Z N/A	z			
SAMPLE R NAME AND SIGNATURE SIGNATURE R SAMPLER R NAME R PARE CONDITIONS SAMPLE R NAME R PARE CONDITIONS SAMPLER R NAME R PARE CONDITIONS SAMPLE R NAME R PARE CONDITIONS SAMPLE R NAME P PARE CONDITIONS	עפור מופות המי מופות אורים וויים		DW WT COMPOSITE COMPOSITE ENDIGRAB	† 1	822	(V/V) əu	office.	
The complete interest content of the content of t	Sample IDs MUST		# 5 € 5 P	Peved (Control of the control of the	& 225 m	nal Chlori	į	
WIT G WIT CONDITIONS BY AFFILMTON DATE THE SAMPLE CONDITIONS SAMPL	# M31		DATE TIME DATE TIME	# OF CC Unpres H ₂ SO ₄ HHO ₃ HCI Na ₂ O ₂ C Methan Other Other	Hd		ce Project No	,/ Lab I.D.
SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE SAMPLER NAME FIRST SAMPLER NAME AND SIGNATURE SAMPLER NAME FIRST SAMPLER NAME FIRST		S-UMM/-1D			~	7		
Maria Mari	2	S-UMW-20						
1 1 2 1 1 2 1 1 2 1 1	8	S-UMW-3D	1			Zana.	8	0
WIT G WI	4 rv	S-UMW-5D	11/11/16	23 9	2	Spring.	DAYN (B)	1
RELINQUISHED BY AFFILIATION DATE TIME SAMPLER CONDITIONS SAMPLE CONDITIONS FIG. 100 Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	9	S-UMW-6D	2)	-	-	nd	1	CIO MINI
RELINQUISHED BY / AFFILIATION DATE TIME SAMPLE CONDITIONS RELINQUISHED BY / AFFILIATION DATE TIME SAMPLE CONDITIONS RELINQUISHED BY / AFFILIATION DATE TIME SAMPLE CONDITIONS SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE SCHANTING OF SAMPLER: SUPPLY STANDING OF SAMPLER: SUPPLY STANDING OF SAMPLER: SUPPLY SAMPLER: SUPPLY STANDING OF SAMPLER: SUPPLY SAMP	7	S-BMW-1D	_					
RELINQUISHED BY AFFILLATION DATE TIME SAMPLE CONDITIONS RELINQUISHED BY AFFILLATION DATE TIME SAMPLE CONDITIONS RELINQUISHED BY AFFILLATION DATE TIME SAMPLE CONDITIONS SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SAMP	8	S-BMW-2D	-					
RELINQUISHED BY I AFFILLATION DATE TIME SAMPLE CONDITIONS RELINQUISHED BY I AFFILLATION DATE TIME SAMPLE CONDITIONS RELINQUISHED BY I AFFILLATION DATE TIME SAMPLE CONDITIONS SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE RECINQUISHED BY I AFFILLATION DATE TIME SAMPLE CONDITIONS SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE OF SAMPLER NAME SAMPLER	10	S-UMW-FB-1	+)			
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SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE SCHOOL COOL COOL COOL COOL COOL COOL COOL		OLIVER THE PARTY OF THE	100	TIME	DATE		MPLE CONDIT	SNC
SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Custody Sealed Custody Sealed	ABDITION EPA 200.7: Ba, Be, B, Ca, Ca	2, Pb, Ll, Mo + EPA 7470A Hg	111 (Dalan) wold	H	79/1 alpa/16 \$3			:
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Start Received on Custody Sealed Custody Seal	EPA 200.8: Sp. As, Cd. Cr. S	B, TI	705 Ph-1	18 M CX119		72	-	
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SAMPLE						d'o	8	2
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SAMPLER: OUTE Signed OUTE SIGNED S	Pag					+		Joe
DATE Signed DATE Signed DATE Signed Country of the Cooperation of the	e 58 d		SAMPLER NAME AND SIGN PRINT Name of SAMF	457		o bavia	eeS (bo	ples Inta (V\V)
	of 60		MAS & BUILDING	1	11/16	ээЯ	nafo	

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.



Sample Condition Upon Receipt



Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other
Custody Seal on Cooler/Box Present: Yes
Packing Material: Bubble Wrap CF-0.5 Foam Nono Other Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None Cooler Temperature (°C): As-read O.6 Corr. Factor OF-0.5 Corrected Other Other Temperature should be above freezing to 6°C Other of Custody present: Other of Custody relinquished: Other
Thermometer Used: T-26 / T-23
Thermometer Used: T-266 / T-239 Type of Ice: Wet Blue None Cooler Temperature (°C): As-read 0.6 Corr. Factor CF-0.5 Corrected 3 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 Correct containers used: Yes No N/A Containers intact: Yes No N/A Containers intact: Yes No N/A
Cooler Temperature (°C): As-read
Temperature should be above freezing to 6°C Chain of Custody present: Chain of Custody relinquished: Samples arrived within holding time: Short Hold Time analyses (<72hr): Rush Turn Around Time requested: Sufficient volume: Correct containers used: Pace containers used: Containers intact: Pyes No No N/A Pyes No No N/A Yes No No N/A Tyes No No N/A Tyes No No N/A Tyes No No N/A Tyes No No N/A Tyes No No N/A Tyes No No N/A
Chain of Custody relinquished: Yes
Samples arrived within holding time: Yes
Short Hold Time analyses (<72hr): Yes
Rush Turn Around Time requested: Sufficient volume: Correct containers used: Pace containers used: Yes No N/A Yes No N/A Containers intact: Yes No N/A
Sufficient volume: Yes
Correct containers used: Pace containers used: Containers intact: Yes No N/A Yes No N/A
Pace containers used: Yes No N/A
Containers intact:
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?
Filtered volume received for dissolved tests?
Sample labels match COC: Date / time / ID / analyses
Samples contain multiple phases? Matrix: ☐Yes ☐No ☐N/A
Containers requiring pH preservation in compliance?
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Cyanide water sample checks:
Lead acetate strip turns dark? (Record only)
Potassium iodide test strip turns blue/purple? (Preserve) □Yes □No
Trip Blank present:
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:
Jami Chel 10/21/16
Project Manager Review: Date:

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical "

83 Pace Project No./ Lab I.D. (N/A) Samples Intact **DRINKING WATER** SAMPLE CONDITIONS Cooler (Y/N) OTHER οť Custody Sealer 18024 Ice (Y/V) Received on NPDES CROUND WATER Page: Residual Chlorine (Y/N) J. ui qmeT 9 REGULATORY AGENCY RCRA 0350 TIME Requested Analysis Filtered (Y/N) 0/20 1/02/0/ Site Location STATE: DATE UST Radium 226 & 228 z Ho DATE Signed (MM/DD/YY): AFFILIATION z LDS z Chloride/Fluoride/Sulfate z Metals* JiseT sisylsnA1 ACCEPTED BY N/A JedtC Methanol Jamie Church Na₂S₂O₃ Preservatives ИаОН HCI 9285 HNO3 コンク Company Name: Reference:
Pace Project
Manager:
Pace Profile #: OS2H 10 Section C TIME Опргеѕегуед ace Quote Address # OF CONTAINERS SAMPLER NAME AND SIGNATURE 2/102/04 2/10 PRINT Name of SAMPLER: SIGNATURE of SAMPLER: SAMPLE TEMP AT COLLECTION DATE 19/20/11/01 pl TIME 0 Report To: Mark Haddock (mhaddock@golder.com) COMPOSITE END/GRAB DATE COLLECTED Ameren Sioux Energy Center RELINQUISHED BY / AFFILIATION 150100 TIME COMPOSITE START DATE Jeffrey Ingram Required Project Information O ပ a O O O O O O O O O (G=GRAB C=COMP) SAMPLE TYPE urchase Order No. X N. Ϋ́ ķ ₹ ₹ M Ś ¥ Ş ķ Ş (see valid codes to left) MATRIX CODE roject Number Project Name: Section B Sopy To: Valid Matrix Codes
MATRIX CODE 35 DRINKING WATER IN WATER WASTE WATER WESTE WATER WASTE WOLLS SOIL/SOLID OIL 7470A Hg Fax: 636-724-9323 820 South Main Street, Suite 100 Ba. Be, B, Ca, Co, Pb, Li, Mo + EPA Sb, As, Cd, Cr, Se, TI ADDITIONAL COMMENTS (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE rnaddock@golder.com St Charles, MO 63301 SAMPLE ID Golder Associates Required Client Information BMW Required Client Information: 636-724-9191 Requested Due Date/TAT: Section D EPA 200 8: Sb. EPA 200 7: Page 60 of 60 Section A Сотрапу: mail To: hone: 10 7 12 00 6 H WELL

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 involces not paid within 30 days

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



December 23, 2016

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between November 09, 2016 and November 18, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jamie Church

jamie.church@pacelabs.com

Project Manager

Enclosures

cc: Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates







CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification Hawaii Certification Idaho Certification Illinois Certification Indiana Certification Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Kansas Certification IDs 9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976 New Jersey/TNI Certification #: PA 051 New Mexico Certification #: PA01457

New York/TNI Certification #: 10888 North Carolina Certification #: 42706 North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60231802001	S-UMW-1D	Water	11/08/16 11:40	11/09/16 04:20
60231802002	S-UMW-2D	Water	11/07/16 15:03	11/09/16 04:20
60231802003	S-UMW-3D	Water	11/07/16 13:52	11/09/16 04:20
60231802004	S-UMW-4D	Water	11/07/16 11:05	11/09/16 04:20
60231802005	S-UMW-5D	Water	11/07/16 15:51	11/09/16 04:20
60231802006	S-UMW-6D	Water	11/08/16 09:25	11/09/16 04:20
60231802007	S-BMW-1D	Water	11/07/16 09:45	11/09/16 04:20
60231802008	S-UMW-DUP-1	Water	11/07/16 08:00	11/09/16 04:20
60231802009	S-UMW-FB-1	Water	11/08/16 15:00	11/09/16 04:20
60231802010	S-UMW-4D MS	Water	11/07/16 11:05	11/09/16 04:20
60231802011	S-UMW-4D MSD	Water	11/07/16 11:05	11/09/16 04:20
60232579001	S-BMW-3D	Water	11/17/16 13:53	11/18/16 03:35



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

_ab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60231802001	S-UMW-1D	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802002	S-UMW-2D	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802003	S-UMW-3D	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802004	S-UMW-4D	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802005	S-UMW-5D	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	 JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802006	S-UMW-6D	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802007	S-BMW-1D	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802008	S-UMW-DUP-1	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802009	S-UMW-FB-1	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0231802010	S-UMW-4D MS	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60231802011	S-UMW-4D MSD	EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60232579001	S-BMW-3D	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7	Sample: S-UMW-1D	Lab ID:	60231802001	Collecte	d: 11/08/16	3 11:40	Received: 11/	09/16 04:20 M	atrix: Water	
Barium 184 ug/L 5.0 0.58 1 11/09/16 17:00 11/11/16 13:09 7440-39-3 Beryllium <0.26	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium	200.7 Metals, Total	Analytical I	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron 454 ug/L 100 50.0 1 11/09/16 17:00 11/11/6 13:09 7440-42-8 Add-42-8 Calcium 110000 ug/L 100 8.1 1 11/09/16 17:00 11/11/16 13:09 7440-70-2 Calcium 110000 ug/L 5.0 0.72 1 11/09/16 17:00 11/11/16 13:09 7440-70-2 Calcium 11/09/16 17:00 11/11/16 13:09 7440-70-2 Calcium 10 11/09/16 17:00 11/11/16 13:09 7440-70-2 Calcium 11/09/16 17:00 11/11/16 13:09 7440-84-8 Lead 2.2.5 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 1 11/09/16 17:00 11/11/16 13:19 7440-36-0 2 2 <th< td=""><td>Barium</td><td>184</td><td>ug/L</td><td>5.0</td><td>0.58</td><td>1</td><td>11/09/16 17:00</td><td>11/11/16 13:09</td><td>7440-39-3</td><td></td></th<>	Barium	184	ug/L	5.0	0.58	1	11/09/16 17:00	11/11/16 13:09	7440-39-3	
Calcium	Beryllium	<0.26	ug/L	1.0	0.26	1	11/09/16 17:00	11/11/16 13:09	7440-41-7	
Cobalt Lead 40.72 Lug/L 2.5 ug/L 5.0 0.72 lt 11/09/16 17:00 11/11/16 13:09 7440-48-4 Lead 42.5 ug/L 5.0 2.5 1 11/09/16 17:00 11/11/16 13:09 7439-92-1 Lithium 15.5 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 Molybdenum 27.9 ug/L 20.0 0.52 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 P0.8 40.0 4.9 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 P0.9 7440-33-9 P0.9 7439-93-2 P0.9 7440-33-9 P0.9	Boron	454	ug/L	100	50.0	1	11/09/16 17:00	11/11/16 13:09	7440-42-8	
Lead 42.5 ug/L 5.0 2.5 1 11/09/16 17:00 11/11/16 13:09 7439-92-1 1 11/09/16 17:00 11/11/16 13:09 7439-92-1 7439-92-1 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 7439-93-2 Molybdenum 27.9 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 7440-33-9	Calcium	110000	ug/L	100	8.1	1	11/09/16 17:00	11/11/16 13:09	7440-70-2	
Lithium 15.5 ug/L 20.0 4.9 1 11/09/16 17:00 11/11/16 13:09 7439-93-2 10/10/90/16 17:00 11/11/16 13:09 7439-93-2 10/10/90/16 17:00 11/11/16 13:09 7439-93-2 10/10/90/16 17:00 11/11/16 13:09 7439-98-7 10/10/90/16 17:00 11/11/16 13:09 7439-98-7 10/10/90/16 17:00 11/11/16 13:09 7439-98-7 10/10/90/16 17:00 11/11/16 13:09 7439-98-7 10/10/90/16 17:00 11/11/16 13:09 7439-98-7 10/10/90/16 17:00 11/11/16 13:09 7439-98-7 10/10/90/16 17:00 11/11/16 13:09 7439-98-7 10/10/90/16 17:00 11/11/16 13:09 7439-98-7 10/10/90/16 17:00 11/11/16 13:09 7440-36-0 10/10/90/16 17:00 11/11/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/11/90/16 13:19 7440-38-2 10/10/90/16 17:00 11/12/16 13:19 7440-38-2 1	Cobalt	<0.72	ug/L	5.0	0.72	1	11/09/16 17:00	11/11/16 13:09	7440-48-4	
Molybdenum 27.9 ug/L 20.0 0.52 1 11/109/16 17:00 11/11/16 13:00 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 13:19 7440-36-2 Arsenic 1.0 ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 13:19 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 13:19 7440-43-9 Chromium <0.034 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 13:19 7440-43-9 Chromium <0.18 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 13:19 7440-43-9 Chromium <0.18 ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 13:19 7440-47-3 Pal 2 Selenium Analytical Method: EPA 7470 Preparation Method: EPA 7470 1	Lead	<2.5	ug/L	5.0	2.5	1	11/09/16 17:00	11/11/16 13:09	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058	Lithium	15.5	ug/L	10.0	4.9	1	11/09/16 17:00	11/11/16 13:09	7439-93-2	
Antimony	Molybdenum	27.9	ug/L	20.0	0.52	1	11/09/16 17:00	11/11/16 13:09	7439-98-7	
Arsenic 1.0 ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 13:19 7440-38-2 Cadmium	200.8 MET ICPMS	Analytical I	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Arsenic 1.0 ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 13:19 7440-38-2 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 13:19 7440-43-9 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 13:19 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 13:19 7440-47-3 Selenium <0.18 ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 13:19 7440-47-3 Thallium <0.18 ug/L 1.0 0.50 1 11/09/16 17:00 11/22/16 13:19 7440-28-0 TA70 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 11/16/16 16:10 11/17/16 12:22 7439-97-6 Total Dissolved Solids 551 mg/L 5.0 5.0 1 11/10/16 16:10 11/10/16 11:25 11/10/16 11:25	Antimony	<0.058	ug/L	1.0	0.058	1	11/09/16 17:00	11/22/16 13:19	7440-36-0	
Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 13:19 7440-47-3 7440-47-4 7440-47-4 7440-47-4 7440-47-4 7440-47-4 7440-47-47-4 7440-47-47-4 7440-47-47-4 7440-47-47-4 7440-47-47-4	•	1.0	•	1.0	0.10	1	11/09/16 17:00			
Selenium	Cadmium	< 0.029	ug/L	0.50	0.029	1	11/09/16 17:00	11/22/16 13:19	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 11/09/16 17:00 11/22/16 13:19 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Feature Name Preparation Method: EPA 7470 2540C Total Dissolved Solids Analytical Method: SM 2540C Preparation Method: SM 2540C P	Chromium	<0.34	ug/L	1.0	0.34	1	11/09/16 17:00	11/22/16 13:19	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.039 ug/L 0.20 0.039 1 11/16/16 16:10 11/17/16 12:22 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 551 mg/L 5.0 5.0 1 11/10/16 11:25 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.6 Std. Units 0.10 0.10 1 11/14/16 06:30 Ht 11/14/16 06:30 Ht 11/14/16 06:30 Analytical Method: EPA 300.0 Chloride 27.9 mg/L 2.0 1.0 2 11/19/16 10:39 16887-00-6	Selenium	<0.18	ug/L	1.0	0.18	1	11/09/16 17:00	11/22/16 13:19	7782-49-2	
Mercury										



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Barium 85.8 ug/L 5.0 0.58 1 11/09/16 17:00 11/11/16 13:11 7440-41-7 100 0.26 1 11/09/16 17:00 11/11/16 13:11 7440-41-7 Beryllium 40.26 ug/L 1.00 0.26 1 11/09/16 17:00 11/11/16 13:11 7440-41-7 11/109/16 17:00 11/11/16 13:11 7440-41-7 Boron 10600 ug/L 100 8.1 1 11/09/16 17:00 11/11/16 13:11 7440-70-2 11/11/16 13:11 7440-70-2 Cobalt 40.72 ug/L 5.0 0.72 1 1 11/09/16 17:00 11/11/16 13:11 7440-70-2 11/11/16 13:11 7430-92-1 Lead 42.5 ug/L 5.0 0.2.5 1 11/09/16 17:00 11/11/16 13:11 7439-92-1 11/11/16 13:11 7439-92-1 Lithium 31.1 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:11 7439-93-2 11/11/16 13:11 7439-93-2 Molybdenum 989 ug/L 20.0 8 Preparation Method: EPA 200.8 Nation 11/109/16 17:00 11/11/16 13:11 7439-93-2 Antimony <0.058 ug/L 1.0 0.058 t 1 11/09/16 17:00 11/12/16 13:23 7440-36-0 Arsenic 1.5 ug/L 1.0 0.058 t 1 11/09/16 17:00 11/12/16 13:23 7440-38-2 Cadmium <0.059 ug/L 0.0 0.029 t 1 11/09/16 17:00 11/22/16 13:23 7440-38-2 Chromium <0.55 ug/L	Sample: S-UMW-2D	Lab ID:	60231802002	Collecte	d: 11/07/16	5 15:03	Received: 11/	09/16 04:20 M	atrix: Water	
Barium 85.8 ug/L 5.0 ug/L 1.0 ug/L 1.11/09/16 17:00 11/11/16 13:11 7440-39-3 440-41-7 7440-39-3 440-41-7 7440-4	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium	200.7 Metals, Total	Analytical I	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron 10600 ug/L 100 50.0 1 11/09/16 17:00 11/11/16 13:11 7440-42-8 Add-42-8 Calcium 177000 ug/L 100 8.1 1 11/09/16 17:00 11/11/16 13:11 7440-70-2 Calcium 7440-70-2 Calcium 11/09/16 17:00 11/11/16 13:11 7440-70-2 Calcium 2.5 ug/L 5.0 0.72 1 11/09/16 17:00 11/11/16 13:11 7440-748-4 Lead 4.2.5 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:11 7440-748-4 Lead 4.0 4.9 1 11/09/16 17:00 11/11/16 13:11 7440-748-4 1.0 1.0 0.50 1 11/09/16 17:00 11/11/16 13:11 7440-749-3 1 11/09/16 17:00 11/11/16 13:11 7440-749-3 2 1 11/09/16 17:00 11/12/16 13:23 7440-38-9 2 2 2 2 2 2 2 2 2 2 2 2 1 11/09/16 17:00 11/12/16 13:23 7440-34-9 2	Barium	85.8	ug/L	5.0	0.58	1	11/09/16 17:00	11/11/16 13:11	7440-39-3	
Calcium	Beryllium	<0.26	ug/L	1.0	0.26	1	11/09/16 17:00	11/11/16 13:11	7440-41-7	
Cobalt 40.72 ug/L 5.0 0.72 1 11/09/16 17:00 11/11/16 13:11 7440-48-4 Lead 42.5 ug/L 5.0 2.5 1 11/09/16 17:00 11/11/16 13:11 7440-48-4 42.5 1 11/09/16 17:00 11/11/16 13:11 7439-92-1 20.0 2.5 1 11/09/16 17:00 11/11/16 13:11 7439-93-2 1 7439-93-2 1 7439-93-2 1 7439-93-2 1 7439-93-2 1 7439-93-2 1 7439-93-2 2 2 1 11/109/16 17:00 11/11/16 13:11 7439-93-2 2 2 1 11/09/16 17:00 11/11/16 13:11 7439-93-2 2 2 2 1 11/109/16 17:00 11/11/16 13:11 7449-93-9 2 3 3 11/109/16 17:00 11/11/16 13:11 7449-93-93-2 3 3 1 11/109/16 17:00 11/12/16 13:23 7440-33-9 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Boron	10600	ug/L	100	50.0	1	11/09/16 17:00	11/11/16 13:11	7440-42-8	
Lead <2.5 ug/L 5.0 2.5 1 11/109/16 17:00 11/11/16 13:11 7439-92-1 14/109/16 17:00 11/11/16 17:00 11/11/16 13:11 7439-92-1 14/109/16 17:00 11/11/16 13:11 7439-93-2 14/109/16 17:00 11/11/16 13:11 7439-93-2 14/109/16 17:00 11/11/16 13:11 7439-93-7 7449-93-2 14/109/16 17:00 11/11/16 13:11 7439-93-2 14/109/16 17:00 11/11/16 13:11 7439-93-2 14/109/16 17:00 11/11/16 13:11 7439-93-2 14/109/16 17:00 11/11/16 13:11 7439-93-2 14/109/16 17:00 11/11/16 13:11 7439-93-2 14/109/16 17:00 11/11/16 13:11 7439-93-2 14/109/16 17:00 11/109/16 17:00 <th< td=""><td>Calcium</td><td>177000</td><td>ug/L</td><td>100</td><td>8.1</td><td>1</td><td>11/09/16 17:00</td><td>11/11/16 13:11</td><td>7440-70-2</td><td></td></th<>	Calcium	177000	ug/L	100	8.1	1	11/09/16 17:00	11/11/16 13:11	7440-70-2	
Lithium	Cobalt	<0.72	ug/L	5.0	0.72	1	11/09/16 17:00	11/11/16 13:11	7440-48-4	
Molybdenum 989 ug/L 20.0 0.52 1 11/09/16 17:00 11/11/16 13:11 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 13:23 7440-38-2 </td <td>Lead</td> <td><2.5</td> <td>ug/L</td> <td>5.0</td> <td>2.5</td> <td>1</td> <td>11/09/16 17:00</td> <td>11/11/16 13:11</td> <td>7439-92-1</td> <td></td>	Lead	<2.5	ug/L	5.0	2.5	1	11/09/16 17:00	11/11/16 13:11	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony Ansenic 1.5 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 13:23 7440-36-0 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7440-38-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/22/16 13:23 7782-49-2 11/09/16 17:00 11/09/16	Lithium	31.1	ug/L	10.0	4.9	1	11/09/16 17:00	11/11/16 13:11	7439-93-2	
Antimony	Molybdenum	989	ug/L	20.0	0.52	1	11/09/16 17:00	11/11/16 13:11	7439-98-7	
Arsenic 1.5 ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 13:23 7440-38-2 Cadmium	200.8 MET ICPMS	Analytical I	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Cadmium	Antimony	<0.058	ug/L	1.0	0.058	1	11/09/16 17:00	11/22/16 13:23	7440-36-0	
Chromium O.55J ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 13:23 7440-47-3 Selenium C.18 ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 13:23 7782-49-2 Thallium C.50 ug/L 1.0 0.50 1 11/09/16 17:00 11/22/16 13:23 7782-49-2 Thallium Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids Robert Analytical Method: SM 4500-H+B PH at 25 Degrees C 8.0 Std. Units O.10 O.50 1 11/12/16 11:30 H66 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.8 mg/L 1.0 O.50 1 11/18/16 18:05 16887-00-6	Arsenic	1.5	ug/L	1.0	0.10	1	11/09/16 17:00	11/22/16 13:23	7440-38-2	
Selenium <0.18 ug/L 1.0 0.18 1 11/09/16 17:00 11/12/16 13:23 7782-49-2 Thallium <0.50 ug/L 1.0 0.50 1 11/09/16 17:00 11/12/16 13:23 7782-49-2 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 11/16/16 16:10 11/17/16 12:25 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Analytical Method: SM 2540C 1 11/10/16 11:21 11/10/16 11:21 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B Heat 25 Degrees C 8.0 Std. Units 0.10 0.10 1 11/12/16 11:30 Heat 300.0	Cadmium	<0.029	ug/L	0.50	0.029	1	11/09/16 17:00	11/22/16 13:23	7440-43-9	
Thallium <0.50 ug/L 1.0 0.50 1 11/09/16 17:00 11/22/16 13:23 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 11/16/16 16:10 11/17/16 12:25 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 11/10/16 11:21 11/10/16 11:21 11/10/16 11:21 11/10/16 11:21 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 9.10 0.10 0.10 1 11/12/16 11:30 11/12/16 11:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 1.0 0.50 1 11/18/16 18:05 16887-00-6	Chromium	0.55J	ug/L	1.0	0.34	1	11/09/16 17:00	11/22/16 13:23	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.039 ug/L 0.20 0.039 1 11/16/16 16:10 11/17/16 12:25 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 823 mg/L 5.0 5.0 1 11/10/16 11:21 4500H+ pH, Electrometric 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 9.10 0.10 1 11/12/16 11:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 1 11/18/16 18:05 16887-00-6	Selenium	<0.18	ug/L	1.0	0.18	1	11/09/16 17:00	11/22/16 13:23	7782-49-2	
Mercury										



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

Sample: S-UMW-3D	Lab ID:	60231802003	Collecte	d: 11/07/16	3 13:52	Received: 11/	09/16 04:20 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	70.9	ug/L	5.0	0.58	1	11/09/16 17:00	11/11/16 13:13	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	11/09/16 17:00	11/11/16 13:13	7440-41-7	
Boron	26400	ug/L	100	50.0	1	11/09/16 17:00	11/11/16 13:13	7440-42-8	
Calcium	230000	ug/L	100	8.1	1	11/09/16 17:00	11/11/16 13:13	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	11/09/16 17:00	11/11/16 13:13	7440-48-4	
Lead	3.5J	ug/L	5.0	2.5	1	11/09/16 17:00	11/11/16 13:13	7439-92-1	
Lithium	16.2	ug/L	10.0	4.9	1	11/09/16 17:00	11/11/16 13:13	7439-93-2	
Molybdenum	4230	ug/L	20.0	0.52	1	11/09/16 17:00	11/11/16 13:13	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	11/09/16 17:00	11/22/16 13:28	7440-36-0	
Arsenic	0.41J	ug/L	1.0	0.10	1	11/09/16 17:00	11/22/16 13:28	7440-38-2	
Cadmium	0.12J	ug/L	0.50	0.029	1	11/09/16 17:00	11/22/16 13:28	7440-43-9	
Chromium	<0.34	ug/L	1.0	0.34	1	11/09/16 17:00	11/22/16 13:28	7440-47-3	
Selenium	0.27J	ug/L	1.0	0.18	1	11/09/16 17:00	11/22/16 13:28	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	11/09/16 17:00	11/22/16 13:28	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	11/16/16 16:10	11/17/16 12:27	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1120	mg/L	5.0	5.0	1		11/10/16 11:22		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.7	Std. Units	0.10	0.10	1		11/12/16 11:30		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	21.0	mg/L	2.0	1.0	2		11/19/16 11:25	16887-00-6	
Fluoride	0.95	mg/L	0.20	0.027	1		11/18/16 18:19	16984-48-8	
Sulfate	810	mg/L	50.0	7.7	50		11/19/16 11:41	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

Sample: S-UMW-4D	Lab ID:	60231802004	Collected	d: 11/07/16	7/16 11:05 Received: 11/09/16 04:20 Matrix: Water						
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual		
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	ration Meth	od: EP	A 200.7					
Barium	72.0	ug/L	5.0	0.58	1	11/09/16 17:00	11/11/16 13:16	7440-39-3			
Beryllium	<0.26	ug/L	1.0	0.26	1	11/09/16 17:00	11/11/16 13:16	7440-41-7			
Boron	24600	ug/L	100	50.0	1	11/09/16 17:00	11/11/16 13:16	7440-42-8	M1		
Calcium	186000	ug/L	100	8.1	1	11/09/16 17:00	11/11/16 13:16	7440-70-2	M1		
Cobalt	<0.72	ug/L	5.0	0.72	1	11/09/16 17:00	11/11/16 13:16	7440-48-4			
Lead	5.6	ug/L	5.0	2.5	1	11/09/16 17:00	11/11/16 13:16	7439-92-1			
Lithium	41.3	ug/L	10.0	4.9	1	11/09/16 17:00	11/11/16 13:16	7439-93-2			
Molybdenum	7190	ug/L	20.0	0.52	1	11/09/16 17:00	11/11/16 13:16	7439-98-7			
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	ration Meth	od: EP	A 200.8					
Antimony	<0.058	ug/L	1.0	0.058	1	11/09/16 17:00	11/22/16 13:32	7440-36-0			
Arsenic	0.18J	ug/L	1.0	0.10	1	11/09/16 17:00	11/22/16 13:32	7440-38-2			
Cadmium	0.13J	ug/L	0.50	0.029	1	11/09/16 17:00	11/22/16 13:32	7440-43-9			
Chromium	0.34J	ug/L	1.0	0.34	1	11/09/16 17:00	11/22/16 13:32	7440-47-3			
Selenium	0.22J	ug/L	1.0	0.18	1	11/09/16 17:00	11/22/16 13:32	7782-49-2			
Thallium	<0.50	ug/L	1.0	0.50	1	11/09/16 17:00	11/22/16 13:32	7440-28-0			
7470 Mercury	Analytical	Method: EPA 74	470 Prepa	ration Meth	od: EPA	A 7470					
Mercury	<0.039	ug/L	0.20	0.039	1	11/16/16 16:10	11/17/16 12:29	7439-97-6	M1		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C								
Total Dissolved Solids	1020	mg/L	5.0	5.0	1		11/10/16 11:22				
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B								
pH at 25 Degrees C	7.2	Std. Units	0.10	0.10	1		11/12/16 12:00		H6		
300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00								
Chloride	24.1	mg/L	2.0	1.0	2		11/19/16 12:27	16887-00-6			
Fluoride	0.78	mg/L	0.20	0.027	1		11/18/16 18:33	16984-48-8			
Sulfate	600	mg/L	50.0	7.7	50		11/19/16 13:13	14808-79-8			



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

Sample: S-UMW-5D	Lab ID:	60231802005	Collecte	d: 11/07/16	3 15:51	Received: 11/	09/16 04:20 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	296	ug/L	5.0	0.58	1	11/09/16 17:00	11/11/16 13:22	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	11/09/16 17:00	11/11/16 13:22	7440-41-7	
Boron	12400	ug/L	100	50.0	1	11/09/16 17:00	11/11/16 13:22	7440-42-8	
Calcium	94000	ug/L	100	8.1	1	11/09/16 17:00	11/11/16 13:22	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	11/09/16 17:00	11/11/16 13:22	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	11/09/16 17:00	11/11/16 13:22	7439-92-1	
Lithium	32.5	ug/L	10.0	4.9	1	11/09/16 17:00	11/11/16 13:22	7439-93-2	
Molybdenum	253	ug/L	20.0	0.52	1	11/09/16 17:00	11/11/16 13:22	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	11/09/16 17:00	11/22/16 13:45	7440-36-0	
Arsenic	0.62J	ug/L	1.0	0.10	1	11/09/16 17:00	11/22/16 13:45	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	11/09/16 17:00	11/22/16 13:45	7440-43-9	
Chromium	0.44J	ug/L	1.0	0.34	1	11/09/16 17:00	11/22/16 13:45	7440-47-3	
Selenium	0.29J	ug/L	1.0	0.18	1	11/09/16 17:00	11/22/16 13:45	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	11/09/16 17:00	11/22/16 13:45	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	11/16/16 16:10	11/17/16 12:40	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	455	mg/L	5.0	5.0	1		11/10/16 11:23		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.4	Std. Units	0.10	0.10	1		11/12/16 11:30		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	24.1	mg/L	2.0	1.0	2		11/19/16 13:59	16887-00-6	
Fluoride	0.70	mg/L	0.20	0.027	1		11/18/16 19:15	16984-48-8	
Sulfate	48.7	mg/L	5.0	0.77	5		11/19/16 14:15	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

Sample: S-UMW-6D	Lab ID:	60231802006	Collected	d: 11/08/16	09:25	Received: 11/	09/16 04:20 Ma	4:20 Matrix: Water						
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual					
200.7 Metals, Total	Analytical N	Method: EPA 20	00.7 Prepa	ration Meth	od: EP/	A 200.7								
Barium	116	ug/L	5.0	0.58	1	11/09/16 17:00	11/11/16 13:35	7440-39-3						
Beryllium	<0.26	ug/L	1.0	0.26	1	11/09/16 17:00	11/11/16 13:35	7440-41-7						
Boron	902	ug/L	100	50.0	1	11/09/16 17:00	11/11/16 13:35	7440-42-8						
Calcium	77600	ug/L	100	8.1	1	11/09/16 17:00	11/11/16 13:35	7440-70-2						
Cobalt	<0.72	ug/L	5.0	0.72	1	11/09/16 17:00	11/11/16 13:35	7440-48-4						
Lead	<2.5	ug/L	5.0	2.5	1	11/09/16 17:00	11/11/16 13:35	7439-92-1						
Lithium	13.6	ug/L	10.0	4.9	1	11/09/16 17:00	11/11/16 13:35	7439-93-2						
Molybdenum	114	ug/L	20.0	0.52	1	11/09/16 17:00	11/11/16 13:35	7439-98-7						
200.8 MET ICPMS	Analytical N	Method: EPA 20	00.8 Prepa	ration Meth	od: EP/	A 200.8								
Antimony	<0.058	ug/L	1.0	0.058	1	11/09/16 17:00	11/22/16 13:50	7440-36-0						
Arsenic	0.38J	ug/L	1.0	0.10	1	11/09/16 17:00	11/22/16 13:50	7440-38-2						
Cadmium	<0.029	ug/L	0.50	0.029	1	11/09/16 17:00	11/22/16 13:50	7440-43-9						
Chromium	0.37J	ug/L	1.0	0.34	1	11/09/16 17:00	11/22/16 13:50	7440-47-3						
Selenium	<0.18	ug/L	1.0	0.18	1	11/09/16 17:00	11/22/16 13:50	7782-49-2						
Thallium	<0.50	ug/L	1.0	0.50	1	11/09/16 17:00	11/22/16 13:50	7440-28-0						
7470 Mercury	Analytical N	Method: EPA 74	170 Prepai	ration Meth	od: EPA	7470								
Mercury	<0.039	ug/L	0.20	0.039	1	11/16/16 16:10	11/17/16 12:43	7439-97-6						
2540C Total Dissolved Solids	Analytical N	Method: SM 25	40C											
Total Dissolved Solids	352	mg/L	5.0	5.0	1		11/10/16 11:26							
4500H+ pH, Electrometric	Analytical N	Method: SM 45	00-H+B											
pH at 25 Degrees C	7.3	Std. Units	0.10	0.10	1		11/12/16 12:00		H6					
300.0 IC Anions 28 Days	Analytical N	Method: EPA 30	0.00											
Chloride	19.9	mg/L	2.0	1.0	2		11/19/16 14:30	16887-00-6						
Fluoride	0.40	mg/L	0.20	0.027	1		11/18/16 19:28	16984-48-8						
Sulfate	79.2	mg/L	5.0	0.77	5		11/19/16 14:45	14808-79-8						



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

Sample: S-BMW-1D	Lab ID: 6	0231802007	Collected	d: 11/07/16	09:45	Received: 11/	09/16 04:20 M	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical M	lethod: EPA 20	00.7 Prepa	ration Meth	od: EP/	A 200.7			
Barium	308	ug/L	5.0	0.58	1	11/09/16 17:00	11/11/16 13:38	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	11/09/16 17:00	11/11/16 13:38	7440-41-7	
Boron	174	ug/L	100	50.0	1	11/09/16 17:00	11/11/16 13:38	7440-42-8	
Calcium	129000	ug/L	100	8.1	1	11/09/16 17:00	11/11/16 13:38	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	11/09/16 17:00	11/11/16 13:38	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	11/09/16 17:00	11/11/16 13:38	7439-92-1	
Lithium	14.8	ug/L	10.0	4.9	1	11/09/16 17:00	11/11/16 13:38	7439-93-2	
Molybdenum	1.2J	ug/L	20.0	0.52	1	11/09/16 17:00	11/11/16 13:38	7439-98-7	В
200.8 MET ICPMS	Analytical M	lethod: EPA 20	00.8 Prepa	ration Meth	od: EP/	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	11/09/16 17:00	11/22/16 14:07	7440-36-0	
Arsenic	0.15J	ug/L	1.0	0.10	1	11/09/16 17:00	11/22/16 14:07	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	11/09/16 17:00	11/22/16 14:07	7440-43-9	
Chromium	0.35J	ug/L	1.0	0.34	1	11/09/16 17:00	11/22/16 14:07	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	11/09/16 17:00	11/22/16 14:07	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	11/09/16 17:00	11/22/16 14:07	7440-28-0	
7470 Mercury	Analytical M	lethod: EPA 74	470 Prepai	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	11/16/16 16:10	11/17/16 12:45	7439-97-6	
2540C Total Dissolved Solids	Analytical M	lethod: SM 25	40C						
Total Dissolved Solids	469	mg/L	5.0	5.0	1		11/10/16 11:24		
4500H+ pH, Electrometric	Analytical M	lethod: SM 45	00-H+B						
pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		11/12/16 11:30		H6
300.0 IC Anions 28 Days	Analytical M	lethod: EPA 30	0.00						
Chloride	5.6	mg/L	1.0	0.50	1		11/18/16 20:10	16887-00-6	
Fluoride	0.29	mg/L	0.20	0.027	1		11/18/16 20:10	16984-48-8	
Sulfate	37.7	mg/L	5.0	0.77	5		11/19/16 15:32	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Barium 73.3 ug/L 5.0 0.58 1 11/09/16 17:00 11/11/16 13:40 74	c: Water
Barium 73.3 ug/L 5.0 0.58 1 11/09/16 17:00 11/11/16 13:40 74 Beryllium <0.26 ug/L 1.0 0.26 1 11/09/16 17:00 11/11/16 13:40 74 Boron 26700 ug/L 100 50.0 1 11/09/16 17:00 11/11/16 13:40 74 Calcium 240000 ug/L 100 8.1 1 11/09/16 17:00 11/11/16 13:40 74 Cobalt <0.72 ug/L 5.0 0.72 1 11/09/16 17:00 11/11/16 13:40 74 Lead 3.2J ug/L 5.0 2.5 1 11/09/16 17:00 11/11/16 13:40 74 Lithium 20.3 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:40 74 Molybdenum 4340 ug/L 20.0 0.52 1 11/09/16 17:00 11/11/16 13:40 74 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 14:12 74 Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 14:12 74 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 74	CAS No. Qual
Beryllium	
Boron 26700 ug/L 100 50.0 1 11/09/16 17:00 11/11/16 13:40 74 Calcium 240000 ug/L 100 8.1 1 11/09/16 17:00 11/11/16 13:40 74 Cobalt <0.72 ug/L 5.0 0.72 1 11/09/16 17:00 11/11/16 13:40 74 Lead 3.2J ug/L 5.0 2.5 1 11/09/16 17:00 11/11/16 13:40 74 Lithium 20.3 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:40 74 Molybdenum 4340 ug/L 20.0 0.52 1 11/09/16 17:00 11/11/16 13:40 74 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 14:12 74 Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Chromium	140-39-3
Calcium 240000 ug/L 100 8.1 1 11/09/16 17:00 11/11/16 13:40 74 Cobalt <0.72	140-41-7
Cobalt <0.72 ug/L 5.0 0.72 1 11/09/16 17:00 11/11/16 13:40 74 Lead 3.2J ug/L 5.0 2.5 1 11/09/16 17:00 11/11/16 13:40 74 Lithium 20.3 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:40 74 Molybdenum 4340 ug/L 20.0 0.52 1 11/09/16 17:00 11/11/16 13:40 74 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 14:12 74 Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 14:12 74 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium <td>40-42-8</td>	40-42-8
Lead 3.2J ug/L 5.0 2.5 1 11/09/16 17:00 11/11/16 13:40 74 Lithium 20.3 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:40 74 Molybdenum 4340 ug/L 20.0 0.52 1 11/09/16 17:00 11/11/16 13:40 74 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 14:12 74 Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 14:12 74 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 74	40-70-2
Lithium 20.3 ug/L 10.0 4.9 1 11/09/16 17:00 11/11/16 13:40 74 Molybdenum 4340 ug/L 20.0 0.52 1 11/09/16 17:00 11/11/16 13:40 74 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 14:12 74 Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 14:12 74 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 74	40-48-4
Molybdenum 4340 ug/L 20.0 0.52 1 11/09/16 17:00 11/11/16 13:40 74 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 14:12 74 Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 14:12 74 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 74	39-92-1
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 11/09/16 17:00 11/22/16 14:12 74 Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 14:12 74 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 77	39-93-2
Antimony	39-98-7
Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 14:12 74 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 77	
Arsenic 0.44J ug/L 1.0 0.10 1 11/09/16 17:00 11/22/16 14:12 74 Cadmium <0.029 ug/L 0.50 0.029 1 11/09/16 17:00 11/22/16 14:12 74 Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 77	140-36-0
Chromium <0.34 ug/L 1.0 0.34 1 11/09/16 17:00 11/22/16 14:12 74 Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 77	
Selenium 0.23J ug/L 1.0 0.18 1 11/09/16 17:00 11/22/16 14:12 77	40-43-9
y	40-47-3
Thallium <0.50 ug/L 1.0 0.50 1 11/09/16 17:00 11/22/16 14:12 74	'82-49-2
• • • • • • • • • • • • • • • • • • •	40-28-0
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470	
Mercury <0.039 ug/L 0.20 0.039 1 11/16/16 16:10 11/17/16 12:47 74	39-97-6
2540C Total Dissolved Solids Analytical Method: SM 2540C	
Total Dissolved Solids 1170 mg/L 5.0 5.0 1 11/10/16 11:24	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B	
pH at 25 Degrees C 7.8 Std. Units 0.10 0.10 1 11/12/16 11:00	H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0	
Chloride 21.2 mg/L 2.0 1.0 2 11/19/16 15:47 16	3887-00-6
y	6984-48-8
Sulfate 774 mg/L 50.0 7.7 50 11/19/16 16:03 14	808-79-8



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

					5 15:00	Received: 11/	U3/10 U4.20 IVI	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
Barium	<0.58	ug/L	5.0	0.58	1	11/09/16 17:00	11/11/16 13:42	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	11/09/16 17:00	11/11/16 13:42	7440-41-7	
Boron	70.0J	ug/L	100	50.0	1	11/09/16 17:00	11/11/16 13:42	7440-42-8	
Calcium	89.4J	ug/L	100	8.1	1	11/09/16 17:00	11/11/16 13:42	7440-70-2	В
Cobalt	<0.72	ug/L	5.0	0.72	1	11/09/16 17:00	11/11/16 13:42	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	11/09/16 17:00	11/11/16 13:42	7439-92-1	
Lithium	<4.9	ug/L	10.0	4.9	1	11/09/16 17:00	11/11/16 13:42	7439-93-2	
Molybdenum	4.5J	ug/L	20.0	0.52	1	11/09/16 17:00	11/11/16 13:42	7439-98-7	В
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	ration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	11/09/16 17:00	11/22/16 14:03	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1	11/09/16 17:00	11/22/16 14:03	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	11/09/16 17:00	11/22/16 14:03		
Chromium	< 0.34	ug/L	1.0	0.34	1	11/09/16 17:00	11/22/16 14:03	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	11/09/16 17:00	11/22/16 14:03	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	11/09/16 17:00	11/22/16 14:03	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.039	ug/L	0.20	0.039	1	11/16/16 16:10	11/17/16 12:49	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		11/10/16 11:26		
4500H+ pH, Electrometric	Analytical	Method: SM 45	500-H+B						
pH at 25 Degrees C	6.1	Std. Units	0.10	0.10	1		11/14/16 06:30		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	<0.50	mg/L	1.0	0.50	1		11/18/16 20:38	16887-00-6	
Fluoride	<0.027	mg/L	0.20	0.027	1		11/18/16 20:38		
Sulfate	<0.15	mg/L	1.0	0.15	1		11/18/16 20:38		



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

Sample: S-BMW-3D	Lab ID:	60232579001	Collecte	d: 11/17/16	3 13:53	Received: 11/	18/16 03:35 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	612	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 14:37	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 14:37	7440-41-7	
Boron	50.7J	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 14:37	7440-42-8	
Calcium	104000	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 14:37	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 14:37	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 14:37	7439-92-1	
Lithium	14.2	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 14:37	7439-93-2	
Molybdenum	1.8J	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 14:37	7439-98-7	В
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	0.27J	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 16:23	7440-36-0	В
Arsenic	0.24J	ug/L	1.0	0.10	1	11/18/16 16:30	12/01/16 18:13	7440-38-2	
Cadmium	0.046J	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 16:23	7440-43-9	В
Chromium	0.46J	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 16:23	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 16:23	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 16:23	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	0.046J	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:50	7439-97-6	В
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
Total Dissolved Solids	429	mg/L	5.0	5.0	1		11/23/16 15:28		
4500H+ pH, Electrometric	Analytical	Method: SM 45	500-H+B						
pH at 25 Degrees C	7.3	Std. Units	0.10	0.10	1		11/30/16 16:23		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	8.5	mg/L	1.0	0.50	1		12/09/16 09:52	16887-00-6	M1
Fluoride	0.28	mg/L	0.20	0.027	1		12/09/16 09:52		M1
Sulfate	26.9	mg/L	2.0	0.31	2		12/12/16 00:22		***
	_5.0	···ə/ –		0.01	_		,, .o oo		



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

QC Batch: 455125 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009

METHOD BLANK: 1863621 Matrix: Water

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009

Blank Reporting Units MDL Qualifiers Parameter Result Limit Analyzed Mercury ug/L < 0.039 0.20 0.039 11/17/16 12:14 LABORATORY CONTROL SAMPLE: 1863622 LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers 5 5.6 113 80-120 Mercury ug/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1863624 1863623 MS MSD MSD MS 60231802004 Spike Spike MS MSD % Rec Max Parameter Units Result Conc. Result Result % Rec % Rec Limits RPD RPD Conc. Qual Mercury ug/L < 0.039 5 5 3.6 3.5 72 75-125 2 20 M1

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

QC Batch: 456625 Analysis Method: EPA 7470

QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60232579001

METHOD BLANK: 1869658 Matrix: Water

Associated Lab Samples: 60232579001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L 0.045J 0.20 0.039 11/29/16 10:56

LABORATORY CONTROL SAMPLE: 1869659

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 5.8 115 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1869661 1869660 MS MSD MS 60232589004 Spike Spike MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 0.044J 5 5 5.5 75-125 20 Mercury ug/L 5.8 110 115

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

QC Batch: 454175 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009

METHOD BLANK: 1859682 Matrix: Water

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	11/11/16 13:06	
Beryllium	ug/L	< 0.26	1.0	0.26	11/11/16 13:06	
Boron	ug/L	<50.0	100	50.0	11/11/16 13:06	
Calcium	ug/L	32.2J	100	8.1	11/11/16 13:06	
Cobalt	ug/L	< 0.72	5.0	0.72	11/11/16 13:06	
Lead	ug/L	<2.5	5.0	2.5	11/11/16 13:06	
Lithium	ug/L	<4.9	10.0	4.9	11/11/16 13:06	
Molybdenum	ug/L	0.94J	20.0	0.52	11/11/16 13:06	

LABORATORY CONTROL SAMPLE:	1859683					
Parameter	Units	Spike	LCS	LCS % Rec	% Rec Limits	Qualifiers
		Conc.	Result	% Kec		Qualifiers
Barium	ug/L	1000	983	98	85-115	
Beryllium	ug/L	1000	1000	100	85-115	
Boron	ug/L	1000	1000	100	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Cobalt	ug/L	1000	1020	102	85-115	
Lead	ug/L	1000	1030	103	85-115	
Lithium	ug/L	1000	980	98	85-115	
Molybdenum	ug/L	1000	1050	105	85-115	
Molybdenum	ŭ	1000	1050	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1859684 1859685												
			MS	MSD								
	6	0231802004	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	72.0	1000	1000	1040	1050	97	98	70-130	1	20	
Beryllium	ug/L	<0.26	1000	1000	988	992	99	99	70-130	0	20	
Boron	ug/L	24600	1000	1000	25100	25200	42	52	70-130	0	20	M1
Calcium	ug/L	186000	10000	10000	190000	189000	46	30	70-130	1	20	M1
Cobalt	ug/L	< 0.72	1000	1000	986	1000	99	100	70-130	2	20	
Lead	ug/L	5.6	1000	1000	977	993	97	99	70-130	2	20	
Lithium	ug/L	41.3	1000	1000	1020	1040	98	99	70-130	1	20	
Molybdenum	ug/L	7190	1000	1000	8020	8100	83	90	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 18596	86		1859687							
			MS	MSD								
	6	0231804001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	72.8	1000	1000	1050	1060	98	98	70-130	0	20	
Beryllium	ug/L	< 0.26	1000	1000	990	998	99	100	70-130	1	20	
Boron	ug/L	1380	1000	1000	2400	2410	103	103	70-130	0	20	
Calcium	ug/L	87400	10000	10000	97200	98300	97	108	70-130	1	20	
Cobalt	ug/L	0.81J	1000	1000	1000	1010	100	101	70-130	1	20	
Lead	ug/L	<2.5	1000	1000	1000	1020	100	102	70-130	1	20	
Lithium	ug/L	17.9	1000	1000	1010	1010	99	99	70-130	0	20	
Molybdenum	ug/L	65.0	1000	1000	1130	1140	106	108	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

QC Batch: 455694 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60232579001

METHOD BLANK: 1865875 Matrix: Water

Associated Lab Samples: 60232579001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	11/23/16 14:35	
Beryllium	ug/L	<0.26	1.0	0.26	11/23/16 14:35	
Boron	ug/L	<50.0	100	50.0	11/23/16 14:35	
Calcium	ug/L	<8.1	100	8.1	11/23/16 14:35	
Cobalt	ug/L	< 0.72	5.0	0.72	11/23/16 14:35	
Lead	ug/L	<2.5	5.0	2.5	11/23/16 14:35	
Lithium	ug/L	<4.9	10.0	4.9	11/23/16 14:35	
Molybdenum	ug/L	< 0.52	20.0	0.52	11/23/16 14:35	

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
- arameter						Qualificis
Barium	ug/L	1000	1000	100	85-115	
Beryllium	ug/L	1000	983	98	85-115	
Boron	ug/L	1000	979	98	85-115	
Calcium	ug/L	10000	9840	98	85-115	
Cobalt	ug/L	1000	1020	102	85-115	
Lead	ug/L	1000	1030	103	85-115	
Lithium	ug/L	1000	993	99	85-115	
Molybdenum	ug/L	1000	1050	105	85-115	

MATRIX SPIKE & MATRIX SI	PIKE DUPLICA	TE: 18658	77		1865878							
			MS	MSD								
	6	0232589004	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	256	1000	1000	1260	1280	100	103	70-130	2	20	
Beryllium	ug/L	< 0.26	1000	1000	1000	1020	100	102	70-130	2	20	
Boron	ug/L	4450	1000	1000	5380	5440	93	98	70-130	1	20	
Calcium	ug/L	69700	10000	10000	78200	79200	85	95	70-130	1	20	
Cobalt	ug/L	< 0.72	1000	1000	1010	1020	101	102	70-130	1	20	
Lead	ug/L	<2.5	1000	1000	991	1010	99	101	70-130	2	20	
Lithium	ug/L	39.9	1000	1000	1050	1070	101	103	70-130	2	20	
Molybdenum	ug/L	109	1000	1000	1170	1190	106	108	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

MATRIX SPIKE SAMPLE:	1865879						
		60232589006	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	 ug/L	166	1000	1150	99	70-130	
Beryllium	ug/L	<0.26	1000	995	99	70-130	
Boron	ug/L	1820	1000	2800	97	70-130	
Calcium	ug/L	90200	10000	98700	85	70-130	
Cobalt	ug/L	< 0.72	1000	1000	100	70-130	
Lead	ug/L	<2.5	1000	998	100	70-130	
Lithium	ug/L	<4.9	1000	998	100	70-130	
Molybdenum	ug/L	1.0J	1000	1060	106	70-130	

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Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

QC Batch: 454179 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009

METHOD BLANK: 1859707 Matrix: Water

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	11/22/16 13:10	
Arsenic	ug/L	<0.10	1.0	0.10	11/22/16 13:10	
Cadmium	ug/L	< 0.029	0.50	0.029	11/22/16 13:10	
Chromium	ug/L	< 0.34	1.0	0.34	11/22/16 13:10	
Selenium	ug/L	<0.18	1.0	0.18	11/22/16 13:10	
Thallium	ug/L	< 0.50	1.0	0.50	11/22/16 13:10	

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
ntimony	ug/L	40	38.9	97	85-115	
senic	ug/L	40	38.8	97	85-115	
admium	ug/L	40	39.1	98	85-115	
romium	ug/L	40	40.2	100	85-115	
lenium	ug/L	40	38.3	96	85-115	
nallium	ug/L	40	40.1	100	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 18597	09		1859710							
Parameter	6 Units	0231802004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	<0.058	40	40	39.2	37.6	98	94	70-130	4	20	
Arsenic	ug/L	0.18J	40	40	39.6	36.9	99	92	70-130	7	20	
Cadmium	ug/L	0.13J	40	40	38.1	36.3	95	90	70-130	5	20	
Chromium	ug/L	0.34J	40	40	39.7	37.3	98	92	70-130	6	20	
Selenium	ug/L	0.22J	40	40	37.2	34.8	92	86	70-130	7	20	
Thallium	ug/L	< 0.50	40	40	41.3	40.0	103	100	70-130	3	20	

MATRIX SPIKE & MATRIX SP	PIKE DUPLICA	TE: 18597	11		1859712							
Parameter	6 Units	0231804001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.35J	40	40	37.0	32.8	92	81	70-130	12	20	
Arsenic	ug/L	1.8	40	40	38.3	34.8	91	83	70-130	9	20	
Cadmium	ug/L	0.044J	40	40	35.6	32.0	89	80	70-130	11	20	

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Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	TE: 18597	11		1859712							
Parameter	6 Units	0231804001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	ug/L	0.47J	40	40	37.0	32.8	91	81	70-130	12	20	
Selenium	ug/L	1.8	40	40	35.2	32.6	84	77	70-130	8	20	
Thallium	ug/L	< 0.50	40	40	37.6	33.6	94	84	70-130	11	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

QC Batch: 455691 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60232579001

METHOD BLANK: 1865866 Matrix: Water

Associated Lab Samples: 60232579001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.18J	1.0	0.058	11/30/16 16:14	
Arsenic	ug/L	<0.10	1.0	0.10	12/01/16 17:55	
Cadmium	ug/L	0.046J	0.50	0.029	11/30/16 16:14	
Chromium	ug/L	< 0.34	1.0	0.34	11/30/16 16:14	
Selenium	ug/L	<0.18	1.0	0.18	11/30/16 16:14	
Thallium	ug/L	< 0.50	1.0	0.50	11/30/16 16:14	

LABORATORY CONTROL SAMPLE:	1865867					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	41.8	105	85-115	
Arsenic	ug/L	40	39.4	98	85-115	
Cadmium	ug/L	40	40.4	101	85-115	
Chromium	ug/L	40	41.4	103	85-115	
Selenium	ug/L	40	39.5	99	85-115	
Thallium	ug/L	40	38.1	95	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 18658	68		1865869							
Parameter	0 Units	60232589004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.18J	40	40	42.4	42.0	106	105	70-130	1	20	
Arsenic	ug/L	6.4	40	40	47.1	45.0	102	96	70-130	4	20	
Cadmium	ug/L	0.032J	40	40	39.6	39.3	99	98	70-130	1	20	
Chromium	ug/L	0.57J	40	40	42.1	40.8	104	101	70-130	3	20	
Selenium	ug/L	<0.18	40	40	38.1	37.6	95	94	70-130	1	20	
Thallium	ug/L	< 0.50	40	40	40.6	39.9	101	100	70-130	2	20	

MATRIX SPIKE SAMPLE:	1865870						
		60232589005	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	0.20J	40	42.0	105	70-130	
Arsenic	ug/L	4.3	40	46.9	106	70-130	
Cadmium	ug/L	0.048J	40	39.5	99	70-130	
Chromium	ug/L	0.51J	40	41.7	103	70-130	
Selenium	ug/L	<0.18	40	38.4	96	70-130	
Thallium	ug/L	<0.50	40	40.3	101	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Total Dissolved Solids

Date: 12/23/2016 11:05 AM

QC Batch: 454266 Analysis Method: SM 2540C

mg/L

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009

METHOD BLANK: 1860122 Matrix: Water

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

Parameter	Units	Blank Result	Reportin Limit	g MDL		Analyz	zed	Qualifiers
Total Dissolved Solids	mg/L	<5	.0	5.0	5.0	11/10/16	11:13	
LABORATORY CONTROL SAMPLE:	1860123							
		Spike	LCS	LCS	%	6 Rec		
Parameter	Units	Conc.	Result	% Rec	L	imits	Qual	lifiers
Total Dissolved Solids	mg/L	1000	955	96		80-120		
SAMPLE DUPLICATE: 1860124								
SAMPLE DUPLICATE: 1860124		6023174700	6 Dup			Max		
SAMPLE DUPLICATE: 1860124 Parameter	Units	6023174700 Result	6 Dup Result	RPD		Max RPD		Qualifiers
	Units mg/L	Result	Result	RPD 643	0		10	Qualifiers
Parameter	_	Result	Result		0			Qualifiers
Parameter Total Dissolved Solids	_	Result	Result		0			Qualifiers

1020

1030

10

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 456308 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60232579001

METHOD BLANK: 1868508 Matrix: Water

Associated Lab Samples: 60232579001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 5.0 11/23/16 15:12

LABORATORY CONTROL SAMPLE: 1868509

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

SAMPLE DUPLICATE: 1867313

60232589004 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 406 395 3 10 **Total Dissolved Solids** mg/L

SAMPLE DUPLICATE: 1868510

Date: 12/23/2016 11:05 AM

60232503004 Dup Max RPD RPD Parameter Units Result Result Qualifiers 5280 **Total Dissolved Solids** mg/L 5400 2 10

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 454661 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60231802008

SAMPLE DUPLICATE: 1862077

Date: 12/23/2016 11:05 AM

60231506002 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.0 pH at 25 Degrees C 7.0 5 H6 Std. Units 0



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 454662 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60231802002, 60231802003, 60231802005, 60231802007

SAMPLE DUPLICATE: 1862079

Date: 12/23/2016 11:05 AM

60231501003 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers pH at 25 Degrees C 4.8 5 H6 Std. Units 4.8 0

(913)599-5665



QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 454663 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60231802004, 60231802006

SAMPLE DUPLICATE: 1862080

Date: 12/23/2016 11:05 AM

60231802004 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.2 pH at 25 Degrees C 7.2 5 H6 Std. Units 0



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 454699 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60231802001, 60231802009

SAMPLE DUPLICATE: 1862311

Date: 12/23/2016 11:05 AM

60231804001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.3 pH at 25 Degrees C 7.3 5 H6 Std. Units 0



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 457036 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60232579001

SAMPLE DUPLICATE: 1871119

Date: 12/23/2016 11:05 AM

60232598006 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.8 pH at 25 Degrees C 7.8 5 H6 Std. Units 0



Reporting

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

QC Batch: 455675 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples:

60231802008, 60231802009

METHOD BLANK: 1865810 Matrix: Water

60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,Associated Lab Samples:

Blank

60231802008, 60231802009

Parameter		Units	Result	t	Limit	MDL		Analyzed	Qua	alifiers		
Chloride		mg/L		:0.50	1.0		0.50 11/	/18/16 17:2	23			
Fluoride		mg/L	<0	0.027	0.20	0	.027 11/	/18/16 17:2	23			
Sulfate		mg/L	<	:0.15	1.0		0.15 11/	/18/16 17:2	23			
LABORATORY CONTROL SAM	PLE: 18	65811										
			Spike	LCS	3	LCS	% Re	С				
Parameter		Units	Conc.	Resu	ult	% Rec	Limit	s C	ualifiers			
Chloride		mg/L	5		4.7	95	9	0-110		-		
Fluoride		mg/L	2.5		2.4	97	9	0-110				
Sulfate		mg/L	5		4.9	98	9	0-110				
MATRIX SPIKE & MATRIX SPIK	E DUDUC	ATE: 18658	12		1865813							
WATRIA SPIRE & WATRIA SPIR	L DOFLIC	AIL. 10030	MS	MSD	1003013							
		60231802004	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Fluoride	mg/L	0.78	2.5	2.5	3.6	3.6	112	114	80-120	1	15	
MATRIX SPIKE SAMPLE:	18	65814										
			6023180	04001	Spike	MS	N	ИS	% Rec			
Parameter		Units	Resu	ult	Conc.	Result	%	Rec	Limits		Qualit	iers
Fluoride		mg/L		0.26	2.5	3	5.2	116	80-	120		

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Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

QC Batch: 455761 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008

METHOD BLANK: 1866337 Matrix: Water

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	11/19/16 08:46	
Sulfate	mg/L	<0.15	1.0	0.15	11/19/16 08:46	

LABORATORY CONTROL SAMPLE:	1866338					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		4.8	96	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIK	E DUPLIC	CATE: 18663	39		1866340							
			MS	MSD								
		60231802004	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	24.1	10	10	35.9	36.0	118	119	80-120	0	15	
Sulfate	mg/L	600	250	250	836	837	94	95	80-120	0	15	

MATRIX SPIKE SAMPLE:	1866341						
		60231804001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	24.9	10	37.1	122	80-120	M1
Sulfate	mg/L	115	50	167	103	80-120	

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



AMEREN SIOUX ENERGY CTR-BOT Project:

Pace Project No.: 60231802

Fluoride

Date: 12/23/2016 11:05 AM

QC Batch: 458214 QC Batch Method: EPA 300.0 Analysis Method: Analysis Description: 300.0 IC Anions

EPA 300.0

Associated Lab Samples: 60232579001

METHOD BLANK: 1875991 Matrix: Water

mg/L

Associated Lab Samples: 60232579001

Blank Reporting Limit MDL Parameter Units Result Qualifiers Analyzed Chloride < 0.50 1.0 12/09/16 08:34 mg/L 0.50 Fluoride mg/L < 0.027 0.20 0.027 12/09/16 08:34

LABORATORY CONTROL SAMPLE: 1875992 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.8 96 90-110 mg/L

2.5

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1875993 1875994 MSD MS 60232579001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 8.5 5 5 14.6 14.6 122 121 80-120 0 15 M1 Fluoride mg/L 0.28 2.5 2.5 3.3 3.3 122 122 80-120 15 M1

2.4

98

90-110

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 458452 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60232579001

METHOD BLANK: 1876996 Matrix: Water

Associated Lab Samples: 60232579001

Parameter Units Result Limit MDL Analyzed Qualifiers

Sulfate mg/L <0.15 1.0 0.15 12/11/16 17:25

LABORATORY CONTROL SAMPLE: 1876997

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Sulfate mg/L 5 5.0 99 90-110

MATRIX SPIKE SAMPLE: 1877000

Date: 12/23/2016 11:05 AM

MS 60232361003 Spike MS % Rec Parameter Units Result Conc. Result % Rec Limits Qualifiers 89.9 155 80-120 M1 Sulfate 50 130 mg/L

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



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-1D Lab ID: 60231802001 Collected: 11/08/16 11:40 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.181 ± 0.276 (0.444) C:NA T:102%	pCi/L	12/06/16 19:15	13982-63-3	
Radium-228	EPA 904.0	0.747 ± 0.375 (0.642) C:79% T:82%	pCi/L	12/07/16 11:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-2D Lab ID: 60231802002 Collected: 11/07/16 15:03 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.074 ± 0.437 (0.975) C:NA T:87%	pCi/L	12/06/16 19:15	13982-63-3	
Radium-228	EPA 904.0	0.477 ± 0.305 (0.562) C:80% T:83%	pCi/L	12/07/16 11:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-3D Lab ID: 60231802003 Collected: 11/07/16 13:52 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.284 (0.578) C:NA T:94%	pCi/L	12/06/16 19:15	13982-63-3	
Radium-228	EPA 904.0	0.567 ± 0.335 (0.595) C:79% T:81%	pCi/L	12/07/16 11:58	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-4D Lab ID: 60231802004 Collected: 11/07/16 11:05 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0677 ± 0.309 (0.629) C:NA T:87%	pCi/L	12/06/16 19:15	13982-63-3	
Radium-228	EPA 904.0	0.615 ± 0.328 (0.568) C:81% T:85%	pCi/L	12/07/16 11:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-5D Lab ID: 60231802005 Collected: 11/07/16 15:51 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.380 (0.804) C:NA T:94%	pCi/L	12/06/16 19:15	13982-63-3	
Radium-228	EPA 904.0	0.902 ± 0.409 (0.671) C:78% T:88%	pCi/L	12/07/16 11:58	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-6D Lab ID: 60231802006 Collected: 11/08/16 09:25 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.595 ± 0.410 (0.438) C:NA T:94%	pCi/L	12/06/16 19:15	13982-63-3	
Radium-228	EPA 904.0	0.0748 ± 0.314 (0.714) C:79% T:77%	pCi/L	12/07/16 11:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-BMW-1D Lab ID: 60231802007 Collected: 11/07/16 09:45 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID: Sample Type:					
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.659 ± 0.490 (0.645) C:NA T:95%	pCi/L	12/06/16 19:44	13982-63-3	
Radium-228	EPA 904.0	0.863 ± 0.358 (0.530) C:85% T:84%	pCi/L	12/07/16 11:57	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-DUP-1 Lab ID: 60231802008 Collected: 11/07/16 08:00 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.283 ± 0.341 (0.520) C:NA T:83%	pCi/L	12/06/16 19:45	13982-63-3	
Radium-228	EPA 904.0	0.448 ± 0.309 (0.585) C:81% T:84%	pCi/L	12/07/16 11:18	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-FB-1 Lab ID: 60231802009 Collected: 11/08/16 15:00 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.276 (0.620) C:NA T:95%	pCi/L	12/06/16 19:44	13982-63-3	
Radium-228	EPA 904.0	0.447 ± 0.354 (0.697) C:86% T:75%	pCi/L	12/07/16 11:57	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-4D MS Lab ID: 60231802010 Collected: 11/07/16 11:05 Received: 11/09/16 04:20 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	94.0 %REC ± NA (NA) C:NA T:NA	pCi/L	12/06/16 19:44	13982-63-3	
Radium-228	EPA 904.0	136.05 %REC ± NA (NA) C:NA T:NA	pCi/L	12/07/16 11:19	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-UMW-4D MSD Lab ID: 60231802011 Collected: 11/07/16 11:05 Received: 11/09/16 04:20 Matrix: Water PWS: Site ID: Sample Type: Method Act ± Unc (MDC) Carr Trac Units CAS No. **Parameters** Analyzed Qual EPA 903.1 89.4 %REC 4.92 RPD ± NA Radium-226 pCi/L 12/06/16 19:45 13982-63-3 (NA) C:NA T:NA 108.29 %REC 22.73 RPD ± EPA 904.0 pCi/L Radium-228 12/07/16 11:19 15262-20-1

NA (NA) C:NA T:NA



Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Sample: S-BMW-3D Lab ID: 60232579001 Collected: 11/17/16 13:53 Received: 11/18/16 03:35 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.340 ± 0.517 (0.890) C:NA T:92%	pCi/L	12/19/16 12:50	13982-63-3	
Radium-228	EPA 904.0	0.992 ± 0.415 (0.648) C:77% T:85%	pCi/L	12/20/16 15:33	15262-20-1	

(913)599-5665



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 241596 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009, 60231802010, 60231802011

METHOD BLANK: 1187622 Matrix: Water

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009, 60231802010, 60231802011

Parameter Act \pm Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.0612 \pm 0.317 (0.659) C:NA T:97% pCi/L 12/06/16 12:19

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 242561 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60232579001

METHOD BLANK: 1192292 Matrix: Water

Associated Lab Samples: 60232579001

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 0.133 ± 0.319 (0.615) C:NA T:96%
 pCi/L
 12/19/16 12:05

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 242562 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60232579001

METHOD BLANK: 1192293 Matrix: Water

Associated Lab Samples: 60232579001

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.531 ± 0.446 (0.896) C:61% T:87%
 pCi/L
 12/20/16 11:48

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

QC Batch: 241603 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009, 60231802010, 60231802011

METHOD BLANK: 1187635 Matrix: Water

Associated Lab Samples: 60231802001, 60231802002, 60231802003, 60231802004, 60231802005, 60231802006, 60231802007,

60231802008, 60231802009, 60231802010, 60231802011

 Parameter
 Act \pm Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.948 \pm 0.429 (0.689) C:74% T:80%
 pCi/L
 12/07/16 11:57

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

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.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 12/23/2016 11:05 AM

B Analyte was detected in the associated method blank.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

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



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

₋ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60231802001	S-UMW-1D	EPA 200.7	454175	EPA 200.7	454324
0231802002	S-UMW-2D	EPA 200.7	454175	EPA 200.7	454324
0231802003	S-UMW-3D	EPA 200.7	454175	EPA 200.7	454324
0231802004	S-UMW-4D	EPA 200.7	454175	EPA 200.7	454324
0231802005	S-UMW-5D	EPA 200.7	454175	EPA 200.7	454324
0231802006	S-UMW-6D	EPA 200.7	454175	EPA 200.7	454324
0231802007	S-BMW-1D	EPA 200.7	454175	EPA 200.7	454324
0231802008	S-UMW-DUP-1	EPA 200.7	454175	EPA 200.7	454324
0231802009	S-UMW-FB-1	EPA 200.7	454175	EPA 200.7	454324
0232579001	S-BMW-3D	EPA 200.7	455694	EPA 200.7	455911
0231802001	S-UMW-1D	EPA 200.8	454179	EPA 200.8	454325
0231802002	S-UMW-2D	EPA 200.8	454179	EPA 200.8	454325
0231802003	S-UMW-3D	EPA 200.8	454179	EPA 200.8	454325
0231802004	S-UMW-4D	EPA 200.8	454179	EPA 200.8	454325
0231802005	S-UMW-5D	EPA 200.8	454179	EPA 200.8	454325
0231802006	S-UMW-6D	EPA 200.8	454179	EPA 200.8	454325
0231802007	S-BMW-1D	EPA 200.8	454179	EPA 200.8	454325
0231802008	S-UMW-DUP-1	EPA 200.8	454179	EPA 200.8	454325
231802009	S-UMW-FB-1	EPA 200.8	454179	EPA 200.8	454325
0232579001	S-BMW-3D	EPA 200.8	455691	EPA 200.8	455912
0231802001	S-UMW-1D	EPA 7470	455125	EPA 7470	455349
0231802002	S-UMW-2D	EPA 7470	455125	EPA 7470	455349
0231802003	S-UMW-3D	EPA 7470	455125	EPA 7470	455349
0231802004	S-UMW-4D	EPA 7470	455125	EPA 7470	455349
0231802005	S-UMW-5D	EPA 7470	455125	EPA 7470	455349
0231802006	S-UMW-6D	EPA 7470	455125	EPA 7470	455349
0231802007	S-BMW-1D	EPA 7470	455125	EPA 7470	455349
0231802008	S-UMW-DUP-1	EPA 7470	455125	EPA 7470	455349
0231802009	S-UMW-FB-1	EPA 7470	455125	EPA 7470	455349
0232579001	S-BMW-3D	EPA 7470	456625	EPA 7470	456654
0231802001	S-UMW-1D	EPA 903.1	241596		
0231802002	S-UMW-2D	EPA 903.1	241596		
0231802003	S-UMW-3D	EPA 903.1	241596		
0231802004	S-UMW-4D	EPA 903.1	241596		
0231802005	S-UMW-5D	EPA 903.1	241596		
0231802006	S-UMW-6D	EPA 903.1	241596		
0231802007	S-BMW-1D	EPA 903.1	241596		
0231802007	S-UMW-DUP-1	EPA 903.1	241596		
0231802009	S-UMW-FB-1	EPA 903.1	241596		
231802010	S-UMW-4D MS	EPA 903.1	241596		
)231802011	S-UMW-4D MSD	EPA 903.1	241596		
0232579001	S-BMW-3D	EPA 903.1	242561		
0231802001	S-UMW-1D	EPA 904.0	241603		
0231802001	S-UMW-2D	EPA 904.0	241603		
:	3 0mm 25	LI / (00T.0	2-1000		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60231802004	S-UMW-4D	EPA 904.0	241603		
60231802005	S-UMW-5D	EPA 904.0	241603		
0231802006	S-UMW-6D	EPA 904.0	241603		
0231802007	S-BMW-1D	EPA 904.0	241603		
0231802008	S-UMW-DUP-1	EPA 904.0	241603		
0231802009	S-UMW-FB-1	EPA 904.0	241603		
0231802010	S-UMW-4D MS	EPA 904.0	241603		
0231802011	S-UMW-4D MSD	EPA 904.0	241603		
0232579001	S-BMW-3D	EPA 904.0	242562		
0231802001	S-UMW-1D	SM 2540C	454266		
0231802002	S-UMW-2D	SM 2540C	454266		
0231802003	S-UMW-3D	SM 2540C	454266		
0231802004	S-UMW-4D	SM 2540C	454266		
0231802005	S-UMW-5D	SM 2540C	454266		
0231802006	S-UMW-6D	SM 2540C	454266		
0231802007	S-BMW-1D	SM 2540C	454266		
0231802008 0231802009	S-UMW-DUP-1 S-UMW-FB-1	SM 2540C SM 2540C	454266 454266		
0232579001	S-BMW-3D	SM 2540C	456308		
0231802001	S-UMW-1D	SM 4500-H+B	454699		
0231802002	S-UMW-2D	SM 4500-H+B	454662		
0231802003	S-UMW-3D	SM 4500-H+B	454662		
0231802004	S-UMW-4D	SM 4500-H+B	454663		
0231802005	S-UMW-5D	SM 4500-H+B	454662		
0231802006	S-UMW-6D	SM 4500-H+B	454663		
0231802007	S-BMW-1D	SM 4500-H+B	454662		
0231802008	S-UMW-DUP-1	SM 4500-H+B	454661		
0231802009	S-UMW-FB-1	SM 4500-H+B	454699		
0232579001	S-BMW-3D	SM 4500-H+B	457036		
0231802001	S-UMW-1D	EPA 300.0	455675		
0231802001	S-UMW-1D	EPA 300.0	455761		
0231802002	S-UMW-2D	EPA 300.0	455675		
0231802002	S-UMW-2D	EPA 300.0	455761		
0231802003	S-UMW-3D	EPA 300.0	455675		
0231802003	S-UMW-3D	EPA 300.0	455761		
0231802004	S-UMW-4D	EPA 300.0	455675		
0231802004	S-UMW-4D	EPA 300.0	455761		
0231802005	S-UMW-5D	EPA 300.0	455675		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOT

Pace Project No.: 60231802

Date: 12/23/2016 11:05 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60231802005	S-UMW-5D	EPA 300.0	455761		
60231802006	S-UMW-6D	EPA 300.0	455675		
60231802006	S-UMW-6D	EPA 300.0	455761		
60231802007	S-BMW-1D	EPA 300.0	455675		
60231802007	S-BMW-1D	EPA 300.0	455761		
60231802008	S-UMW-DUP-1	EPA 300.0	455675		
60231802008	S-UMW-DUP-1	EPA 300.0	455761		
60231802009	S-UMW-FB-1	EPA 300.0	455675		
60232579001	S-BMW-3D	EPA 300.0	458214		
60232579001	S-BMW-3D	EPA 300.0	458452		



Sample Condition Upon Receipt



Client Name: (20/der			
Courier: FedEx □ UPS □ VIA □ Clay □	PEX 🗆 ECI 🗆	Pace □ Xroads □	Client □ Other □
Tracking #:	ace Shipping Label Used	1? Yes □ No □	
Custody Seal on Cooler/Box Present: Yes No 🗆	Seals intact: Yes	No 🗆	
Packing Material: Bubble Wrap ☐ Bubble Bags	s □ Foam □	None □ Oth	er 🗆
Thermometer Used: 1-266 / T-239 Type	of Ice: Wet Blue No	ne / /	D
Cooler Temperature (°C): As-read / 4/13,9 Corr. Fa	ctor CF+0.7 CF-0.5 Correct	ed 2-1/14-6/13-3	Date and initials of person examining contents:
Temperature should be above freezing to 6°C 12.6			P-11/9/16
Chain of Custody present:	Yes No N/A		# 95.55
Chain of Custody relinquished:	Yes No N/A	N.	
Samples arrived within holding time:	✓Yes □No □N/A	4	
Short Hold Time analyses (<72hr):	Yes ONO ON/A	PH	
Rush Turn Around Time requested:	□Yes No □N/A	7.50	
Sufficient volume:	Ves □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:	Yes No N/A		
Containers requiring pH preservation in compliance?	Yes □No □N/A		
(HNO₃, H₂SO₄, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)			
Cyanide water sample checks: ZN/A			
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 fig	eld? DYes DNo DN/A		
	C to Client? Y / N	Field Data Required?	Y / N
	e/Time:		
Comments/ Resolution:			
			
Jann Chel		11/9/16	
Project Manager Review:	Date	9;	

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

18RU 28PIN Pace Project No./ Lab I.D. (N/A) DRINKING WATER Samples Intact SAMPLE CONDITIONS 18 BM 2-0 11 Cooler (Y/N) OTHER ŏ Ice (Y/N) Received on **GROUND WATER** Page: Residual Chlorine (Y/N) 146 J° ni qmeT 2 388N3804 38R allo Ş REGULATORY AGENCY RCRA 1700 TIME Requested Analysis Filtered (Y/N) 1/4/11/0 Site Location STATE NPDES PATE 20 0 UST DATE Signed | 10 g RS2 & 322 muibe S z H N M AFFILIATION 3 z LDS z Chloride/Fluoride/Sulfate M *slatals* z Analysis Test N/A ACCEPTED BY Other Methanol Jamie Church Preservatives Na₂S₂O₃ ベンナ HOBN HCI 9285 ^EONH Company Name: Reference:
Pace Project
Manager:
Pace Profile #: PS2H 700 Section C Unpreserved TIME 3 Pace Quote 4ddress: 1 # OF CONTAINERS SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER: SAMPLE TEMP AT COLLECTION Ameren Sioux Energy Center - Bottom Ash DATE 1500 2216118/11 1(3) RIF/11 0945 2 1551 1563 TIME 1816 1140 1252 3 Report To: Mark Haddock (mhaddock@golder.com) COMPOSITE END/GRAB 11/6 11/8/14 DATE COLLECTED MIC 012 RELINQUISHED BY / AFFILIATION TIME COMPOSITE 153-1406.0003A START DATE Jeffrey Ingram Required Project Information: O O ග ഗ U O ഠ O (G=GRAB C=COMP) SAMPLE TYPE urchase Order No. M X M ¥ 5 ¥ K Project Number: **BUOD XISTAM** roject Name: Section B Copy To: CODE Valid Matrix Codes DRINKING WATER WATER WASTE WATER PRODUCT SOIL/SOLID EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl Fax: 636-724-9323 Suite 100 S-UMW-DUP-1 S-UMW-FB-1 S-UMW-3D S-UMW-4D S-UMW-6D S-BMW-1D S-UMW-2D S-UMW-5D S-BMW-2D ADDITIONAL COMMENTS (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE 820 South Main Street, maddock@golder.com St Charles, MO 63301 SAMPLE 1D Golder Associates Required Client Information Required Client Information: hone: 636-724-9191 Requested Due Date/TAT: Section D Page 58 of 60 Section A 12 9 7 00 o 10 1 2 w ITEM # က

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

mportant 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



Sample Condition Upon Receipt



Client Name: Golder	in the second se
Courier: FedEx UPS VIA Clay C	PEX □ ECI □ Pace □ Xroads □ Client □ Other □
Tracking #:	ace Shipping Label Used?, Yes No C
Custody Seal on Cooler/Box Present: Yes No	Seals intact: Yes ✓ No □
Packing Material: Bubble Wrap □ Bubble Bags	
CF+0.7 CF-0.5	of Ice: Wel Blue None
	Date and initials of person examining contents:
Temperature should be above freezing to 6°C	examining contents.
Chain of Custody present:	ĹlYes □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):	Øyes □No □N/A P/T
Rush Turn Around Time requested:	□Yes No □N/A
Sufficient volume:	ZYes □No □N/A
Correct containers used:	Ves □No □N/A
Pace containers used:	Yes DNo DN/A
Containers intact:	Yes □No □N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No ØN/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: Mat	─ □Yes ØNo □N/A
Containers requiring pH preservation in compliance?	Nyes □No □N/A
(HNO₃, H₂SO₄, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)	
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	
Cyanide water sample checks: N/A	
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 fie	eld? □Yes □No ☑N/A
Client Notification/ Resolution: Copy COC	C to Client? Y / N Field Data Required? Y / N
Person Contacted: Date	e/Time:
Comments/ Resolution:	
Project Manager Review: fam: Chel	11/18/16 Date:
- reject manager neview.	Date.

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

	Nedalled Client Illionnation.	,	<u>:</u>									ļ			
Company:	Golder Associates	Report To: Mark Haddock (mhaddock@golder.com)	k (mhaddock@gol	der.com)	Attention:										
Address.	820 South Main Street, Suite 100	Copy To: Jeffrey Ingram	L		Company Name	ame:				REGUL	REGULATORY AGENCY	GENCY			
	St Charles, MO 63301				Address:					₽ L	NPDES 😿	GROUND WATER	WATER	L DRIN	DRINKING WATER
Email To:	maddock@golder.com	Purchase Order No.:			Pace Quote					T UST	T T	RCRA		□ OTHER	ER
Phone: 63	636-724-9191 Fax 636-724-9323	Project Name: Ameren	Ameren Sioux Energy Center - B	ter - Bottom Ash	Pace Project	Jamie Church	hurch			Site Location	cation	2			
quested	915	Project Number: 153-1406.0003A	6.0003A		Pace Profile #	9285				S	STATE:	2		1000	
									ednestec	Requested Analysis Filtered (YIN)	Filtered	(Y/N)			
- 8 8	Section D Valid Matrix Codes Required Client Information MATRIX CO	des CODE	COLLECTED	GE		Preservatives	ıtives	z tn/A	z	z	_				
	DRINKING WATER WATER WASTE WATER PRODUCT SOILSOLID OIL	ee valid codes i	COMPOSITE	COMPOSITE TION END/GRAB ECTION				† 3	e/Sulfate	828	F.			6025257	12
# M3TI	SAMPLE ID (A-2, 0-9 / ;-) Sample IDS MUST BE UNIQUE	§ € ₽ ₽ s) 3dOD XIRTAM =5) 3qYT = UMAS	DATE TIME D	DATE TAMPE TAMPE	# OF CONTAINER	HCI HNO ³ H ⁵ 20 ⁴	Na ₂ S ₂ O ₃ Methanol Other	Metals*	Chloride/Fluorid TDS Hq	Radium 226 & 2			Residual Chlorin	ace Proje	Pace Project No./ Lab I.D.
	- C NAMA-1D	WT G												1	100
	OS-DIMAY-2D	WT						183			-				2/13
1 10	GE WWIT-S	WT G									1				
4	CHAWITS	WT G													
5	S LIMMY SB	O TW				+						+	+		
9	G-UNIVIVI-6D	WT G					1						‡		
7	S BIMWHB &	WT G			1				1	1		1	+		9
00	S-BMW-2D	WT G									1				
8	-S-UNIVV-DUP-1	MT G				+		-			+	+			
10	S UMW FB 1	NT G			\rightarrow		1	1					``	40	
11	S-EMM-3D	,D	多年を記する	11111 1353	7	~		· 2	-	2	1	STATE OF THE STATE	2	18/22 /18 P2 V	261118
12							1	The same	NOIT VI III	1	DATE	TIME		SAMPLE CONDITIONS	SNOILION
	ADDITIONAL COMMENTS	RELINQUISHE	RELINQUISHED BY / AFFILIATION	DATE	IBME		ALLER	Accerted by Arricanon		+			-	-	-
A 200.7	EPA 200,7: Ba, Be, B, Ca, Co, Pb. Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Ti	SOF HA	1 (5)	1.37	1500	11	Single Si	100		9	9 2	2320	2.2	×	, X
		1800	The state of the s		1-1				4				163	5	×
Pa						_				1			-		
age (SAMPLER N	SAMPLER NAME AND SIGNATURE		1	ŀ							(N/A)	
60 of			PRIN	PRINT Name of S/355 1 CK.	Son Cons	1	1020	7	-BATE Signed	11/11	11/1		TempT		eloo0
60					3	hour	9	1	MANUSCHALL	1	2//2				



January 12, 2017

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on December 09, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jamie Church

jamie.church@pacelabs.com

Project Manager

Enclosures

cc: Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates







CERTIFICATIONS

AMEREN SIOUX ENERGY CTR-BOTTOM Project:

Pace Project No.: 60233958

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification

Hawaii Certification Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002 Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

(913)599-5665



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60233958001	S-BMW-3D	Water	12/08/16 11:15	12/09/16 04:40

(913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60233958001	S-BMW-3D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Date: 01/12/2017 10:30 AM

Sample: S-BMW-3D	Lab ID:	60233958001	Collecte	d: 12/08/10	3 11:15	Received: 12/	/09/16 04:40 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	667	ug/L	5.0	0.58	1	12/13/16 15:05	12/15/16 14:49	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	12/13/16 15:05	12/15/16 14:49	7440-41-7	
Boron	53.1J	ug/L	100	50.0	1	12/13/16 15:05	12/15/16 14:49	7440-42-8	
Calcium	103000	ug/L	100	8.1	1	12/13/16 15:05	12/15/16 14:49	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	12/13/16 15:05	12/15/16 14:49	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	12/13/16 15:05	12/15/16 14:49	7439-92-1	
Lithium	20.6	ug/L	10.0	4.9	1	12/13/16 15:05	12/15/16 14:49	7439-93-2	
Molybdenum	1.8J	ug/L	20.0	0.52	1	12/13/16 15:05	12/15/16 14:49	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	0.076J	ug/L	1.0	0.058	1	12/13/16 10:50	12/14/16 12:29	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1	12/13/16 10:50	12/14/16 12:29	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	12/13/16 10:50	12/14/16 12:29	7440-43-9	
Chromium	0.99J	ug/L	1.0	0.34	1	12/13/16 10:50	12/14/16 12:29	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	12/13/16 10:50	12/14/16 12:29	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	12/13/16 10:50	12/14/16 12:29	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.039	ug/L	0.20	0.039	1	12/13/16 14:15	12/14/16 10:24	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	425	mg/L	5.0	5.0	1		12/13/16 16:45		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		12/19/16 08:40		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	10.8	mg/L	1.0	0.50	1		12/22/16 00:18	16887-00-6	
Fluoride	0.34	mg/L	0.20	0.027	1		12/22/16 00:18	16984-48-8	
Sulfate	36.8	mg/L	2.0	0.31	2		12/22/16 10:52	1/18/18-70-8	



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Date: 01/12/2017 10:30 AM

QC Batch: 458785 Analysis Method: EPA 7470

QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60233958001

METHOD BLANK: 1878151 Matrix: Water

Associated Lab Samples: 60233958001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L <0.039 0.20 0.039 12/14/16 09:58

LABORATORY CONTROL SAMPLE: 1878152

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers 5.2 Mercury ug/L 104 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1878153 1878154

MS MSD MS MS 60233685001 Spike Spike MSD MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ug/L ND 5 5 4.6 4.9 75-125 6 20 Mercury 92 98

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Date: 01/12/2017 10:30 AM

QC Batch: 458773 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60233958001

METHOD BLANK: 1878108 Matrix: Water

Associated Lab Samples: 60233958001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	1.8J	5.0	0.58	12/15/16 14:00	
Beryllium	ug/L	<0.26	1.0	0.26	12/15/16 14:00	
Boron	ug/L	<50.0	100	50.0	12/15/16 14:00	
Calcium	ug/L	<8.1	100	8.1	12/15/16 14:00	
Cobalt	ug/L	< 0.72	5.0	0.72	12/15/16 14:00	
Lead	ug/L	<2.5	5.0	2.5	12/15/16 14:00	
Lithium	ug/L	<4.9	10.0	4.9	12/15/16 14:00	
Molybdenum	ug/L	< 0.52	20.0	0.52	12/15/16 14:00	

LABORATORY CONTROL SAMPLE:	1878109	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	1000	1070	107	85-115	
Beryllium	ug/L	1000	1020	102	85-115	
Boron	ug/L	1000	1000	100	85-115	
Calcium	ug/L	10000	9910	99	85-115	
Cobalt	ug/L	1000	1070	107	85-115	
Lead	ug/L	1000	1060	106	85-115	
Lithium	ug/L	1000	1080	108	85-115	
Molvbdenum	ua/L	1000	1090	109	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 18781	10		1878111							
	6	0234024001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	19.7	1000	1000	1080	1080	107	106	70-130	0	20	
Beryllium	ug/L	ND	1000	1000	1000	999	100	100	70-130	0	20	
Boron	ug/L	ND	1000	1000	1030	1020	102	102	70-130	0	20	
Calcium	ug/L	223000	10000	10000	230000	232000	65	83	70-130	1	20	M1
Cobalt	ug/L	ND	1000	1000	1030	1030	103	103	70-130	0	20	
Lead	ug/L	ND	1000	1000	1010	1010	101	101	70-130	0	20	
Lithium	ug/L	25.7	1000	1000	1120	1110	110	109	70-130	1	20	
Molybdenum	ug/L	ND	1000	1000	1100	1100	108	108	70-130	0	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Date: 01/12/2017 10:30 AM

MATRIX SPIKE SAMPLE:	1878112						
		60233958001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	 ug/L	667	1000	1710	105	70-130	
Beryllium	ug/L	<0.26	1000	997	100	70-130	
Boron	ug/L	53.1J	1000	1050	100	70-130	
Calcium	ug/L	103000	10000	112000	85	70-130	
Cobalt	ug/L	<0.72	1000	1010	101	70-130	
Lead	ug/L	<2.5	1000	991	99	70-130	
Lithium	ug/L	20.6	1000	1080	106	70-130	
Molybdenum	ug/L	1.8J	1000	1050	105	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Date: 01/12/2017 10:30 AM

QC Batch: 458723 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60233958001

METHOD BLANK: 1877907 Matrix: Water

Associated Lab Samples: 60233958001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	12/14/16 11:37	
Arsenic	ug/L	<0.10	1.0	0.10	12/14/16 11:37	
Cadmium	ug/L	< 0.029	0.50	0.029	12/14/16 11:37	
Chromium	ug/L	< 0.34	1.0	0.34	12/14/16 11:37	
Selenium	ug/L	<0.18	1.0	0.18	12/14/16 11:37	
Thallium	ug/L	< 0.50	1.0	0.50	12/14/16 11:37	

LABORATORY CONTROL SAMPLE:	1877908					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	39.4	98	85-115	
Arsenic	ug/L	40	39.5	99	85-115	
Cadmium	ug/L	40	40.0	100	85-115	
Chromium	ug/L	40	41.0	103	85-115	
Selenium	ug/L	40	38.8	97	85-115	
Thallium	ug/L	40	40.5	101	85-115	

MATRIX SPIKE & MATRIX SPIR	(E DUPLIC	CATE: 187790	09		1877910							
			MS	MSD								
		7555053001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	1.0	40	40	40.1	41.1	98	100	70-130	2	20	
Arsenic	ug/L	0.0039 mg/L	40	40	45.0	46.2	103	106	70-130	3	20	
Cadmium	ug/L	ND	40	40	37.2	38.0	93	95	70-130	2	20	
Chromium	ug/L	0.0026 mg/L	40	40	41.0	41.7	96	98	70-130	2	20	
Selenium	ug/L	ND	40	40	39.0	39.6	96	98	70-130	2	20	
Thallium	ug/L	ND	40	40	40.1	41.0	100	102	70-130	2	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

QC Batch: 458809 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60233958001

METHOD BLANK: 1878246 Matrix: Water

Associated Lab Samples: 60233958001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 12/13/16 16:40

LABORATORY CONTROL SAMPLE: 1878247

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 921 92 80-120

SAMPLE DUPLICATE: 1878248

60233763001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 411 424 3 10 **Total Dissolved Solids** mg/L

SAMPLE DUPLICATE: 1878249

Date: 01/12/2017 10:30 AM

60233959001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 447 **Total Dissolved Solids** mg/L 448 0 10

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

QC Batch: 459374 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60233958001

SAMPLE DUPLICATE: 1880971

Date: 01/12/2017 10:30 AM

 Parameter
 Units
 Result
 Dup Result
 Max RPD
 RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.9
 7.9
 1
 5 H6

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



EPA 300.0

300.0 IC Anions

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Date: 01/12/2017 10:30 AM

QC Batch: 459810 Analysis Method: QC Batch Method: EPA 300.0 Analysis Description:

Associated Lab Samples: 60233958001

METHOD BLANK: 1882488 Matrix: Water

Associated Lab Samples: 60233958001

Blank Reporting MDL Parameter Units Result Limit Qualifiers Analyzed Chloride < 0.50 1.0 0.50 12/21/16 22:31 mg/L Fluoride mg/L < 0.027 0.20 0.027 12/21/16 22:31

1882489 LABORATORY CONTROL SAMPLE: Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.8 96 90-110 mg/L mg/L Fluoride 2.5 2.4 98 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1882491 1882490 MSD MS 60233958001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 10.8 5 5 16.4 16.5 111 114 80-120 15 Fluoride mg/L 0.34 2.5 2.5 2.7 2.8 96 97 80-120 15

MATRIX SPIKE SAMPLE: 1882492 MS MS % Rec 60233959001 Spike % Rec Qualifiers Parameter Units Result Conc. Result Limits Chloride 12.0 5 17.7 113 80-120 mg/L 0.33 80-120 Fluoride mg/L 2.5 2.7 95

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



Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Date: 01/12/2017 10:30 AM

QC Batch: 459964 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60233958001

METHOD BLANK: 1883030 Matrix: Water

Associated Lab Samples: 60233958001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Sulfate mg/L <0.15 1.0 0.15 12/22/16 10:24

LABORATORY CONTROL SAMPLE: 1883031

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1883033 1883032 MS MSD 60233958001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Sulfate 47.3 47.3 80-120 0 mg/L 36.8 10 10 105 105 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.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Sample: S-BMW-3D Lab ID: 60233958001 Collected: 12/08/16 11:15 Received: 12/09/16 04:40 Matrix: Water

PWS: Site ID: Sample Type:

1 773.	Site ID.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.342 ± 0.383 (0.556) C:NA T:91%	pCi/L	01/09/17 16:18	13982-63-3	
Radium-228	EPA 904.0	0.761 ± 0.428 (0.776) C:71% T:81%	pCi/L	01/11/17 15:06	15262-20-1	



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

QC Batch: 245293 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60233958001

METHOD BLANK: 1207282 Matrix: Water

Associated Lab Samples: 60233958001

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.0746 ± 0.323 (0.732) C:72% T:93%
 pCi/L
 01/10/17 12:04

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

QC Batch: 245233 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60233958001

METHOD BLANK: 1207115 Matrix: Water

Associated Lab Samples: 60233958001

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 0.186 ± 0.318 (0.517) C:NA T:91%
 pCi/L
 01/09/17 15:16

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

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.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 01/12/2017 10:30 AM

H6 Analysis initiated outside of the 15 minute EPA required holding time.

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



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTTOM

Pace Project No.: 60233958

Date: 01/12/2017 10:30 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60233958001	S-BMW-3D	EPA 200.7	458773	EPA 200.7	458836
60233958001	S-BMW-3D	EPA 200.8	458723	EPA 200.8	458750
60233958001	S-BMW-3D	EPA 7470	458785	EPA 7470	458813
60233958001	S-BMW-3D	EPA 903.1	245233		
60233958001	S-BMW-3D	EPA 904.0	245293		
60233958001	S-BMW-3D	SM 2540C	458809		
60233958001	S-BMW-3D	SM 4500-H+B	459374		
60233958001	S-BMW-3D	EPA 300.0	459810		
60233958001	S-BMW-3D	EPA 300.0	459964		



Sample Condition Upon Receipt



Client Name:	
Courier: FedEx UPS VIA Clay PEX ECI	□ Pace □ Xroads □ Client □ Other □
Tracking #: Pace Shipping Labe	I Used? Yes □ No.
Custody Seal on Cooler/Box Present: Yes ✓ No □ Seals intact:	
Packing Material: Bubble Wrap □ Bubble Bags □ Foar	,
GF+0.7 CF -0.5	e None
Cooler Temperature (°C): As-read 0.6/11-8 Corr. Factor (F-0.7) CF-0.5C	Date and initials of person examining contents:
Temperature should be above freezing to 6°C	DV12/9/16
Chain of Custody present: ✓Yes □No [JN/A
Chain of Custody relinquished:	□N/A
Samples arrived within holding time: ✓ Yes ☐No [□N/A
Short Hold Time analyses (<72hr): ✓ Yes □ No □	DN/A P/H
Rush Turn Around Time requested:	□N/A /
Sufficient volume:	□N/A
Correct containers used:	□N/A
Pace containers used:	□N/A
Containers intact:	□n/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs? □Yes □No	ZN/A
Filtered volume received for dissolved tests?	N/A
Sample labels match COC: Date / time / ID / analyses	□N/A
Samples contain multiple phases? Matrix: WT DYes No [□N/A
Containers requiring pH preservation in compliance?	ZN/A
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)	
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Cyanide water sample checks: ☑N/A	
Lead acetate strip turns dark? (Record only)	
Potassium iodide test strip turns blue/purple? (Preserve)	- 1 ×
Trip Blank present: □Yes □No [ZNIA
/	ZNIA
Samples from USDA Regulated Area: State:	Sn/A
Additional labels attached to 5035A / TX1005 vials in the field?	JAVA
Client Notification/ Resolution: Copy COC to Client? Y	N Field Data Required? Y / N
Person Contacted: Date/Time:	
Comments/ Resolution:	
Jami Chel	12/9/16
Project Manager Review:	Date:

Pace Analytical

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

Required C	Required Client Information:	Required Project Information:									I			7		1		
Company:	Golder Associates	Report To: Mark Haddock			Attention:	ion:										-		Ì
Address:	820 South Main Street, Suite 100	Copy To: Jeffrey Ingram			Com	Сотрапу Nате:					RE	GULA	REGULATORY AGENCY	GENCY				
	St. Charles, MO 63301				Address:	SS:					_	NPDES	_ Si	GROUN	GROUND WATER	L.	DRINKING WATER	WATER
Email To:	mhaddock@golder.com	Purchase Order No.:			Pace Quote	Juote nce:						_ UST	L	RCRA		L	OTHER	
Phone: 63	636-724-9191 Fax: 636-724-9323	Project Name: Ameren Siou:	Ameren Sioux Energy Center -	- Bottom Ash		ı	Jamie Church	ırch			S	Site Location	ttion	2				
Requested	Requested Due Date/TAT:	Project Number:			Pace	Pace Profile #: 92	9285					STA	STATE:	2				
										Requested Analysis Filtered (YIN)	ted An	alysis F	iltered	(N/A)				
<u>w</u> %	Section D Valid Matrix Codes Required Client Information MATRIX COL	des CODE	COLLECTED			Pı	Preservatives	sə,	↑ N / A	z	z	z	z	z				
		WY W		COMPOSITE	S				1	e/Sulfate	829				(N/Y) ə	,	′	S
	SAMPLE ID WIFE AR (A-Z, 0-9 / ,-) OTHER SAMPLE IDS MUST BE UNIQUE TISSUE	CODE (8			D TA 9MBT E	pənəs			səT sisyl *.		2 & 92S m				nal Chlorin	609	s < 65 5 20°	ر ب
# M3T		KIRTAM BJ9MA2	TIME	III III		^⁵ OS ^z H	NgOH HCI HNO ³	Na ₂ S ₂ (Methal	snA 🌡	Metals Chloric TDS	Hd	100.100.000.000				Pace	roject N	Pace Project No / Lab I.D.
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EPA 200	*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl	JCH Trum	W (50) W	12/8/16	+	(230	da	N	A.	100	3	12/2	110	220	1	7	1	7
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January 31, 2017

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between January 05, 2017 and January 07, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Richard Inganny

Richard Mannz for Jamie Church jamie.church@pacelabs.com Project Manager

Enclosures

cc: Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates



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



CERTIFICATIONS

AMEREN SIOUX ENERGY CTR-BOTT Project:

Pace Project No.: 60235473

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143 West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01

Arkansas Certification #: 15-016-0

Illinois Certification #: 003097 Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60235473001	S-BMW-1D	Water	01/03/17 11:21	01/05/17 05:45
60235473002	S-BMW-3D	Water	01/03/17 14:29	01/05/17 05:45
60235625001	S-UMW-1D	Water	01/05/17 10:33	01/07/17 03:40
60235625002	S-UMW-2D	Water	01/05/17 15:12	01/07/17 03:40
60235625003	S-UMW-3D	Water	01/05/17 15:20	01/07/17 03:40
60235625004	S-UMW-4D	Water	01/05/17 14:05	01/07/17 03:40
60235625005	S-UMW-5D	Water	01/05/17 14:15	01/07/17 03:40
60235625006	S-UMW-6D	Water	01/05/17 12:30	01/07/17 03:40
60235625007	S-UMW-DUP-1	Water	01/05/17 08:00	01/07/17 03:40
60235625008	S-UMW-FB-1	Water	01/05/17 14:02	01/07/17 03:40
60235625009	S-UMW-1D MS	Water	01/05/17 10:33	01/07/17 03:40
60235625010	S-UMW-1D MSD	Water	01/05/17 10:33	01/07/17 03:40



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

_ab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60235473001	S-BMW-1D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235473002	S-BMW-3D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235625001	S-UMW-1D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235625002	S-UMW-2D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235625003	S-UMW-3D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	 JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235625004	S-UMW-4D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	НММ	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235625005	S-UMW-5D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235625006	S-UMW-6D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235625007	S-UMW-DUP-1	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0235625008	S-UMW-FB-1	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K

(913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
	_	EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60235625009	S-UMW-1D MS	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60235625010	S-UMW-1D MSD	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-BMW-1D	Lab ID:	60235473001	Collecte	d: 01/03/17	7 11:21	Received: 01/	/05/17 05:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	334	ug/L	5.0	0.58	1	01/06/17 10:00	01/06/17 15:35	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	01/06/17 10:00	01/06/17 15:35	7440-41-7	
Boron	170	ug/L	100	50.0	1	01/06/17 10:00	01/06/17 15:35	7440-42-8	
Calcium	135000	ug/L	100	8.1	1	01/06/17 10:00	01/06/17 15:35	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	01/06/17 10:00	01/06/17 15:35	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	01/06/17 10:00	01/06/17 15:35	7439-92-1	
Lithium	15.1	ug/L	10.0	4.9	1	01/06/17 10:00	01/06/17 15:35	7439-93-2	
Molybdenum	0.75J	ug/L	20.0	0.52	1	01/06/17 10:00	01/06/17 15:35	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	01/06/17 10:00	01/11/17 14:27	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1	01/06/17 10:00	01/11/17 14:27	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	01/06/17 10:00	01/11/17 14:27	7440-43-9	
Chromium	0.42J	ug/L	1.0	0.34	1	01/06/17 10:00	01/11/17 14:27	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	01/06/17 10:00	01/11/17 14:27	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	01/06/17 10:00	01/11/17 14:27	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.055	ug/L	0.20	0.055	1	01/12/17 09:55	01/12/17 15:36	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	460	mg/L	5.0	5.0	1		01/06/17 10:45		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		01/10/17 11:30		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	5.6	mg/L	1.0	0.50	1		01/21/17 14:41	16887-00-6	
Fluoride	0.27	mg/L	0.20	0.027	1		01/21/17 14:41	16984-48-8	
Sulfate	38.8	mg/L	5.0	0.77	5		01/22/17 15:23	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-BMW-3D	Lab ID:	60235473002	Collected	d: 01/03/1	7 14:29	Received: 01/	/05/17 05:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	183	ug/L	5.0	0.58	1	01/06/17 10:00	01/06/17 15:38	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	01/06/17 10:00	01/06/17 15:38	7440-41-7	
Boron	76.2J	ug/L	100	50.0	1	01/06/17 10:00	01/06/17 15:38	7440-42-8	
Calcium	141000	ug/L	100	8.1	1	01/06/17 10:00	01/06/17 15:38	7440-70-2	
Cobalt	2.8J	ug/L	5.0	0.72	1	01/06/17 10:00	01/06/17 15:38	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	01/06/17 10:00	01/06/17 15:38	7439-92-1	
Lithium	7.9J	ug/L	10.0	4.9	1	01/06/17 10:00	01/06/17 15:38	7439-93-2	
Molybdenum	6.2J	ug/L	20.0	0.52	1	01/06/17 10:00	01/06/17 15:38	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	01/06/17 10:00	01/11/17 14:31	7440-36-0	
Arsenic	1.5	ug/L	1.0	0.10	1	01/06/17 10:00	01/11/17 14:31	7440-38-2	
Cadmium	<0.029	ug/L	0.50	0.029	1	01/06/17 10:00	01/11/17 14:31		
Chromium	0.59J	ug/L	1.0	0.34	1	01/06/17 10:00	01/11/17 14:31	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	01/06/17 10:00	01/11/17 14:31	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	01/06/17 10:00	01/11/17 14:31	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.055	ug/L	0.20	0.055	1	01/12/17 09:55	01/12/17 15:37	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	445	mg/L	5.0	5.0	1		01/06/17 10:46		
4500H+ pH, Electrometric	Analytical	Method: SM 45	600-H+B						
pH at 25 Degrees C	7.3	Std. Units	0.10	0.10	1		01/11/17 11:49		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	11.2	mg/L	1.0	0.50	1		01/21/17 14:55	16887-00-6	
Fluoride	0.34	mg/L	0.20	0.027	1		01/21/17 14:55	16984-48-8	
Sulfate	28.8	mg/L	2.0	0.31	2		01/22/17 15:37	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-UMW-1D	Lab ID:	60235625001	Collecte	d: 01/05/17	7 10:33	Received: 01/	/07/17 03:40 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical I	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	146	ug/L	5.0	0.58	1	01/10/17 13:15	01/12/17 18:02	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	01/10/17 13:15	01/12/17 18:02	7440-41-7	
Boron	538	ug/L	100	50.0	1	01/10/17 13:15	01/12/17 18:02	7440-42-8	
Calcium	81300	ug/L	100	8.1	1	01/10/17 13:15	01/12/17 18:02	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	01/10/17 13:15	01/12/17 18:02	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	01/10/17 13:15	01/12/17 18:02	7439-92-1	
Lithium	13.5	ug/L	10.0	4.9	1	01/10/17 13:15	01/12/17 18:02	7439-93-2	
Molybdenum	40.9	ug/L	20.0	0.52	1	01/10/17 13:15	01/12/17 18:02	7439-98-7	
200.8 MET ICPMS	Analytical I	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	01/10/17 13:15	01/11/17 17:30	7440-36-0	
Arsenic	0.98J	ug/L	1.0	0.10	1		01/11/17 17:30		
Cadmium	<0.029	ug/L	0.50	0.029	1	01/10/17 13:15	01/11/17 17:30	7440-43-9	
Chromium	0.71J	ug/L	1.0	0.34	1	01/10/17 13:15	01/11/17 17:30	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	01/10/17 13:15	01/11/17 17:30	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	01/10/17 13:15	01/11/17 17:30	7440-28-0	
7470 Mercury	Analytical I	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.055	ug/L	0.20	0.055	1	01/17/17 15:50	01/18/17 09:37	7439-97-6	
2540C Total Dissolved Solids	Analytical I	Method: SM 25	40C						
Total Dissolved Solids	374	mg/L	5.0	5.0	1		01/09/17 16:01		
4500H+ pH, Electrometric	Analytical I	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.2	Std. Units	0.10	0.10	1		01/17/17 14:07		H6
300.0 IC Anions 28 Days	Analytical I	Method: EPA 3	0.00						
Chloride	23.2	mg/L	2.0	1.0	2		01/22/17 09:44	16887-00-6	
Fluoride	0.27	mg/L	0.20	0.027	1		01/21/17 20:42	16984-48-8	
Sulfate	85.6	mg/L	10.0	1.5	10		01/22/17 10:30	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-UMW-2D	Lab ID:	60235625002	Collecte	d: 01/05/1	7 15:12	Received: 01/	07/17 03:40 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytica	Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Barium	92.8	ug/L	5.0	0.58	1	01/10/17 13:15	01/12/17 18:13	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	01/10/17 13:15	01/12/17 18:13	7440-41-7	
Boron	14500	ug/L	100	50.0	1	01/10/17 13:15	01/12/17 18:13	7440-42-8	
Calcium	188000	ug/L	100	8.1	1	01/10/17 13:15	01/12/17 18:13	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	01/10/17 13:15	01/12/17 18:13	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	01/10/17 13:15	01/12/17 18:13	7439-92-1	
Lithium	29.7	ug/L	10.0	4.9	1	01/10/17 13:15	01/12/17 18:13	7439-93-2	
Molybdenum	1310	ug/L	20.0	0.52	1	01/10/17 13:15	01/12/17 18:13	7439-98-7	
200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	01/10/17 13:15	01/11/17 17:39	7440-36-0	
Arsenic	1.4	ug/L	1.0	0.10	1	01/10/17 13:15	01/11/17 17:39	7440-38-2	
Cadmium	0.23J	ug/L	0.50	0.029	1	01/10/17 13:15	01/11/17 17:39	7440-43-9	
Chromium	< 0.34	ug/L	1.0	0.34	1	01/10/17 13:15	01/11/17 17:39	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	01/10/17 13:15	01/11/17 17:39	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	01/10/17 13:15	01/11/17 17:39	7440-28-0	
7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	0.059J	ug/L	0.20	0.055	1	01/17/17 15:50	01/18/17 09:42	7439-97-6	В
2540C Total Dissolved Solids	Analytica	Method: SM 25	540C						
Total Dissolved Solids	885	mg/L	5.0	5.0	1		01/09/17 16:03		
4500H+ pH, Electrometric	Analytica	Method: SM 45	500-H+B						
pH at 25 Degrees C	8.0	Std. Units	0.10	0.10	1		01/10/17 00:00		H6
300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Chloride	20.0	mg/L	2.0	1.0	2		01/22/17 12:13	16887-00-6	
Fluoride	1.1	mg/L	0.20	0.027	1		01/21/17 21:10	16984-48-8	
Sulfate	477	mg/L	50.0	7.7	50		01/22/17 12:29	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-UMW-3D	Lab ID:	60235625003	Collecte	d: 01/05/1	7 15:20	Received: 01/	/07/17 03:40 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytica	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	76.1	ug/L	5.0	0.58	1	01/10/17 13:15	01/12/17 18:15	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	01/10/17 13:15	01/12/17 18:15	7440-41-7	
Boron	21300	ug/L	100	50.0	1	01/10/17 13:15	01/12/17 18:15	7440-42-8	
Calcium	206000	ug/L	100	8.1	1	01/10/17 13:15	01/12/17 18:15	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	01/10/17 13:15	01/12/17 18:15	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	01/10/17 13:15	01/12/17 18:15	7439-92-1	
Lithium	18.4	ug/L	10.0	4.9	1	01/10/17 13:15	01/12/17 18:15	7439-93-2	
Molybdenum	3430	ug/L	20.0	0.52	1	01/10/17 13:15	01/12/17 18:15	7439-98-7	
200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	01/10/17 13:15	01/11/17 17:43	7440-36-0	
Arsenic	0.14J	ug/L	1.0	0.10	1	01/10/17 13:15	01/11/17 17:43	7440-38-2	
Cadmium	0.79	ug/L	0.50	0.029	1	01/10/17 13:15	01/11/17 17:43	7440-43-9	
Chromium	0.35J	ug/L	1.0	0.34	1	01/10/17 13:15	01/11/17 17:43	7440-47-3	
Selenium	0.21J	ug/L	1.0	0.18	1	01/10/17 13:15	01/11/17 17:43	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	01/10/17 13:15	01/11/17 17:43	7440-28-0	
7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.055	ug/L	0.20	0.055	1	01/17/17 15:50	01/18/17 09:47	7439-97-6	
2540C Total Dissolved Solids	Analytica	Method: SM 25	40C						
Total Dissolved Solids	1020	mg/L	5.0	5.0	1		01/09/17 16:03		
4500H+ pH, Electrometric	Analytica	Method: SM 45	00-H+B						
pH at 25 Degrees C	8.0	Std. Units	0.10	0.10	1		01/10/17 00:00		H6
300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Chloride	23.2	mg/L	2.0	1.0	2		01/22/17 12:44	16887-00-6	
Fluoride	1.0	mg/L	0.20	0.027	1		01/21/17 21:24	16984-48-8	
Sulfate	531	mg/L	50.0	7.7	50		01/22/17 13:00	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-UMW-4D	Lab ID:	60235625004	Collecte	d: 01/05/17	7 14:05	Received: 01/	/07/17 03:40 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	90.4	ug/L	5.0	0.58	1	01/10/17 13:15	01/12/17 18:17	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	01/10/17 13:15	01/12/17 18:17	7440-41-7	
Boron	28600	ug/L	100	50.0	1	01/10/17 13:15	01/12/17 18:17	7440-42-8	
Calcium	204000	ug/L	100	8.1	1	01/10/17 13:15	01/12/17 18:17	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	01/10/17 13:15	01/12/17 18:17	7440-48-4	
Lead	4.7J	ug/L	5.0	2.5	1	01/10/17 13:15	01/12/17 18:17	7439-92-1	
Lithium	44.2	ug/L	10.0	4.9	1	01/10/17 13:15	01/12/17 18:17	7439-93-2	
Molybdenum	7830	ug/L	20.0	0.52	1	01/10/17 13:15	01/12/17 18:17	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	01/10/17 13:15	01/11/17 17:56	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1		01/11/17 17:56		
Cadmium	1.9	ug/L	0.50	0.029	1	01/10/17 13:15	01/11/17 17:56	7440-43-9	
Chromium	< 0.34	ug/L	1.0	0.34	1	01/10/17 13:15	01/11/17 17:56	7440-47-3	
Selenium	0.24J	ug/L	1.0	0.18	1	01/10/17 13:15	01/11/17 17:56	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	01/10/17 13:15	01/11/17 17:56	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.055	ug/L	0.20	0.055	1	01/17/17 15:50	01/18/17 09:48	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1120	mg/L	5.0	5.0	1		01/09/17 16:04		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.6	Std. Units	0.10	0.10	1		01/10/17 00:00		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	25.9	mg/L	2.0	1.0	2		01/22/17 13:15	16887-00-6	
Fluoride	0.86	mg/L	0.20	0.027	1		01/21/17 21:38	16984-48-8	
Sulfate	550	mg/L	50.0	7.7	50		01/22/17 13:30	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-UMW-5D	Lab ID: 60235625005 Collected: 01/05/17 14:15 Receiv						eceived: 01/07/17 03:40 Matrix: Water				
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual		
200.7 Metals, Total	Analytica	Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	A 200.7					
Barium	281	ug/L	5.0	0.58	1	01/10/17 13:15	01/12/17 18:19	7440-39-3			
Beryllium	<0.26	ug/L	1.0	0.26	1	01/10/17 13:15	01/12/17 18:19	7440-41-7			
Boron	5970	ug/L	100	50.0	1	01/10/17 13:15	01/12/17 18:19	7440-42-8			
Calcium	75800	ug/L	100	8.1	1	01/10/17 13:15	01/12/17 18:19	7440-70-2			
Cobalt	<0.72	ug/L	5.0	0.72	1	01/10/17 13:15	01/12/17 18:19	7440-48-4			
Lead	<2.5	ug/L	5.0	2.5	1	01/10/17 13:15	01/12/17 18:19	7439-92-1			
Lithium	28.4	ug/L	10.0	4.9	1	01/10/17 13:15	01/12/17 18:19	7439-93-2			
Molybdenum	254	ug/L	20.0	0.52	1	01/10/17 13:15	01/12/17 18:19	7439-98-7			
200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	nod: EP	A 200.8					
Antimony	<0.058	ug/L	1.0	0.058	1	01/10/17 13:15	01/11/17 18:01	7440-36-0			
Arsenic	0.26J	ug/L	1.0	0.10	1	01/10/17 13:15	01/11/17 18:01	7440-38-2			
Cadmium	0.041J	ug/L	0.50	0.029	1	01/10/17 13:15	01/11/17 18:01	7440-43-9			
Chromium	0.62J	ug/L	1.0	0.34	1	01/10/17 13:15	01/11/17 18:01	7440-47-3			
Selenium	<0.18	ug/L	1.0	0.18	1	01/10/17 13:15	01/11/17 18:01	7782-49-2			
Thallium	<0.50	ug/L	1.0	0.50	1	01/10/17 13:15	01/11/17 18:01	7440-28-0			
7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470					
Mercury	<0.055	ug/L	0.20	0.055	1	01/17/17 15:50	01/18/17 09:50	7439-97-6			
2540C Total Dissolved Solids	Analytica	Method: SM 25	40C								
Total Dissolved Solids	350	mg/L	5.0	5.0	1		01/09/17 16:07				
4500H+ pH, Electrometric	Analytica	Method: SM 45	600-H+B								
pH at 25 Degrees C	7.7	Std. Units	0.10	0.10	1		01/10/17 00:00		H6		
300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00								
Chloride	24.4	mg/L	2.0	1.0	2		01/22/17 13:46	16887-00-6			
Fluoride	0.56	mg/L	0.20	0.027	1		01/21/17 21:52	16984-48-8			
Sulfate	15.5	mg/L	1.0	0.15	1		01/21/17 21:52	14808-79-8			



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-UMW-6D	Lab ID:	60235625006	Collecte	d: 01/05/17	7 12:30	Received: 01/	07/17 03:40 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	119	ug/L	5.0	0.58	1	01/10/17 13:15	01/12/17 18:21	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	01/10/17 13:15	01/12/17 18:21	7440-41-7	
Boron	899	ug/L	100	50.0	1	01/10/17 13:15	01/12/17 18:21	7440-42-8	
Calcium	74900	ug/L	100	8.1	1	01/10/17 13:15	01/12/17 18:21	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	01/10/17 13:15	01/12/17 18:21	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	01/10/17 13:15	01/12/17 18:21	7439-92-1	
Lithium	12.2	ug/L	10.0	4.9	1	01/10/17 13:15	01/12/17 18:21	7439-93-2	
Molybdenum	110	ug/L	20.0	0.52	1	01/10/17 13:15	01/12/17 18:21	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	01/10/17 13:15	01/11/17 18:05	7440-36-0	
Arsenic	0.20J	ug/L	1.0	0.10	1	01/10/17 13:15	01/11/17 18:05	7440-38-2	
Cadmium	0.031J	ug/L	0.50	0.029	1	01/10/17 13:15	01/11/17 18:05	7440-43-9	
Chromium	0.70J	ug/L	1.0	0.34	1	01/10/17 13:15	01/11/17 18:05	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	01/10/17 13:15	01/11/17 18:05	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	01/10/17 13:15	01/11/17 18:05	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.055	ug/L	0.20	0.055	1	01/17/17 15:50	01/18/17 09:51	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	349	mg/L	5.0	5.0	1		01/09/17 16:07		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.6	Std. Units	0.10	0.10	1		01/10/17 00:00		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	20.1	mg/L	2.0	1.0	2		01/22/17 14:01	16887-00-6	
Fluoride	0.38	mg/L	0.20	0.027	1		01/21/17 22:06	16984-48-8	
Sulfate	80.2	mg/L	5.0	0.77	5		01/22/17 14:17	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Parameters Results Units PQL MDL DF Prepared Analyzed CAS No. 200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.7 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8<	Sample: S-UMW-DUP-1	Lab ID: 60235625007		Collected: 01/05/17 08:00			Received: 01/07/17 03:40 Matrix: Water			
Barium 93.5 ug/L 5.0 0.58 1 01/10/17 13:15 01/12/17 18:24 7440-39-3 Beryllium <0.26	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium	200.7 Metals, Total	Analytical Me	thod: EPA 20	00.7 Prepa	ration Meth	od: EP/	A 200.7			
Boron 14600 ug/L 100 50.0 1 01/10/17 13:15 01/12/17 18:24 7440-42-8 Add-42-8 Calcium 188000 ug/L 100 8.1 1 01/10/17 13:15 01/12/17 18:24 7440-70-2 Calcium 0.72 ug/L 5.0 0.72 1 01/10/17 13:15 01/12/17 18:24 7440-70-2 Calcium 0.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7440-70-2 Calcium 0.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7440-70-2 Calcium 0.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7440-74-2 1 0.0 0.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7440-98-2 0.0 0.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7440-98-93-2 0.0 0.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7440-98-93-2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 <	Barium	93.5	ug/L	5.0	0.58	1	01/10/17 13:15	01/12/17 18:24	7440-39-3	
Calcium 188000 ug/L 100 8.1 1 01/10/17 13:15 01/12/17 18:24 7440-70-2 Cobalt 40.72 ug/L 5.0 0.72 1 01/10/17 13:15 01/12/17 18:24 7440-78-2 Lead 2.5 ug/L 5.0 2.5 1 01/10/17 13:15 01/12/17 18:24 7439-92-1 Lithium 30.4 ug/L 10.0 4.9 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 Molybdenum 1330 ug/L 20.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Value 10/10/17 13:15 01/11/17 18:10 7440-36-0 Antimony <0.058	Beryllium	<0.26	ug/L	1.0	0.26	1	01/10/17 13:15	01/12/17 18:24	7440-41-7	
Cobalt <0.72 ug/L 5.0 0.72 1 01/10/17 13:15 01/12/17 18:24 7440-48-4 Lead <2.5 ug/L 5.0 2.5 1 01/10/17 13:15 01/12/17 18:24 7439-92-1 1 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 1 01/10/17 13:15 01/11/17 18:10 7440-38-2 2 2 2 0 </td <td>Boron</td> <td>14600</td> <td>ug/L</td> <td>100</td> <td>50.0</td> <td>1</td> <td>01/10/17 13:15</td> <td>01/12/17 18:24</td> <td>7440-42-8</td> <td></td>	Boron	14600	ug/L	100	50.0	1	01/10/17 13:15	01/12/17 18:24	7440-42-8	
Lead	Calcium	188000	ug/L	100	8.1	1	01/10/17 13:15	01/12/17 18:24	7440-70-2	
Lithium 130.4 ug/L 20.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7439-93-2 20.0 Molybdenum 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.058 ug/L 1.0 0.058 1 01/10/17 13:15 01/11/17 18:10 7440-36-0 12 ug/L 1.0 0.10 1 01/10/17 13:15 01/11/17 18:10 7440-36-0 12 ug/L Cadmium 0.19J ug/L 0.50 0.029 1 01/10/17 13:15 01/11/17 18:10 7440-38-2 13 01/10/17 13:15 01/11/17 18:10 7440-38-2 14 01/10/17 13:15 01/11/17	Cobalt	<0.72	ug/L	5.0	0.72	1	01/10/17 13:15	01/12/17 18:24	7440-48-4	
Molybdenum 1330 ug/L 20.0 0.52 1 01/10/17 13:15 01/12/17 18:24 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.058 ug/L 1.0 0.058 1 01/10/17 13:15 01/11/17 18:10 7440-36-0 Arsenic 1.2 ug/L 1.0 0.10 1 01/10/17 13:15 01/11/17 18:10 7440-38-2 Chromium 0.19J ug/L 0.50 0.029 1 01/10/17 13:15 01/11/17 18:10 7440-43-9 Chromium <0.34 ug/L 1.0 0.34 1 01/10/17 13:15 01/11/17 18:10 7440-43-9 Chromium <0.34 ug/L 1.0 0.34 1 01/10/17 13:15 01/11/17 18:10 7440-43-9 Chromium <0.18 ug/L 1.0 0.18 1 01/10/17 13:15 01/11/17 18:10 7440-43-9 Chromium <0.18 1 01/10/17 13:15 01/11/17 18:10 7440-47-3 Chromium <0.18 1 01/10/17 13:15 01/11/17 18:10 7440-47-3 Chromium <0.18 1 01/10/17 1	Lead	<2.5	ug/L	5.0	2.5	1	01/10/17 13:15	01/12/17 18:24	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony Arsenic 1.2 ug/L 1.0 0.058 1 01/10/17 13:15 01/11/17 18:10 7440-36-0 Arsenic 0.19J ug/L 0.50 0.029 1 01/10/17 13:15 01/11/17 18:10 7440-38-2 Cadmium	Lithium	30.4	ug/L	10.0	4.9	1	01/10/17 13:15	01/12/17 18:24	7439-93-2	
Antimony Ant	Molybdenum	1330	ug/L	20.0	0.52	1	01/10/17 13:15	01/12/17 18:24	7439-98-7	
Arsenic 1.2 ug/L 1.0 0.10 1 01/10/17 13:15 01/11/17 18:10 7440-38-2 Cadmium 0.19J ug/L 0.50 0.029 1 01/10/17 13:15 01/11/17 18:10 7440-43-9 Chromium 4.0.34 ug/L 1.0 0.34 1 01/10/17 13:15 01/11/17 18:10 7440-47-3 Selenium 4.0.18 ug/L 1.0 0.18 1 01/10/17 13:15 01/11/17 18:10 7782-49-2 Thallium 4.0.50 ug/L 1.0 0.50 1 01/10/17 13:15 01/11/17 18:10 7782-49-2 Thallium 4.0.50 ug/L 1.0 0.50 1 01/10/17 13:15 01/11/17 18:10 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 4.0.055 ug/L 0.20 0.055 1 01/17/17 15:50 01/18/17 09:52 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 916 mg/L 5.0 5.0 1 01/09/17 16:08 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.0 Std. Units 0.10 0.10 1 01/10/17 00:00 F 300.0 IC Anions 28 Days Analytical Method: EPA 300.0	200.8 MET ICPMS	Analytical Me	thod: EPA 20	00.8 Prepa	ration Meth	od: EP/	A 200.8			
Cadmium 0.19J ug/L 0.50 0.029 1 01/10/17 13:15 01/11/17 18:10 7440-43-9 Chromium <0.34	Antimony	<0.058	ug/L	1.0	0.058	1	01/10/17 13:15	01/11/17 18:10	7440-36-0	
Chromium	Arsenic	1.2	ug/L	1.0	0.10	1	01/10/17 13:15	01/11/17 18:10	7440-38-2	
Selenium Co.18 ug/L 1.0 0.18 1 01/10/17 13:15 01/11/17 18:10 7782-49-2 1.0 0.50 ug/L 1.0 0.50 1 01/10/17 13:15 01/11/17 18:10 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 747	Cadmium	0.19J	ug/L	0.50	0.029	1	01/10/17 13:15	01/11/17 18:10	7440-43-9	
Thallium	Chromium	< 0.34	ug/L	1.0	0.34	1	01/10/17 13:15	01/11/17 18:10	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.055 ug/L 0.20 0.055 1 01/17/17 15:50 01/18/17 09:52 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 916 mg/L 5.0 5.0 1 01/09/17 16:08 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.0 Std. Units 0.10 0.10 1 01/10/17 00:00 PH 300.0 IC Anions 28 Days Analytical Method: EPA 300.0	Selenium	<0.18	ug/L	1.0	0.18	1	01/10/17 13:15	01/11/17 18:10	7782-49-2	
Mercury doi.055 ug/L 0.20 0.055 1 01/17/17 15:50 01/18/17 09:52 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 916 mg/L 5.0 5.0 1 01/09/17 16:08 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.0 Std. Units 0.10 0.10 1 01/10/17 00:00 H 300.0 IC Anions 28 Days Analytical Method: EPA 300.0	Thallium	<0.50	ug/L	1.0	0.50	1	01/10/17 13:15	01/11/17 18:10	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 916 mg/L 5.0 5.0 1 01/09/17 16:08 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.0 Std. Units 0.10 0.10 1 01/10/17 00:00 H 300.0 IC Anions 28 Days Analytical Method: EPA 300.0	7470 Mercury	Analytical Me	thod: EPA 7	470 Prepar	ation Meth	od: EPA	7470			
Total Dissolved Solids 916 mg/L 5.0 5.0 1 01/09/17 16:08 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.0 Std. Units 0.10 0.10 1 01/10/17 00:00 H 300.0 IC Anions 28 Days Analytical Method: EPA 300.0	Mercury	<0.055	ug/L	0.20	0.055	1	01/17/17 15:50	01/18/17 09:52	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 8.0 Std. Units 0.10 0.10 1 01/10/17 00:00 H 300.0 IC Anions 28 Days Analytical Method: EPA 300.0	2540C Total Dissolved Solids	Analytical Me	thod: SM 25	40C						
pH at 25 Degrees C 8.0 Std. Units 0.10 0.10 1 01/10/17 00:00 H 300.0 IC Anions 28 Days Analytical Method: EPA 300.0	Total Dissolved Solids	916	mg/L	5.0	5.0	1		01/09/17 16:08		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0	4500H+ pH, Electrometric	Analytical Me	thod: SM 45	00-H+B						
	pH at 25 Degrees C	8.0 St	d. Units	0.10	0.10	1		01/10/17 00:00		H6
Chloride 19.8 mg/L 2.0 1.0 2 01/22/17 15:03 16887-00-6	300.0 IC Anions 28 Days	Analytical Me	thod: EPA 30	00.0						
	Chloride	19.8	mg/L	2.0	1.0	2		01/22/17 15:03	16887-00-6	
Fluoride 1.1 mg/L 0.20 0.027 1 01/21/17 22:48 16984-48-8	Fluoride		J		0.027			01/21/17 22:48	16984-48-8	
Sulfate 482 mg/L 50.0 7.7 50 01/22/17 15:18 14808-79-8			•							



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Sample: S-UMW-FB-1	Lab ID:	60235625008	Collected	d: 01/05/1	7 14:02	Received: 01/	/07/17 03:40 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytica	l Method: EPA 2	00.7 Prepa	ration Meth	nod: EP	A 200.7			
Barium	<0.58	ug/L	5.0	0.58	1	01/10/17 13:15	01/12/17 18:26	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	01/10/17 13:15	01/12/17 18:26	7440-41-7	
Boron	<50.0	ug/L	100	50.0	1	01/10/17 13:15	01/12/17 18:26	7440-42-8	
Calcium	26.9J	ug/L	100	8.1	1	01/10/17 13:15	01/12/17 18:26	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	01/10/17 13:15	01/12/17 18:26	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	01/10/17 13:15	01/12/17 18:26	7439-92-1	
Lithium	<4.9	ug/L	10.0	4.9	1	01/10/17 13:15	01/12/17 18:26	7439-93-2	
Molybdenum	2.4J	ug/L	20.0	0.52	1	01/10/17 13:15	01/12/17 18:26	7439-98-7	
200.8 MET ICPMS	Analytica	l Method: EPA 2	00.8 Prepa	ration Meth	nod: EP	A 200.8			
Antimony	<0.058	ug/L	1.0	0.058	1	01/10/17 13:15	01/11/17 18:14	7440-36-0	
Arsenic	<0.10	ug/L	1.0	0.10	1	01/10/17 13:15	01/11/17 18:14	7440-38-2	
Cadmium	< 0.029	ug/L	0.50	0.029	1	01/10/17 13:15	01/11/17 18:14	7440-43-9	
Chromium	0.44J	ug/L	1.0	0.34	1	01/10/17 13:15	01/11/17 18:14	7440-47-3	
Selenium	<0.18	ug/L	1.0	0.18	1	01/10/17 13:15	01/11/17 18:14	7782-49-2	
Thallium	<0.50	ug/L	1.0	0.50	1	01/10/17 13:15	01/11/17 18:14	7440-28-0	
7470 Mercury	Analytica	l Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.055	ug/L	0.20	0.055	1	01/17/17 15:50	01/18/17 09:54	7439-97-6	
2540C Total Dissolved Solids	Analytica	l Method: SM 25	40C						
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		01/09/17 16:08		
4500H+ pH, Electrometric	Analytica	l Method: SM 45	600-H+B						
pH at 25 Degrees C	8.3	Std. Units	0.10	0.10	1		01/10/17 00:00		H6
300.0 IC Anions 28 Days	Analytica	l Method: EPA 3	00.0						
Chloride	<0.50	mg/L	1.0	0.50	1		01/21/17 23:01	16887-00-6	
Fluoride	<0.027	mg/L	0.20	0.027	1		01/21/17 23:01		
Sulfate	<0.15	mg/L	1.0	0.15	1		01/21/17 23:01		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

QC Batch: 461806 Analysis Method: EPA 7470

QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60235473001, 60235473002

METHOD BLANK: 1890258 Matrix: Water

Associated Lab Samples: 60235473001, 60235473002

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L <0.055 0.20 0.055 01/12/17 13:27

LABORATORY CONTROL SAMPLE: 1890259

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 5.1 102 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1890261 1890260 MS MSD 60235627003 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual < 0.055 5 5 5.5 75-125 2 20 Mercury ug/L 5.4 110 108

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.



AMEREN SIOUX ENERGY CTR-BOTT Project:

Pace Project No.: 60235473

Mercury

Date: 01/31/2017 04:50 PM

QC Batch: 462292 Analysis Method: EPA 7470 QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007, Associated Lab Samples:

60235625008

METHOD BLANK: 1892597 Matrix: Water

ug/L

<0.055

5

Associated Lab Samples: 60235625008 Blank Reporting MDL Parameter Units Result Limit Analyzed Qualifiers Mercury ug/L 0.11J 0.20 0.055 01/18/17 09:11 LABORATORY CONTROL SAMPLE: 1892598 LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers 5 5.2 105 80-120 Mercury ug/L MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1892599 1892600 MS MSD MSD MS 60235624001 Spike Spike MS MSD % Rec Max Parameter Units Result Conc. Result % Rec % Rec RPD Conc. Result Limits RPD Qual Mercury 0.070J 5 5 4.7 4.9 93 75-125 20 ug/L MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1892601 1892602 MS MSD 60235625001 MS MSD MS MSD Spike Spike % Rec Max Parameter Units Conc. % Rec % Rec Limits RPD RPD Qual Result Conc. Result Result

5

5.1

5.1

102

101

75-125

20

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

QC Batch: 461335 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60235473001, 60235473002

METHOD BLANK: 1888310 Matrix: Water

Associated Lab Samples: 60235473001, 60235473002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Farameter	Offics	Result		IVIDL	Allalyzeu	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	01/09/17 11:37	
Beryllium	ug/L	< 0.26	1.0	0.26	01/09/17 11:37	
Boron	ug/L	<50.0	100	50.0	01/09/17 11:37	
Calcium	ug/L	24.6J	100	8.1	01/09/17 11:37	
Cobalt	ug/L	< 0.72	5.0	0.72	01/09/17 11:37	
Lead	ug/L	2.9J	5.0	2.5	01/09/17 11:37	
Lithium	ug/L	<4.9	10.0	4.9	01/09/17 11:37	
Molybdenum	ug/L	< 0.52	20.0	0.52	01/09/17 11:37	

LABORATORY CONTROL SAMPLE:	1888311	o "				
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
	_					Quamoro
Barium	ug/L	1000	998	100	85-115	
Beryllium	ug/L	1000	1000	100	85-115	
Boron	ug/L	1000	930	93	85-115	
Calcium	ug/L	10000	9940	99	85-115	
Cobalt	ug/L	1000	1010	101	85-115	
Lead	ug/L	1000	997	100	85-115	
Lithium	ug/L	1000	1030	103	85-115	
Molybdenum	ug/L	1000	1030	103	85-115	

MATRIX SPIKE & MATRIX SF	PIKE DUPLICA	TE: 18883	12		1888313							
			MS	MSD								
	6	0235457003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	258	1000	1000	1260	1270	101	101	70-130	0	20	
Beryllium	ug/L	< 0.26	1000	1000	997	992	100	99	70-130	1	20	
Boron	ug/L	76.1J	1000	1000	1030	1010	95	94	70-130	1	20	
Calcium	ug/L	124000	10000	10000	138000	139000	142	147	70-130	0	20 N	√ 11
Cobalt	ug/L	2.2J	1000	1000	979	971	98	97	70-130	1	20	
Lead	ug/L	4.2J	1000	1000	967	960	96	96	70-130	1	20	
Lithium	ug/L	32.1	1000	1000	1080	1090	105	106	70-130	1	20	
Molybdenum	ug/L	1.1J	1000	1000	1030	1020	103	102	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

MATRIX SPIKE SAMPLE:	1888314						
		60235457004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	 ug/L	241	1000	1220	98	70-130	
Beryllium	ug/L	<0.26	1000	978	98	70-130	
Boron	ug/L	149	1000	1090	94	70-130	
Calcium	ug/L	124000	10000	135000	105	70-130	
Cobalt	ug/L	1.2J	1000	963	96	70-130	
Lead	ug/L	2.9J	1000	951	95	70-130	
Lithium	ug/L	36.9	1000	1060	103	70-130	
Molybdenum	ug/L	< 0.52	1000	1010	101	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

QC Batch: 461572 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008

METHOD BLANK: 1889317 Matrix: Water

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	01/12/17 17:25	
Beryllium	ug/L	<0.26	1.0	0.26	01/12/17 17:25	
Boron	ug/L	<50.0	100	50.0	01/12/17 17:25	
Calcium	ug/L	<8.1	100	8.1	01/12/17 17:25	
Cobalt	ug/L	< 0.72	5.0	0.72	01/12/17 17:25	
Lead	ug/L	<2.5	5.0	2.5	01/12/17 17:25	
Lithium	ug/L	<4.9	10.0	4.9	01/12/17 17:25	
Molybdenum	ug/L	< 0.52	20.0	0.52	01/12/17 17:25	

LABORATORY CONTROL SAMPLE:	1889318					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	1000	1000	100	85-115	
Beryllium	ug/L	1000	996	100	85-115	
Boron	ug/L	1000	954	95	85-115	
Calcium	ug/L	10000	9650	96	85-115	
Cobalt	ug/L	1000	1010	101	85-115	
Lead	ug/L	1000	1010	101	85-115	
Lithium	ug/L	1000	1020	102	85-115	
Molybdenum	ug/L	1000	994	99	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 18893	19		1889320							
Parameter	6 Units	0235624001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Max RPD	Qual
Barium	ug/L	357	1000	1000	1340	1340	99	98	70-130		20	
Beryllium	ug/L	<0.26	1000	1000	973	964	97	96	70-130	-	20	
Boron	ug/L	<50.0	1000	1000	1030	1020	99	98	70-130	1	20	
Calcium	ug/L	122000	10000	10000	129000	129000	71	78	70-130	1	20	
Cobalt	ug/L	< 0.72	1000	1000	991	978	99	98	70-130	1	20	
Lead	ug/L	<2.5	1000	1000	992	971	99	97	70-130	2	20	
Lithium	ug/L	<4.9	1000	1000	1030	1020	103	102	70-130	1	20	
Molybdenum	ug/L	< 0.52	1000	1000	1030	1020	103	101	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	TE: 18893	21		1889322							
	0	0005005004	MS	MSD	MC	MCD	MC	MCD	0/ Daa		N4=	
Parameter	Units	0235625001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
						- Nesuit	70 INEC	70 IXEC			- NI D	
Barium	ug/L	146	1000	1000	1210	1220	106	107	70-130	1	20	
Beryllium	ug/L	< 0.26	1000	1000	1050	1060	105	106	70-130	1	20	
Boron	ug/L	538	1000	1000	1520	1550	98	101	70-130	2	20	
Calcium	ug/L	81300	10000	10000	89300	92200	80	109	70-130	3	20	
Cobalt	ug/L	< 0.72	1000	1000	1010	1020	101	102	70-130	1	20	
Lead	ug/L	<2.5	1000	1000	1010	1020	101	101	70-130	1	20	
Lithium	ug/L	13.5	1000	1000	1110	1120	110	111	70-130	1	20	
Molybdenum	ug/L	40.9	1000	1000	1090	1100	105	105	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

QC Batch: 461338 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60235473001, 60235473002

METHOD BLANK: 1888324 Matrix: Water

Associated Lab Samples: 60235473001, 60235473002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.055	1.0	0.055	01/11/17 13:23	
Arsenic	ug/L	< 0.25	1.0	0.25	01/11/17 13:23	
Cadmium	ug/L	< 0.082	0.50	0.082	01/11/17 13:23	
Chromium	ug/L	0.28J	1.0	0.16	01/11/17 13:23	
Selenium	ug/L	<0.12	1.0	0.12	01/11/17 13:23	
Thallium	ug/L	< 0.052	1.0	0.052	01/11/17 13:23	

LABORATORY CONTROL SAMPLE:	1888325	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	40.1	100	85-115	
Arsenic	ug/L	40	38.0	95	85-115	
Cadmium	ug/L	40	39.5	99	85-115	
hromium	ug/L	40	41.1	103	85-115	
elenium	ug/L	40	36.5	91	85-115	
-hallium	ug/L	40	40.3	101	85-115	

MATRIX SPIKE & MATRIX SPIR	KE DUPLI	CATE: 18883	26		1888327							
			MS	MSD								
		60235457003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	0.10J	40	40	40.1	40.4	100	101	70-130	1	20	
Arsenic	ug/L	1.6	40	40	39.6	39.2	95	94	70-130	1	20	
Cadmium	ug/L	< 0.029	40	40	38.8	38.6	97	97	70-130	0	20	
Chromium	ug/L	0.55J	40	40	40.0	40.2	99	99	70-130	0	20	
Selenium	ug/L	<0.18	40	40	35.2	35.6	88	89	70-130	1	20	
Thallium	ug/L	<0.50	40	40	41.6	41.5	104	104	70-130	0	20	

MATRIX SPIKE SAMPLE:	1888328						
		60235457005	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	0.31J	40	41.5	103	70-130	
Arsenic	ug/L	0.34J	40	39.6	98	70-130	
Cadmium	ug/L	0.081J	40	39.9	100	70-130	
Chromium	ug/L	0.46J	40	39.4	97	70-130	
Selenium	ug/L	1.5	40	40.4	97	70-130	
Thallium	ug/L	<0.50	40	41.0	102	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

QC Batch: 461613 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008

METHOD BLANK: 1889506 Matrix: Water

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.083J	1.0	0.055	01/11/17 16:12	
Arsenic	ug/L	< 0.25	1.0	0.25	01/11/17 16:12	
Cadmium	ug/L	< 0.082	0.50	0.082	01/11/17 16:12	
Chromium	ug/L	0.18J	1.0	0.16	01/11/17 16:12	
Selenium	ug/L	<0.12	1.0	0.12	01/11/17 16:12	
Thallium	ug/L	< 0.052	1.0	0.052	01/11/17 16:12	

LABORATORY CONTROL SAMPLE:	1889507					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	40.3	101	85-115	
Arsenic	ug/L	40	38.7	97	85-115	
Cadmium	ug/L	40	40.5	101	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Selenium	ug/L	40	40.2	101	85-115	
Thallium	ug/L	40	39.5	99	85-115	

MATRIX SPIKE & MATRIX SF	PIKE DUPLICA	ATE: 188950	08		1889509							
			MS	MSD					0/ 5			
	6	0235624001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	<0.058	40	40	40.5	40.0	101	100	70-130	1	20	
Arsenic	ug/L	0.38J	40	40	39.0	38.1	97	94	70-130	2	20	
Cadmium	ug/L	< 0.029	40	40	39.7	38.9	99	97	70-130	2	20	
Chromium	ug/L	0.62J	40	40	39.2	39.0	97	96	70-130	0	20	
Selenium	ug/L	<0.18	40	40	37.3	36.2	93	90	70-130	3	20	
Thallium	ug/L	< 0.50	40	40	41.0	40.9	102	102	70-130	0	20	

MATRIX SPIKE SAMPLE:	1889510						
Parameter	Units	60235625001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	<0.058	40	40.6	101	70-130	
Arsenic	ug/L	0.98J	40	39.3	96	70-130	
Cadmium	ug/L	<0.029	40	39.6	99	70-130	
Chromium	ug/L	0.71J	40	39.2	96	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

MATRIX SPIKE SAMPLE:	1889510						
		60235625001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Selenium	ug/L	<0.18	40	37.6	94	70-130	
Thallium	ug/L	<0.50	40	40.3	101	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 461337 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60235473001, 60235473002

METHOD BLANK: 1888320 Matrix: Water

Associated Lab Samples: 60235473001, 60235473002

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 01/06/17 10:39

LABORATORY CONTROL SAMPLE: 1888321

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

SAMPLE DUPLICATE: 1888322

60235335001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 6900 10 **Total Dissolved Solids** 6850 1 mg/L

SAMPLE DUPLICATE: 1888323

Date: 01/31/2017 04:50 PM

60235514003 Dup Max RPD RPD Parameter Units Result Result Qualifiers 693 **Total Dissolved Solids** mg/L 692 0 10

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



Reporting

AMEREN SIOUX ENERGY CTR-BOTT Project:

Pace Project No.: 60235473

Total Dissolved Solids

Date: 01/31/2017 04:50 PM

QC Batch: 461527 Analysis Method: SM 2540C

mg/L

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007, Associated Lab Samples:

60235625008

METHOD BLANK: 1889118 Matrix: Water

Associated Lab Samples: Blank

60235625008

Units MDL Qualifiers Parameter Result Limit Analyzed **Total Dissolved Solids** mg/L <5.0 5.0 5.0 01/09/17 15:57 LABORATORY CONTROL SAMPLE: 1889119 LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** 1010 101 80-120 mg/L 1000 SAMPLE DUPLICATE: 1889120 60235625001 Dup Max RPD RPD Result Qualifiers Parameter Units Result Total Dissolved Solids 374 377 10 mg/L 1 SAMPLE DUPLICATE: 1889121 60235627003 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers

367

375

2

10

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 461465 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007, 60235625008

SAMPLE DUPLICATE: 1888952

Date: 01/31/2017 04:50 PM

 Parameter
 Units
 60235624001 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.2
 7.2
 1
 5 H6

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 461546 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60235473001

SAMPLE DUPLICATE: 1889186

Date: 01/31/2017 04:50 PM

 Parameter
 Units
 60235246002 Result
 Dup Result
 Max RPD
 RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 4.7
 4.7
 0
 5 H6

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 461642 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60235473002

SAMPLE DUPLICATE: 1889573

Date: 01/31/2017 04:50 PM

60235457003 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.2 pH at 25 Degrees C 7.2 5 H6 Std. Units 0

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 462105 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60235625001

SAMPLE DUPLICATE: 1892038

Date: 01/31/2017 04:50 PM

60235625001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.2 pH at 25 Degrees C 7.6 5 H6 Std. Units 5

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

QC Batch: 462745 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60235473001, 60235473002

METHOD BLANK: 1894695 Matrix: Water

Associated Lab Samples: 60235473001, 60235473002

Blank Reporting MDL Limit Qualifiers Parameter Units Result Analyzed Chloride < 0.50 1.0 01/21/17 09:20 mg/L 0.50 Fluoride mg/L < 0.027 0.20 0.027 01/21/17 09:20

LABORATORY CONTROL SAMPLE: 1894696 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 5.0 100 90-110 mg/L Fluoride 2.5 2.6 104 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1894698 1894697 MSD MS 60235457001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 3.9 5 5 9.7 9.3 115 108 80-120 4 15 Fluoride mg/L 0.32 2.5 2.5 3.3 3.1 117 109 80-120 6 15

MATRIX SPIKE SAMPLE: 1894699 MS MS 60235457003 % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits Chloride 1.6 5 6.9 107 80-120 mg/L 0.27 80-120 Fluoride mg/L 2.5 3.0 111

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Fluoride

Date: 01/31/2017 04:50 PM

QC Batch: 462746 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

mg/L

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008

METHOD BLANK: 1894700 Matrix: Water

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

Blank

60235625008

			Diank		cporting							
Parameter		Units	Result	t	Limit	MDL	F	Analyzed	Qua	alifiers		
Chloride		mg/L	<	0.50	1.0)	0.50 01/2	21/17 16:04	ļ		_	
Fluoride		mg/L	<0	0.027	0.20	0	.027 01/2	21/17 16:04	1			
Sulfate		mg/L	<	:0.15	1.0)	0.15 01/2	21/17 16:04	1			
LABORATORY CONTROL SA	MPLE: 189)4701										
			Spike	LCS	3	LCS	% Red	;				
Parameter		Units	Conc.	Resu	ılt	% Rec	Limits	Qı	ualifiers			
Chloride	-	mg/L	5		5.0	101	90)-110		-		
Fluoride		mg/L	2.5		2.7	107	90	-110				
Sulfate		mg/L	5		5.1	101	90)-110				
MATRIX SPIKE & MATRIX SP	IKE DUPLICA	ATE: 18947	02		1894703							
			MS	MSD								
	ϵ	0235624001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Fluoride	mg/L	0.25	2.5	2.5	3.0	3.0	110	112	80-120	1	15	
MATRIX SPIKE SAMPLE:	189)4704										
		•	6023562	25001	Spike	MS	M	IS	% Rec			
Parameter		Units	Resu	ult	Conc.	Result	% F	Rec	Limits		Qualif	iers

0.27

2.5

3.1

114

80-120

Reporting

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

QC Batch: 462784 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60235473001, 60235473002

METHOD BLANK: 1895026 Matrix: Water

Associated Lab Samples: 60235473001, 60235473002

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Sulfate mg/L <0.15 1.0 0.15 01/22/17 10:23

LABORATORY CONTROL SAMPLE: 1895027

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895028 1895029

MS MSD 60235457003 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Sulfate 25 80-120 2 mg/L 55.7 25 82.7 84.0 108 113 15

MATRIX SPIKE SAMPLE: 1895030 60235624001 Spike MS MS % Rec

ParameterUnitsResultConc.Result% RecLimitsQualifiersSulfatemg/L1045016011180-120

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



AMEREN SIOUX ENERGY CTR-BOTT Project:

Pace Project No.: 60235473

Sulfate

Date: 01/31/2017 04:50 PM

QC Batch: 462785 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007

METHOD BLANK: 1895031 Matrix: Water

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007

Blank Reporting Limit MDL Parameter Units Result Analyzed Qualifiers Chloride < 0.50 1.0 01/22/17 08:59 mg/L 0.50 mg/L < 0.15 1.0 0.15 01/22/17 08:59

LABORATORY CONTROL SAMPLE: 1895032 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.8 97 90-110 mg/L Sulfate 5 4.9 98 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895033 1895034 MS MSD 60235625001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 23.2 10 10 34.5 34.3 113 110 80-120 15 Sulfate mg/L 85.6 50 50 140 141 110 111 80-120 15

MATRIX SPIKE SAMPLE: 1895035 MS MS 60236411003 % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits Chloride ND 100 119 100 80-120 mg/L 176 286 80-120 Sulfate mg/L 100 110

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-BMW-1D Lab ID: 60235473001 Collected: 01/03/17 11:21 Received: 01/05/17 05:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.324 ± 0.451 (0.753) C:NA T:90%	pCi/L	01/28/17 11:49	13982-63-3	
Radium-228	EPA 904.0	0.695 ± 0.426 (0.792) C:59% T:94%	pCi/L	01/30/17 16:08	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-BMW-3D Lab ID: 60235473002 Collected: 01/03/17 14:29 Received: 01/05/17 05:45 Matrix: Water

PWS: Site ID: Sample Type:

1 443.	Site ib.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.453 (0.982) C:NA T:91%	pCi/L	01/28/17 11:49	13982-63-3	
Radium-228	EPA 904.0	0.158 ± 0.349 (0.776) C:55% T:89%	pCi/L	01/30/17 16:08	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-1D Lab ID: 60235625001 Collected: 01/05/17 10:33 Received: 01/07/17 03:40 Matrix: Water

PWS: Site ID: Sample Type:

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.340 (0.693) C:NA T:95%	pCi/L	01/28/17 19:55	13982-63-3	
Radium-228	EPA 904.0	0.529 ± 0.451 (0.914) C:68% T:83%	pCi/L	01/30/17 18:27	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-2D Lab ID: 60235625002 Collected: 01/05/17 15:12 Received: 01/07/17 03:40 Matrix: Water

PWS: Site ID: Sample Type:

1 443.	Site ib.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0806 ± 0.368 (0.593) C:NA T:85%	pCi/L	01/28/17 20:22	13982-63-3	
Radium-228	EPA 904.0	0.217 ± 0.422 (0.927) C:65% T:74%	pCi/L	01/30/17 18:27	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-3D Lab ID: 60235625003 Collected: 01/05/17 15:20 Received: 01/07/17 03:40 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0739 ± 0.435 (0.888) C:NA T:94%	pCi/L	01/28/17 20:22	13982-63-3	
Radium-228	EPA 904.0	0.0321 ± 0.401 (0.924) C:62% T:84%	pCi/L	01/30/17 18:27	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-4D Lab ID: 60235625004 Collected: 01/05/17 14:05 Received: 01/07/17 03:40 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.161 ± 0.367 (0.592) C:NA T:90%	pCi/L	01/28/17 20:22	13982-63-3	
Radium-228	EPA 904.0	0.497 ± 0.404 (0.803) C:72% T:78%	pCi/L	01/30/17 18:27	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-5D Lab ID: 60235625005 Collected: 01/05/17 14:15 Received: 01/07/17 03:40 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.377 (0.845) C:NA T:89%	pCi/L	01/28/17 20:22	13982-63-3	
Radium-228	EPA 904.0	0.289 ± 0.324 (0.677) C:73% T:91%	pCi/L	01/30/17 18:27	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-6D Lab ID: 60235625006 Collected: 01/05/17 12:30 Received: 01/07/17 03:40 Matrix: Water

PWS: Site ID: Sample Type:

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.236 ± 0.360 (0.578) C:NA T:87%	pCi/L	01/28/17 20:22	13982-63-3	
Radium-228	EPA 904.0	0.453 ± 0.445 (0.918) C:67% T:79%	pCi/L	01/30/17 18:27	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-DUP-1 Lab ID: 60235625007 Collected: 01/05/17 08:00 Received: 01/07/17 03:40 Matrix: Water

PWS: Site ID: Sample Type

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.155 ± 0.373 (0.720) C:NA T:87%	pCi/L	01/28/17 20:22	13982-63-3	
Radium-228	EPA 904.0	0.816 ± 0.462 (0.837) C:71% T:74%	pCi/L	01/30/17 18:29	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-FB-1 Lab ID: 60235625008 Collected: 01/05/17 14:02 Received: 01/07/17 03:40 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.076 ± 0.348 (0.707) C:NA T:93%	pCi/L	01/28/17 21:02	13982-63-3	
Radium-228	EPA 904.0	0.277 ± 0.380 (0.812) C:63% T:89%	pCi/L	01/30/17 18:29	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-1D MS Lab ID: 60235625009 Collected: 01/05/17 10:33 Received: 01/07/17 03:40 Matrix: Water

PWS:	Site ID:	Sample Type:					
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual	
Radium-226	EPA 903.1	101 %REC +/- NA (NA) C:NA T:NA	pCi/L	01/28/17 20:51	13982-63-3		
Radium-228	EPA 904.0	82.0 %REC +/- NA (NA) C:NA T:NA	pCi/L	01/30/17 18:29	15262-20-1		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Sample: S-UMW-1D MSD Lab ID: 60235625010 Collected: 01/05/17 10:33 Received: 01/07/17 03:40 Matrix: Water

C:NA T:NA

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac Units **Parameters** Analyzed CAS No. Qual EPA 903.1 105 %REC 4.35 RPD +/- NA Radium-226 pCi/L 01/28/17 20:51 13982-63-3 (NA) C:NA T:NA 103 %REC 22.0 RPD +/- NA EPA 904.0 pCi/L Radium-228 01/30/17 18:29 15262-20-1 (NA)



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 246431 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60235473001, 60235473002

METHOD BLANK: 1211778 Matrix: Water

Associated Lab Samples: 60235473001, 60235473002

ParameterAct \pm Unc (MDC) Carr TracUnitsAnalyzedQualifiersRadium-226 0.000 ± 0.423 (0.682) C:NA T:80%pCi/L01/28/17 11:18

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 246435 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008, 60235625009, 60235625010

METHOD BLANK: 1211782 Matrix: Water

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008, 60235625009, 60235625010

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.247 ± 0.377 (0.607) C:NA T:90% pCi/L 01/28/17 19:22

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 246436 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008, 60235625009, 60235625010

METHOD BLANK: 1211783 Matrix: Water

Associated Lab Samples: 60235625001, 60235625002, 60235625003, 60235625004, 60235625005, 60235625006, 60235625007,

60235625008, 60235625009, 60235625010

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.0628 ± 0.324 (0.745) C:61% T:84%
 pCi/L
 01/30/17 18:24

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

QC Batch: 246432 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60235473001, 60235473002

METHOD BLANK: 1211779 Matrix: Water

Associated Lab Samples: 60235473001, 60235473002

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.196 ± 0.401 (0.883) C:62% T:84%
 pCi/L
 01/30/17 16:07

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

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.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 01/31/2017 04:50 PM

B Analyte was detected in the associated method blank.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60235473001	S-BMW-1D	EPA 200.7	461335	EPA 200.7	461385
60235473002	S-BMW-3D	EPA 200.7	461335	EPA 200.7	461385
60235625001	S-UMW-1D	EPA 200.7	461572	EPA 200.7	461636
60235625002	S-UMW-2D	EPA 200.7	461572	EPA 200.7	461636
60235625003	S-UMW-3D	EPA 200.7	461572	EPA 200.7	461636
60235625004	S-UMW-4D	EPA 200.7	461572	EPA 200.7	461636
60235625005	S-UMW-5D	EPA 200.7	461572	EPA 200.7	461636
60235625006	S-UMW-6D	EPA 200.7	461572	EPA 200.7	461636
0235625007	S-UMW-DUP-1	EPA 200.7	461572	EPA 200.7	461636
0235625008	S-UMW-FB-1	EPA 200.7	461572	EPA 200.7	461636
0235473001	S-BMW-1D	EPA 200.8	461338	EPA 200.8	461386
60235473002	S-BMW-3D	EPA 200.8	461338	EPA 200.8	461386
0235625001	S-UMW-1D	EPA 200.8	461613	EPA 200.8	461637
0235625002	S-UMW-2D	EPA 200.8	461613	EPA 200.8	461637
0235625002	S-UMW-3D	EPA 200.8	461613	EPA 200.8	461637
0235625004	S-UMW-4D	EPA 200.8	461613	EPA 200.8	461637
0235625005	S-UMW-5D	EPA 200.8	461613	EPA 200.8	461637
0235625006	S-UMW-6D	EPA 200.8	461613	EPA 200.8	461637
0235625007	S-UMW-DUP-1	EPA 200.8	461613	EPA 200.8	461637
0235625007	S-UMW-FB-1	EPA 200.8	461613	EPA 200.8	461637
0235473001	S-BMW-1D	EPA 7470	461806	EPA 7470	461843
0235473001	S-BMW-3D	EPA 7470	461806	EPA 7470	461843
0235625001	S-UMW-1D	EPA 7470	462292	EPA 7470	462306
0235625001	S-UMW-2D	EPA 7470	462292	EPA 7470	462306
0235625003	S-UMW-3D	EPA 7470	462292	EPA 7470	462306
0235625004	S-UMW-4D	EPA 7470	462292	EPA 7470	462306
0235625005	S-UMW-5D	EPA 7470	462292	EPA 7470	462306
0235625006	S-UMW-6D	EPA 7470	462292	EPA 7470	462306
0235625007	S-UMW-DUP-1	EPA 7470	462292	EPA 7470	462306
0235625007	S-UMW-FB-1	EPA 7470	462292	EPA 7470	462306
0235473001	S-BMW-1D	EPA 903.1	246431		
0235473001	S-BMW-3D	EPA 903.1	246431		
0233473002		LI A 303.1			
0235625001	S-UMW-1D	EPA 903.1	246435		
0235625002	S-UMW-2D	EPA 903.1	246435		
0235625003	S-UMW-3D	EPA 903.1	246435		
0235625004	S-UMW-4D	EPA 903.1	246435		
0235625005	S-UMW-5D	EPA 903.1	246435		
0235625006	S-UMW-6D	EPA 903.1	246435		
0235625007	S-UMW-DUP-1	EPA 903.1	246435		
0235625008	S-UMW-FB-1	EPA 903.1	246435		
0235625009	S-UMW-1D MS	EPA 903.1	246435		
0235625010	S-UMW-1D MSD	EPA 903.1	246435		
0235473001	S-BMW-1D	EPA 904.0	246432		
0235473002	S-BMW-3D	EPA 904.0	246432		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60235625001	S-UMW-1D	EPA 904.0	246436		
0235625002	S-UMW-2D	EPA 904.0	246436		
0235625003	S-UMW-3D	EPA 904.0	246436		
0235625004	S-UMW-4D	EPA 904.0	246436		
0235625005	S-UMW-5D	EPA 904.0	246436		
0235625006	S-UMW-6D	EPA 904.0	246436		
0235625007	S-UMW-DUP-1	EPA 904.0	246436		
0235625008	S-UMW-FB-1	EPA 904.0	246436		
0235625009	S-UMW-1D MS	EPA 904.0	246436		
0235625010	S-UMW-1D MSD	EPA 904.0	246436		
0235473001	S-BMW-1D	SM 2540C	461337		
0235473002	S-BMW-3D	SM 2540C	461337		
0235625001	S-UMW-1D	SM 2540C	461527		
0235625002	S-UMW-2D	SM 2540C	461527		
0235625003	S-UMW-3D	SM 2540C	461527		
0235625004	S-UMW-4D	SM 2540C	461527		
0235625005	S-UMW-5D	SM 2540C	461527		
0235625006	S-UMW-6D	SM 2540C	461527		
0235625007	S-UMW-DUP-1	SM 2540C	461527		
0235625008	S-UMW-FB-1	SM 2540C	461527		
0235473001	S-BMW-1D	SM 4500-H+B	461546		
0235473002	S-BMW-3D	SM 4500-H+B	461642		
0235625001	S-UMW-1D	SM 4500-H+B	462105		
0235625002	S-UMW-2D	SM 4500-H+B	461465		
0235625003	S-UMW-3D	SM 4500-H+B	461465		
0235625004	S-UMW-4D	SM 4500-H+B	461465		
0235625005	S-UMW-5D	SM 4500-H+B	461465		
0235625006	S-UMW-6D	SM 4500-H+B	461465		
0235625007	S-UMW-DUP-1	SM 4500-H+B	461465		
0235625008	S-UMW-FB-1	SM 4500-H+B	461465		
0235473001	S-BMW-1D	EPA 300.0	462745		
0235473001	S-BMW-1D	EPA 300.0	462784		
0235473002	S-BMW-3D	EPA 300.0	462745		
0235473002	S-BMW-3D	EPA 300.0	462784		
0235625001	S-UMW-1D	EPA 300.0	462746		
0235625001	S-UMW-1D	EPA 300.0	462785		
0235625002	S-UMW-2D	EPA 300.0	462746		
0235625002	S-UMW-2D	EPA 300.0	462785		
0235625003	S-UMW-3D	EPA 300.0	462746		
0235625003	S-UMW-3D	EPA 300.0	462785		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60235473

Date: 01/31/2017 04:50 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60235625004	S-UMW-4D	EPA 300.0	462746		
60235625004	S-UMW-4D	EPA 300.0	462785		
60235625005	S-UMW-5D	EPA 300.0	462746		
60235625005	S-UMW-5D	EPA 300.0	462785		
60235625006	S-UMW-6D	EPA 300.0	462746		
60235625006	S-UMW-6D	EPA 300.0	462785		
60235625007	S-UMW-DUP-1	EPA 300.0	462746		
60235625007	S-UMW-DUP-1	EPA 300.0	462785		
60235625008	S-UMW-FB-1	EPA 300.0	462746		



Sample Condition Upon Receipt



Client Name: Soll		
Courier: FedEx □ UPS □ VIA □ Clay □	PEX 🗆 ECI 🗆	Pace ☐ Xroads ☐ Client ☐ Other ☐
Tracking #: Page Page Page Page Page Page Page Page	ce Shipping Label Used	1? Yes ☑ No □
Custody Seal on Cooler/Box Present: Yes No 🗆	Seals intact: Yes	No □
Packing Material: Burble Wrap ☐ Bubble Bags I	Foam	None Other D
Thermometer Used: (T-266)/ T-239 Type o	fice Wet Blue Nor	Date and initials of person
Cooler Temperature (°C): As-read Z.2/11.4 Corr. Fact	tor CF +0.7 CF +0.9 Correct	red 7.7 //2:1 examining contents:
Temperature should be above freezing to 6°C		,
Chain of Custody present:	Yes ONo ON/A	
Chain of Custody relinquished:	Ves □No □N/A	
Samples arrived within holding time:	✓Yes □No □N/A	
Short Hold Time analyses (<72hr):	Yes ONO ON/A	ри
Rush Turn Around Time requested:	□Yes No □N/A	/
Sufficient volume:	Des □No □N/A	- SAMPLE S-BMW-30 on coc has
Correct containers used:	□Mes □No □N/A	a container label that has
Pace containers used:	DYes □No □N/A	been affect to read
Containers intact:	✓es □No □N/A	5-BMW-35 collected @ 1520
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No □Ñ/A	- pre printed portion of label says
Filtered volume received for dissolved tests?	□Yes □No □N/A	sample is from Bottom Ash
Sample labels match COC: Date / time / ID / analyses	DVes □No □N/A	Site
Samples contain multiple phases? Matrix:	□Yes ☑No □N/A	- The hand written ID/time is
Containers requiring pH preservation in compliance?	ØYes □No □N/A	a mater for a sample on
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)		El. Axla (ac.
Cyanide water sample checks:		- 11 '22
Lead acetate strip turns dark? (Record only)	□Yes □No	possible mix up.
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No	1.
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	d? □Yes □No □N/A	21
Client Notification/ Resolution: Copy COC		Field Data Required? Y / N
Person Contacted: Per client, sample S-BMW-2D sho		21520 and S-BMW-3S should be S-BMW-3D
Project Manager Review Jami Chel -		1/5/17
Project Manager Review:	Date	

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical

00 Pace Project No./ Lab I.D. (N/Y) **DRINKING WATER** Samples Intact 28611 SAMPLE CONDITIONS 00235473 Cooler (Y/N) OTHER φ Custody Sealer F02 Received on Row K GROUND WATER Residual Chlorine (Y/N) Page: 7:2 J° ni qmeT REGULATORY AGENCY Š RCRA 050 TIME Requested Analysis Filtered (Y/N) Site Location STATE DATE NPDES UST 15/ Radium 226 & 228 N z DATE Signed (MM/DD/YY): Н ACCEPTED BY / AFFILIATION z LDS z Chloride/Fluoride/Sulfate z Netals* N/A Test Test Other Methanol Jamie Church Preservatives Na₂S₂O₃ non HORN ЮН 9285 00 Invoice Information ²QNH Company Name: くとう 1700 OS2H ace Profile #. 1620 Section C TIME Uppreserved Pace Quote Address: + # OF CONTAINERS SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER: SAMPLE TEMP AT COLLECTION 4/2 Ameren Sioux Energy Center - Bottom Ash DATE 1420 TIME 11211 Report To: Mark Haddock (mhaddock@golder.com) COMPOSITE 1/3/17 DATE COLLECTED maland RELINQUISHED BY / AFFILIATION (mosti / 60) der TIME COMPOSITE 153-1406.0003A START DATE Jeffrey Ingram Required Project Information: Service of the servic Q O O O O O Φ O O SAMPLE TYPE O (G=GRAB C=COMP) urchase Order No. 340 Ž ₹ Ž ₹ Ž M Ž ₹ ₹ \$ Project Number. (see valid codes to left) MATRIX CODE roject Name: Section B Copy To: CODE BANKIDS-BMM-P Valid Matrix Codes DW WW WW OL OL OL OL OT TS DRINKING WATER
WASTE WATER
PRODUCT
SOIL/SOLD
OIL EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200 8: Sb, As, Cd, Cr, Se, Tl Fax: 636-724-9323 820 South Main Street, Suite 100 S-UMW-DUP-1 S-UMW-FB-1 S-UMMA-2D S-BMW-3D GE-MANIL'S G+AMAD-6 S-UMM-5B S-LIMA CD S-UMMV-1D ADDITIONAL COMMENTS (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE maddock@golder.com St Charles, MO 63301 SAMPLE ID Golder Associates Required Client Information Required Client Information: Phone: 636-724-9191 Requested Due Date/TAT: Section D Page 57 of 59 Section A Company: Email To: Address: 12 10 m 4 S 9 00 တ Ŧ 2 7 # MaTI

Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1,5% per month for any invoices not paid within 30 days.

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



Sample Condition Upon Receipt



Client Name: Golder		
Courier: FedEx □ UPS □ VIA □ Clay □ I	PEX 🗆 ECI 🗆	Pace □ Xroads ☑ Client □ Other □
Tracking #: Pac	e Shipping Label Used	i? Yes □ No □
Custody Seal on Cooler/Box Present: Yes ☑ No □	Seals intact: Yes 4	ĺ No □
Packing Material: Bubble Wrap □ Bubble Bags □	□ Foam □	None ☑ Other □
Thermometer Used: (T-266 / T-239 Type of	fice: Wev Blue Nor	A
Cooler Temperature (°C): As-read <u>7.0 ω.γ</u> Corr. Fact	or F+07 CF +0.9 Correct	ed 2-1 II.1 7.3 Date and initials of person (/2//)
Temperature should be above freezing to 6°C 2-1		
Chain of Custody present:	ÆYes □No □N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	⊠Yes □No □N/A	
Short Hold Time analyses (<72hr):	☑Yes □No □N/A	PH
Rush Turn Around Time requested:	□Yes ☑No □N/A	
Sufficient volume:	ÆYes □No □N/A	
Correct containers used:	⊠Yes □No □N/A	
Pace containers used:	DYes □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?	⊠Yes □No □N/A	
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)		
Cyanide water sample checks: N/A		
Lead acetate strip tums 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 ØN/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	o Client? Y / N	Field Data Required? Y / N
Person Contacted: Date/1	Гіте: 	
Comments/ Resolution:		
Jam Chel		1/9/17
Project Manager Review:	Date	

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section B Section A Required Client Company:

Colone Accordance Colo	Section A Required C	lient Information:	Section B Required Project Information:	nation:			Section C Invoice Information:	mation:						Page:	1	of 1	
Control Name Street S	Compar	Golder Associates	Report To: Mark Hac	dock (mhad	dock@golder.	com)	Attention:						<u>,</u>				
School of the Color of the Co	Address	820 South Main Street, Suite 100	1	gram			Company N	эте:			22	GULATOR	Y AGENCY		H/A		
Company Comp		St Charles, MO 63301					Address:				<u> </u>		K GROUNE) WATER	□ DR	NKING W	ATER
SAMPLE ID Pac GB-724-919 Pac GB-72	Email T	maddock@golder.com	Purchase Order No.:				Pace Quote Reference:					_ UST	☐ RCRA		T OT	ER	
### STATE Property Hornor 153-1409 DOOLA 153-1409	Phone:	636-724-9191 Fax: 636-724-9323		ren Sioux Er	ergy Center -	Bottom Ash	Pace Project Manager.		nurch		3)	ite Location	Ov.				
Samples Date	Reques	Standard		-1406.0003A			Pace Profile				veli	STATE:					
CONFECTED COLLECTED Coll		2									quested An	alysis Filter	(N/A) pa				
1 1 1 1 1 1 1 1 1 1		lient Information	(f)el o		COLLECTED			Preservat	íves	z	z						
COURT COUNTINE C		DRINKING WATER WASTE WASTE WASTE SOLCOUD OIL	see valld codes	COMPOSITE	70 11		-										
			CODE (TA 9M3T.	ЯЗИІАТИС			Ŋ					209	355	52
WIT G	TEM #	r.c.	_			_	# OF CC	HCI HNQ3	Na ₂ S ₂ C	Metals	TDS			nbisəЯ	Pace Pro	ject No√	Lab I.D.
WIT G	-	S-UMW-1D	_	⊢	1/5/			9	1 1 1	3	-			8)9	*)(N)	1 (rie/0)	(Ber) (U)
	2	S-UMW-2D					- 7	3		-	2 1 1			7(1	かりして	P32 1962	0 102
WIT G WI	m	S-UMW-3D				1520				Fill							lb3
WIT G 1730 L1 1	4	S-UMW-4D				1405								_			ख
WIT G WI	2	S-UMW-5D				14/5				+	-						ES .
WIT G WI	9	S-UMW-6D			4		1	4			7			-			3)
WIT G INFORMATION DATE TIME ACCEPTED BY AFFILIATION PATE TIME SAMPLE CONDITIONS SAMPLER NAME AND SIGNATURE SIGNATURE of SAMPLER: MANDER: MAN	7	S-Birry To								den						_	,
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SAMPLER NAME AND SIGNATURE of SAMPLER: Signed SIGNATURE of SAMPLER: Signed Signad I Signature of SAMPLER: Signad	12	ADDITIONAL COMMENTS	RELINGU	ISHED BY / AFF	FILIATION	DATE	TIME		ACCEPTED	BY / AFFIL	MATION	PATE	THME		SAMPLE	NOITIGNOS	S S
SAMPLER NAME AND SIGNATURE SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER: (MMUDDITY): C 1 1 1 1 1 1 1 1 1	*EPA 2	00.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg	13ha (1	021/120	1hr	1	The state of the s	1	1	1	10421	19-12	0340	-	,	7	>
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER: (MMIDDITY): U 12 SAMPLER:			h -					1	1	6	*	र्धाना		_	2	7	>
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SIGNATURE of SAMPLER: SIGNATURE of SAMPLER:														_	7	>-	>
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: And Mark of SAMPLER: A		Pa														p	1
SIGNATURE of SAMPLER: The Signed DATE Signed Sampler CCC Sampler CCC		ge 5		Ś	AMPLER NAME		JRE			1100 11 <u>1</u> 1				_	(N/,		
SIGNATURE OF SAMPLERY. (MMIDDITY): U		59 of :			PRINT N2		7	2	.6.	DAT		PRop.		_	r) eol		
		59		_]	SIGNATO	JKE OI SAMIPLE	4/1	in the second	1	(M)		200			1		s

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

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





March 03, 2017

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on February 03, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com

314-838-7223 Project Manager

Enclosures

cc: Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates



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



CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976 New Jersey/TNI Certification #: PA 051 New Mexico Certification #: PA01457

New York/TNI Certification #: 10888 North Carolina Certification #: 42706 North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

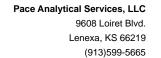
Wisconsin Certification

Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070





SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60237185001	S-BMW-3D	Water	02/02/17 10:30	02/03/17 03:55

(913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60237185001	S-BMW-3D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JMC1	1	PASI-K
		EPA 300.0	OL	3	PASI-K



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Date: 03/03/2017 03:23 PM

Sample: S-BMW-3D	Lab ID:	60237185001	Collecte	d: 02/02/17	7 10:30	Received: 02/	03/17 03:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	650	ug/L	5.0	0.58	1	02/03/17 16:15	02/06/17 16:21	7440-39-3	
Beryllium	<0.26	ug/L	1.0	0.26	1	02/03/17 16:15	02/06/17 16:21	7440-41-7	
Boron	<50.0	ug/L	100	50.0	1	02/03/17 16:15	02/06/17 16:21	7440-42-8	
Calcium	106000	ug/L	100	8.1	1	02/03/17 16:15	02/06/17 16:21	7440-70-2	
Cobalt	<0.72	ug/L	5.0	0.72	1	02/03/17 16:15	02/06/17 16:21	7440-48-4	
Lead	<2.5	ug/L	5.0	2.5	1	02/03/17 16:15	02/06/17 16:21	7439-92-1	
Lithium	20.0	ug/L	10.0	4.9	1	02/03/17 16:15	02/06/17 16:21	7439-93-2	
Molybdenum	<0.52	ug/L	20.0	0.52	1	02/03/17 16:15	02/06/17 16:21	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	0.21J	ug/L	1.0	0.026	1	02/08/17 11:30	02/13/17 12:23	7440-36-0	В
Arsenic	<0.052	ug/L	1.0	0.052	1	02/08/17 11:30	02/13/17 12:23	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	02/08/17 11:30	02/13/17 12:23	7440-43-9	
Chromium	0.61J	ug/L	1.0	0.054	1	02/08/17 11:30	02/13/17 12:23	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	02/08/17 11:30	02/13/17 12:23	7782-49-2	
Thallium	0.082J	ug/L	1.0	0.036	1	02/08/17 11:30	02/13/17 12:23	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	0.066J	ug/L	0.20	0.039	1	02/06/17 09:45	02/06/17 13:15	7439-97-6	В
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	402	mg/L	5.0	5.0	1		02/08/17 10:00		
4500H+ pH, Electrometric	Analytical	Method: SM 45	600-H+B						
pH at 25 Degrees C	7.5	Std. Units	0.10	0.10	1		02/13/17 12:42		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	8.2	mg/L	1.0	0.50	1		02/04/17 16:39	16887-00-6	
Fluoride	0.34	mg/L	0.20	0.027	1		02/04/17 16:39	16984-48-8	
Sulfate	20.0	mg/L	2.0	0.31	2		02/04/17 16:53	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Date: 03/03/2017 03:23 PM

QC Batch: 464462 Analysis Method: EPA 7470

QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60237185001

METHOD BLANK: 1901187 Matrix: Water

Associated Lab Samples: 60237185001

Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L 0.10J 0.20 0.039 02/06/17 12:42

LABORATORY CONTROL SAMPLE: 1901188

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 5.5 110 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1901189 1901190

MS MSD 60236274001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ug/L 0.12J 5 5 5.5 5.2 75-125 5 20 Mercury 107 102

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Date: 03/03/2017 03:23 PM

QC Batch: 464383 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60237185001

METHOD BLANK: 1900682 Matrix: Water

Associated Lab Samples: 60237185001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	02/06/17 15:49	
Beryllium	ug/L	<0.16	1.0	0.16	02/06/17 15:49	
Boron	ug/L	<3.5	100	3.5	02/06/17 15:49	
Calcium	ug/L	<36.0	100	36.0	02/06/17 15:49	
Cobalt	ug/L	< 0.73	5.0	0.73	02/06/17 15:49	
Lead	ug/L	<2.4	5.0	2.4	02/06/17 15:49	
Lithium	ug/L	<2.9	10.0	2.9	02/06/17 15:49	
Molybdenum	ug/L	<1.3	20.0	1.3	02/06/17 15:49	

	11.5	Spike	LCS	LCS	% Rec	0 ""
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	1020	102	85-115	
Boron	ug/L	1000	932	93	85-115	
Calcium	ug/L	10000	9970	100	85-115	
Cobalt	ug/L	1000	1030	103	85-115	
Lead	ug/L	1000	1020	102	85-115	
Lithium	ug/L	1000	1060	106	85-115	
Molybdenum	ug/L	1000	1130	113	85-115	

MATRIX SPIKE & MATRIX SI	PIKE DUPLICA	ATE: 19006	84		1900685							
			MS	MSD					a. 5			
	6	0237217001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	0.075 mg/L	1000	1000	1080	1120	101	104	70-130	3	20	
Beryllium	ug/L	ND	1000	1000	1000	1030	100	103	70-130	3	20	
Boron	ug/L	ND	1000	1000	970	990	93	95	70-130	2	20	
Calcium	ug/L	43.4 mg/L	10000	10000	51200	53000	78	97	70-130	3	20	
Cobalt	ug/L	ND	1000	1000	994	1020	99	102	70-130	2	20	
Lead	ug/L	ND	1000	1000	987	1010	99	100	70-130	2	20	
Lithium	ug/L	ND	1000	1000	1040	1080	103	107	70-130	3	20	
Molybdenum	ug/L	ND	1000	1000	1120	1140	112	114	70-130	2	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Date: 03/03/2017 03:23 PM

MATRIX SPIKE SAMPLE:	1900686						
		60237222008	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	 ug/L	38.0	1000	1050	101	70-130	
Beryllium	ug/L	ND	1000	998	100	70-130	
Boron	ug/L	ND	1000	924	92	70-130	
Calcium	ug/L	17300	10000	26400	92	70-130	
Cobalt	ug/L	ND	1000	1000	100	70-130	
Lead	ug/L	ND	1000	1000	100	70-130	
Lithium	ug/L	ND	1000	1040	104	70-130	
Molybdenum	ug/L	ND	1000	1120	112	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Date: 03/03/2017 03:23 PM

QC Batch: 464778 Analysis Method: EPA 200.8

QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60237185001

METHOD BLANK: 1902182 Matrix: Water

Associated Lab Samples: 60237185001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.18J	1.0	0.026	02/13/17 12:02	
Arsenic	ug/L	< 0.052	1.0	0.052	02/13/17 12:02	
Cadmium	ug/L	<0.018	0.50	0.018	02/13/17 12:02	
Chromium	ug/L	< 0.054	1.0	0.054	02/13/17 12:02	
Selenium	ug/L	<0.086	1.0	0.086	02/13/17 12:02	
Thallium	ug/L	< 0.036	1.0	0.036	02/13/17 12:02	

LABORATORY CONTROL SAMPLE:	1902183					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	38.3	96	85-115	
Arsenic	ug/L	40	39.2	98	85-115	
Cadmium	ug/L	40	39.1	98	85-115	
Chromium	ug/L	40	40.5	101	85-115	
Selenium	ug/L	40	39.5	99	85-115	
Thallium	ug/L	40	36.9	92	85-115	

MATRIX SPIKE & MATRIX SI	PIKE DUPLICA	ATE: 190218	34		1902185							
			MS	MSD								
	6	0237356001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	0.25J	40	40	38.8	39.0	96	97	70-130	1	20	
Arsenic	ug/L	< 0.052	40	40	39.1	38.9	98	97	70-130	1	20	
Cadmium	ug/L	< 0.018	40	40	37.9	39.0	95	97	70-130	3	20	
Chromium	ug/L	0.66J	40	40	38.8	40.0	95	98	70-130	3	20	
Selenium	ug/L	< 0.086	40	40	38.5	38.3	96	96	70-130	1	20	
Thallium	ug/L	< 0.036	40	40	36.0	36.8	90	92	70-130	2	20	

MATRIX SPIKE SAMPLE:	1902186						
		60237356002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	1.4	40	39.9	96	70-130	
Arsenic	ug/L	2.9	40	41.8	97	70-130	
Cadmium	ug/L	1.7	40	39.1	94	70-130	
Chromium	ug/L	0.97J	40	38.8	95	70-130	
Selenium	ug/L	<0.086	40	38.3	96	70-130	
Thallium	ug/L	0.16J	40	36.1	90	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

QC Batch: 464737 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60237185001

METHOD BLANK: 1902098 Matrix: Water

Associated Lab Samples: 60237185001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 02/08/17 10:00

LABORATORY CONTROL SAMPLE: 1902099

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 1030 103 80-120

SAMPLE DUPLICATE: 1902191

Date: 03/03/2017 03:23 PM

60237315002 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers **Total Dissolved Solids** 3420 5 10 3580 mg/L

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

QC Batch: 464959 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60237185001

SAMPLE DUPLICATE: 1903138

Date: 03/03/2017 03:23 PM

60237044003 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 6.3 pH at 25 Degrees C Std. Units 5 H6 6.3 0

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Date: 03/03/2017 03:23 PM

QC Batch: 464392 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60237185001

METHOD BLANK: 1900744 Matrix: Water

Associated Lab Samples: 60237185001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	02/04/17 11:38	
Fluoride	mg/L	< 0.027	0.20	0.027	02/04/17 11:38	
Sulfate	mg/L	<0.15	1.0	0.15	02/04/17 11:38	

LABORATORY CONTROL SAMPLE:	1900745					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	4.7	95	90-110	

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Sample: S-BMW-3D Lab ID: 60237185001 Collected: 02/02/17 10:30 Received: 02/03/17 03:55 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.773 ± 0.694 (1.05) C:NA T:82%	pCi/L	02/28/17 10:10	13982-63-3	
Radium-228	EPA 904.0	1.16 ± 0.522 (0.868) C:63% T:81%	pCi/L	03/01/17 19:19	15262-20-1	



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

QC Batch: 249802 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60237185001

METHOD BLANK: 1229201 Matrix: Water

Associated Lab Samples: 60237185001

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 -0.065 ± 0.299 (0.608) C:NA T:90%
 pCi/L
 02/28/17 10:10

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

QC Batch: 249956 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60237185001

METHOD BLANK: 1229809 Matrix: Water

Associated Lab Samples: 60237185001

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.993 ± 0.490 (0.830) C:56% T:84%
 pCi/L
 03/01/17 15:20

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

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.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 03/03/2017 03:23 PM

B Analyte was detected in the associated method blank.

H6 Analysis initiated outside of the 15 minute EPA required holding time.



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60238979

Date: 03/03/2017 03:23 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60237185001	S-BMW-3D	EPA 200.7	464383	EPA 200.7	464444
60237185001	S-BMW-3D	EPA 200.8	464778	EPA 200.8	464815
60237185001	S-BMW-3D	EPA 7470	464462	EPA 7470	464469
60237185001	S-BMW-3D	EPA 903.1	249802		
60237185001	S-BMW-3D	EPA 904.0	249956		
60237185001	S-BMW-3D	SM 2540C	464737		
60237185001	S-BMW-3D	SM 4500-H+B	464959		
60237185001	S-BMW-3D	EPA 300.0	464392		



Sample Condition Upon Receipt



Client Name: (10)dev				
Courier: FedEx UPS VIA Clay F	PEX 🗆 ECI 🗆	Pace □ Xroads □	Client □ Other □	
Tracking #: Pace	e 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 🗆 Oth	er 🗆	
Thermometer Used: (7-266)/ T-239 Type of	Ice: Wet Blue Non	ie ,		
Cooler Temperature (°C): As-read 0.6/13.3Corr. Factor	or CF(+1.5)CF +0.9 Correcte	ed 2.1/14.8	Date and initials of person examining contents:	
Temperature should be above freezing to 6°C		Δ	pv2/3/17	
Chain of Custody present:	✓Yes □No □N/A		1	
Chain of Custody relinquished:	Yes DNo DN/A			
Samples arrived within holding time:	Yes ONO ON/A			
Short Hold Time analyses (<72hr):	Yes □No □N/A	PH		
Rush Turn Around Time requested:	□Yes ZNo □N/A			
Sufficient volume;	Ves □No □N/A			
Correct containers used:	Yes DNo DN/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 □N6 ØN/A			
Sample labels match COC: Date / time / ID / analyses	Yes DNo DN/A			
Samples contain multiple phases? Matrix:	□Yes No □N/A			
Containers requiring pH preservation in compliance?	✓Yes □No □N/A			
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)				
Cyanide water sample checks: N/A				
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 □XN/A			
Client Notification/ Resolution: Copy COC to	Client? Y / N	Field Data Required	? Y / N	
Person Contacted: Date/T	ime:			
Comments/ Resolution:				
Project Manager Review:	Date	·		

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

The control of the	Mail Mail Mail Mail Mail Mail Mail Mail	S	Report To: A	Mark H	Janes / may															
Main Street, Suite 100 Control	Mai Mgool				addock (III)	haddock@	golder.com)		Attention:											
Stronger No 05301 Strong Strong No 05301 Stro	MO (a)	Street, Suite 100		Jeffrey	Ingram				Company I	tame:				2	EGULATO	RY AGEN	СУ	1	4	
Fire GB-724-8233 Proper Name: America State County Properties one for the control of the county Properties one for the county Properties Propert	logg	3301							Address:						NPDES		OUND WA	TER	DRINKING WATER	WATER
Face CSS-724-9323 Project Name of Energy Central - Will Project Name of Energy C		r.com	Purchase On	der No.:		FLYA		BonAsh	Pace Quote Reference:						UST	RC	RA		OTHER	
Proceedings Processes Pr		ix: 636-724-9323	Project Name		neren Siou	x Energy C	enter - UW		Pace Project Manager	ļ ·	Church				Site Locati		C N			
Cookers Cook		andard	Project Numi	15.	3-1406.000	33B ₹ 000	34		Pace Profile	1					STAT					
COOLECTED The second state of the state of													Requ	ested Ar	alysis Fil	tered (Y/N				
## ## ## ## ## ## ## ## ## ## ## ## ##	Section D Required Client Information	Valid Matrix (_	1	COLLEC	CTED			Preser	vatives	₹N/A	_	z						
1 1 1 1 1 1 1 1 1 1		DRINGING WATER WASTE WATER PRODUCT SOIL/SOLID	W T N N T O			OSITE	COMPOSITE	ОГГЕСТІОИ	S			1		28	07		(N/X) 6			
WT 6			WW POT TS			L L	111/01-15			€ONH	HORN EO _S 2s _s N	Other	*slateN	Н	ממוחווא איז מ		Residual Chlorine		60237188	© √ VLab I.D.
WT G	< BALL	30		-	+		1/2	30	1 17					-				1883 M2	my81 0.	25PlN
WT C	5- BMW-	35			/B		=	22	1 7	m		1534	7 7	1				, 4	+	4
WT G	3				(1)												+			
WT G	4				(n															
WT G	25		i		(n							T		-						
WT G	9				(0)		E													
WT G	7				(0)															
WT G	80	/		_	(n							1	1							
WT G	6	1		_	()							T								
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RELINQUISHED BY AFFILIATION DATE TIME ACCEPTED BY AFFILIATION DATE TIME To him was i coldet 2/4/7 1315 Gladyan By and 2/2/13 12:15 SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Sobrighted Signature is soon on the coldet of the coldet	11		/		(2)	n.														
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Tehn hazz 1217 1215 Mender 21217 12:15 German 2717 17:00 Mender 21217 12:15 SAMPLER NAME AND SIGNATURE SAMPLER NAME OF SAMPLER: SOLD LOTS:	ADDITIONAL CC	OMMENTS		RELING	VISHED BY	/ AFFILIATIO	Z	DATE	TIME		Acce	PTED BY	/ AFFILM	NOLL	DATE			SAME	LE CONDITIC	NS
Thus, I wanter and signature of sampler: South of sampler: South of sampler o	:PA 200 7: Ва, Ве, В, Са, Со, Рb, I PA 200 8: Sb. As, Cd. Сг. Se. TI	Li, Mo + EPA 7470A Hg	To.	N/	18	30lder	61		~	B	in the	多	3	Jum	2/2/	7 12.	15		>	
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O O O O O O							RINT Name or	SAMPLER	4	1700	32						uj du	aevie		88lc (N\Y)
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April 03, 2017

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on March 10, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jamie Church

jamie.church@pacelabs.com 314-838-7223

Project Manager

Enclosures

cc: Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates



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



CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification Hawaii Certification

Idaho Certification

Illinois Certification
Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976 New Jersey/TNI Certification #: PA 051

New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706 North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002 Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457 Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868

Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C

Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60239429001	S-UMW-1D	Water	03/09/17 13:43	03/10/17 03:45
60239429002	S-UMW-2D	Water	03/09/17 11:04	03/10/17 03:45
60239429003	S-UMW-3D	Water	03/09/17 09:43	03/10/17 03:45
60239429004	S-UMW-4D	Water	03/09/17 08:48	03/10/17 03:45
60239429005	S-UMW-5D	Water	03/08/17 14:05	03/10/17 03:45
60239429006	S-UMW-6D	Water	03/08/17 14:48	03/10/17 03:45
60239429007	S-BMW-1D	Water	03/08/17 10:37	03/10/17 03:45
60239429008	S-BMW-3D	Water	03/08/17 12:02	03/10/17 03:45
60239429009	S-UMW-DUP-1	Water	03/09/17 08:00	03/10/17 03:45
60239429010	S-UMW-FB-1	Water	03/08/17 14:00	03/10/17 03:45
60239429011	S-UMW-1D MS	Water	03/09/17 13:43	03/10/17 03:45
60239429012	S-UMW-1D MSD	Water	03/09/17 13:43	03/10/17 03:45



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

_ab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60239429001	S-UMW-1D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0239429002	S-UMW-2D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239429003 S-U	S-UMW-3D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0239429004	S-UMW-4D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0239429005	S-UMW-5D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	 LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0239429006	S-UMW-6D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0239429007	S-BMW-1D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0239429008	S-BMW-3D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0239429009	S-UMW-DUP-1	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
0239429010	S-UMW-FB-1	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K

(913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239429011	S-UMW-1D MS	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
60239429012	S-UMW-1D MSD	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Sample: S-UMW-1D	Lab ID:	60239429001	Collected	d: 03/09/17	7 13:43	Received: 03/	10/17 03:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical I	Method: EPA 20	00.7 Prepa	ration Meth	od: EP	A 200.7			
Barium	123	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:24	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:24	7440-41-7	
Boron	325	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:24	7440-42-8	
Calcium	71600	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:24	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:24	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:24	7439-92-1	
Lithium	10.1	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:24	7439-93-2	
Molybdenum	35.7	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:24	7439-98-7	
200.8 MET ICPMS	Analytical I	Method: EPA 20	00.8 Prepa	ration Meth	od: EP	A 200.8			
Antimony	0.041J	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 14:45	7440-36-0	
Arsenic	1.1	ug/L	1.0	0.052	1	03/14/17 13:00	03/22/17 14:45	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 14:45	7440-43-9	
Chromium	1.5	ug/L	1.0	0.054	1	03/14/17 13:00	03/22/17 14:45	7440-47-3	В
Selenium	<0.086	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 14:45	7782-49-2	
Thallium	0.17J	ug/L	1.0	0.036	1	03/14/17 13:00	03/22/17 14:45	7440-28-0	
7470 Mercury	Analytical I	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.046	ug/L	0.20	0.046	1	03/15/17 09:30	03/15/17 13:00	7439-97-6	
2540C Total Dissolved Solids	Analytical I	Method: SM 25	40C						
Total Dissolved Solids	314	mg/L	5.0	5.0	1		03/14/17 11:20		
4500H+ pH, Electrometric	Analytical I	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.2	Std. Units	0.10	0.10	1		03/13/17 15:02		H6
300.0 IC Anions 28 Days	Analytical I	Method: EPA 3	0.00						
Chloride	18.8	mg/L	2.0	1.0	2		03/14/17 12:35	16887-00-6	
Fluoride	0.34	mg/L	0.20	0.10	1		03/14/17 11:55	16984-48-8	
Sulfate	51.0	mg/L	5.0	2.5	5		03/14/17 13:42	14808-79-8	M1



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Sample: S-UMW-2D	Lab ID:	60239429002	Collecte	d: 03/09/17	7 11:04	Received: 03/	10/17 03:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	131	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:30	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:30	7440-41-7	
Boron	25200	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:30	7440-42-8	
Calcium	302000	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:30	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:30	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:30	7439-92-1	
Lithium	30.2	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:30	7439-93-2	
Molybdenum	1880	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:30	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	0.048J	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 14:54	7440-36-0	
Arsenic	2.1	ug/L	1.0	0.052	1	03/14/17 13:00	03/22/17 14:54	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 14:54	7440-43-9	
Chromium	1.7	ug/L	1.0	0.054	1	03/14/17 13:00	03/22/17 14:54	7440-47-3	В
Selenium	0.12J	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 14:54	7782-49-2	
Thallium	0.25J	ug/L	1.0	0.036	1	03/14/17 13:00	03/22/17 14:54	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.046	ug/L	0.20	0.046	1	03/15/17 09:30	03/15/17 13:07	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1380	mg/L	5.0	5.0	1		03/13/17 15:24		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.8	Std. Units	0.10	0.10	1		03/13/17 14:57		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	18.9	mg/L	1.0	0.50	1		03/14/17 14:22	16887-00-6	
Fluoride	0.72	mg/L	0.20	0.10	1		03/14/17 14:22	16984-48-8	
Sulfate	738	mg/L	100	50.0	100		03/14/17 14:49	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Sample: S-UMW-3D	Lab ID:	60239429003	Collecte	d: 03/09/17	7 09:43	Received: 03/	/10/17 03:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	79.8	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:32	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:32	7440-41-7	
Boron	25000	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:32	7440-42-8	
Calcium	236000	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:32	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:32	7440-48-4	
Lead	2.8J	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:32	7439-92-1	
Lithium	14.9	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:32	7439-93-2	
Molybdenum	4120	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:32	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.026	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 14:57	7440-36-0	
Arsenic	0.45J	ug/L	1.0	0.052	1	03/14/17 13:00	03/22/17 14:57	7440-38-2	В
Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 14:57	7440-43-9	
Chromium	0.56J	ug/L	1.0	0.054	1	03/14/17 13:00	03/22/17 14:57	7440-47-3	В
Selenium	0.12J	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 14:57	7782-49-2	
Thallium	0.084J	ug/L	1.0	0.036	1	03/14/17 13:00	03/22/17 14:57	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.046	ug/L	0.20	0.046	1	03/15/17 09:30	03/15/17 13:09	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1090	mg/L	5.0	5.0	1		03/13/17 15:24		
4500H+ pH, Electrometric	Analytical	Method: SM 45	600-H+B						
pH at 25 Degrees C	7.8	Std. Units	0.10	0.10	1		03/13/17 14:53		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	21.6	mg/L	2.0	1.0	2		03/14/17 15:29	16887-00-6	
Fluoride	0.99	mg/L	0.20	0.10	1		03/14/17 15:16	16984-48-8	
Sulfate	603	mg/L	50.0	25.0	50		03/14/17 16:10	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Beryllium <0.16	Matrix: Water	
Barium 71.2 ug/L 5.0 0.91 1 03/14/17 13:00 03/22/17 1 Beryllium <0.16 ug/L 1.0 0.16 1 03/14/17 13:00 03/22/17 1 Boron 23000 ug/L 100 3.5 1 03/14/17 13:00 03/22/17 1 Calcium 181000 ug/L 100 36.0 1 03/14/17 13:00 03/22/17 1 Cobalt <0.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 1 Lead <2.4 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 1 Lithium 34.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 1 Molybdenum 6480 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 1 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	ed CAS No.	Qual
Beryllium <0.16 ug/L 1.0 0.16 1 03/14/17 13:00 03/22/17 1 Boron 23000 ug/L 100 3.5 1 03/14/17 13:00 03/22/17 1 Calcium 181000 ug/L 100 36.0 1 03/14/17 13:00 03/22/17 1 Cobalt <0.73		
Boron 23000 ug/L 100 3.5 1 03/14/17 13:00 03/22/17 1 Calcium 181000 ug/L 100 36.0 1 03/14/17 13:00 03/22/17 1 Cobalt <0.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 1 Lead <2.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 1 Lithium 34.4 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 1 Molybdenum 6480 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 1 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	7:35 7440-39-3	
Calcium 181000 ug/L 100 36.0 1 03/14/17 13:00 03/22/17 1 Cobalt <0.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 1 Lead <2.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 1 Lithium 34.4 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 1 Molybdenum 6480 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 1 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	7:35 7440-41-7	
Cobalt <0.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 1 Lead <2.4	7:35 7440-42-8	
Lead <2.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 1 Lithium 34.4 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 1 Molybdenum 6480 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 1 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	7:35 7440-70-2	
Lithium 34.4 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 1 Molybdenum 6480 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 1 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	7:35 7440-48-4	
Molybdenum 6480 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 1 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	7:35 7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	7:35 7439-93-2	
	7:35 7439-98-7	
Antimony 40.026 ug/l 1.0 0.026 1 02/4/47 12:00 02/22/47 4		
Antimony 40.020 ug/L 1.0 0.020 i 03/14/17 13.00 03/22/17 i	5:00 7440-36-0	
Arsenic 0.27J ug/L 1.0 0.052 1 03/14/17 13:00 03/22/17 1	5:00 7440-38-2	В
Cadmium <0.018 ug/L 0.50 0.018 1 03/14/17 13:00 03/22/17 1	5:00 7440-43-9	
Chromium 0.90J ug/L 1.0 0.054 1 03/14/17 13:00 03/22/17 1	5:00 7440-47-3	В
Selenium 0.20J ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 1	5:00 7782-49-2	
Thallium 0.046J ug/L 1.0 0.036 1 03/14/17 13:00 03/22/17 1	5:00 7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470		
Mercury <0.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 1	3:16 7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C		
Total Dissolved Solids 1010 mg/L 5.0 5.0 1 03/13/17 1	5:25	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B		
pH at 25 Degrees C 6.8 Std. Units 0.10 0.10 1 03/13/17 1	4:44	H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0		
Chloride 24.1 mg/L 2.0 1.0 2 03/14/17 1	6:36 16887-00-6	
· · · · · · · · · · · · · · · · · · ·	6:23 16984-48-8	
· · · · · · · · · · · · · · · · · · ·	6:50 14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Sample: S-UMW-5D	Lab ID:	60239429005	Collecte	d: 03/08/17	7 14:05	Received: 03/	10/17 03:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	248	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:37	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:37	7440-41-7	
Boron	2990	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:37	7440-42-8	
Calcium	71500	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:37	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:37	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:37	7439-92-1	
Lithium	21.5	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:37	7439-93-2	
Molybdenum	242	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:37	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.026	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 15:03	7440-36-0	
Arsenic	0.42J	ug/L	1.0	0.052	1	03/14/17 13:00	03/22/17 15:03	7440-38-2	В
Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 15:03	7440-43-9	
Chromium	0.74J	ug/L	1.0	0.054	1	03/14/17 13:00	03/22/17 15:03	7440-47-3	В
Selenium	0.091J	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 15:03	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/14/17 13:00	03/22/17 15:03	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.046	ug/L	0.20	0.046	1	03/15/17 09:30	03/15/17 13:18	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	331	mg/L	5.0	5.0	1		03/13/17 13:34		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.3	Std. Units	0.10	0.10	1		03/13/17 12:29		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	26.0	mg/L	2.0	1.0	2		03/14/17 17:17	16887-00-6	
Fluoride	0.47	mg/L	0.20	0.10	1		03/14/17 17:03	16984-48-8	
Sulfate	16.8	mg/L	1.0	0.50	1		03/14/17 17:03	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

200.7 Metals, Total	Sample: S-UMW-6D	Lab ID:	60239429006	Collecte	d: 03/08/1	7 14:48	Received: 03/	/10/17 03:45 Ma	atrix: Water	
Barium 115 ug/L 5.0 0.91 1 03/14/17 13:00 03/22/17 17:39 7440-39-3 Beryllium 40.16 ug/L 1.0 0.16 1 03/14/17 13:00 03/22/17 17:39 7440-41-7 7400-41-7 8000 35 ug/L 100 3.5 1 03/14/17 13:00 03/22/17 17:39 7440-41-7 7440-31-7 7440-31-7 7440-31-7 7440-31-7 7440-31-7 7440-31-7 </th <th>Parameters</th> <th>Results</th> <th>Units</th> <th>PQL</th> <th>MDL</th> <th>DF</th> <th>Prepared</th> <th>Analyzed</th> <th>CAS No.</th> <th>Qual</th>	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Renyllium	200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron 935 ug/L 100 3.5 1 03/14/17 13:00 03/22/17 17:39 7440-42-8 7440-	Barium	115	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:39	7440-39-3	
Calcium	Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:39	7440-41-7	
Cobalt 40.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 17:39 7440-48-4 4 Lead 42.4 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 17:39 7440-48-4 4 Lead 42.4 ug/L 10.0 2.4 1 03/14/17 13:00 03/22/17 17:39 7439-93-2 Value 108 ug/L 10.0 0.9 1 03/14/17 13:00 03/22/17 17:39 7439-93-2 Value 108 ug/L 10.0 0.9 1 03/14/17 13:00 03/22/17 17:39 7439-93-2 Value 108 0.0 0.0 1 03/14/17 13:00 03/22/17 17:39 7439-93-2 Value 108 0.0	Boron	935	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:39	7440-42-8	
Lead <2.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 17:39 7439-92-1 439-93-2 Lithium 11.8 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 17:39 7439-93-2 Valyanga-3-2 Molybdenum 108 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 17:39 7439-98-7 Valyanga-3-2 Molybdenum 108 ug/L 10.0 0.026 1 03/14/17 13:00 03/22/17 17:00 7440-38-0 Apa-98-7 Paramatania Apa-98-7 Apa	Calcium	79000	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:39	7440-70-2	
Lithium Molybdenum 11.8 ug/L ug/L ug/L 10.0 2.9 1 303/14/17 13:00 03/22/17 17:39 7439-93-2 7439-98-7 7439-93-2 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7439-98-7 7440-36-0 32/217 15:06 7440-36-0 7440-38-2 8 740-3	Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:39	7440-48-4	
Molybdenum 108 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 17:39 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 2018 Preparative Method: EPA 2018 Preparative Method: EPA 2018 Antimony 40.026 ug/L 1.0 0.026 1 03/14/17 13:00 03/22/17 15:06 7440-36-0 Advase and a second and a second and an analyzable and a second and an analyzable and analyzable	Lead	<2.4	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:39	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 0.026 1 03/14/17 13:00 03/22/17 15:06 7440-36-0 Areanic 0.38J ug/L 1.0 0.026 1 03/14/17 13:00 03/22/17 15:06 7440-38-2 B B Cadmium <0.018	Lithium	11.8	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:39	7439-93-2	
Antimony	Molybdenum	108	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:39	7439-98-7	
Arsenic 0.38J ug/L 1.0 0.052 1 03/14/17 13:00 03/22/17 15:06 7440-38-2 B Cadmium <0.018 ug/L 0.50 0.018 1 03/14/17 13:00 03/22/17 15:06 7440-43-9 B Chromium 0.82J ug/L 1.0 0.054 1 03/14/17 13:00 03/22/17 15:06 7440-43-9 B Selenium 40.086 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:06 7440-47-3 B Selenium 40.086 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:06 7440-47-3 B Thallium 40.036 ug/L 1.0 0.036 1 03/14/17 13:00 03/22/17 15:06 7440-47-3 B Thallium 40.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 13:20 7439-97-6 Thallium Analytical Behod: SM 25 5.0 5.0 1 03/13/17 09:30	200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Arsenic 0.38J ug/L 1.0 0.052 1 03/14/17 13:00 03/22/17 15:06 7440-38-2 B Cadmium 40.018 ug/L 0.50 0.018 1 03/14/17 13:00 03/22/17 15:06 7440-43-9 B Chromium 0.82J ug/L 1.0 0.054 1 03/14/17 13:00 03/22/17 15:06 7440-43-9 B Selenium 40.086 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:06 7440-43-9 B Thallium 40.036 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:06 7440-43-9 B 4740 Mercury Analytical Wethod: EPA 7470 Preparation Method: EPA 7470 Preparation Method: EPA 7470 Value 7470 7439-97-6 7439-97-6 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-0 7440-28-	Antimony	<0.026	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 15:06	7440-36-0	
Chromium 0.82J ug/L 1.0 0.054 1 03/14/17 13:00 03/22/17 15:06 7440-47-3 B Selenium 40.086 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:06 7440-47-3 B 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Freparation Method: EPA 7470 Freparation Method: EPA 7470 7439-97-6 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 03/15/17 09:30 03/13/17 13:20 7439-97-6 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 5.0 5.0 1 03/13/17 13:35 4 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 2 0.30 0.0 0.30 0.1 0.30 0.3/14/17 17:43 16887-00-6 Fluoride 19.5 mg/L 2.0 1.0 2 03/14/17 17:43 16887-00-6 60.36 60.36 mg/L 0.20 0.10 1 0.30/14/17 17:30 03/14/17 17:30 16984-48-8	Arsenic	0.38J	-	1.0	0.052	1	03/14/17 13:00	03/22/17 15:06	7440-38-2	В
Chromium	Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 15:06	7440-43-9	
Thallium <0.036 ug/L 1.0 0.036 1 03/14/17 13:00 03/22/17 15:06 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Frequency 40.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 13:20 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Fig. 1 5.0 5.0 5.0 1 93/13/17 13:35 93/13/17 13:35 1 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 4500H+B 9.10 0.10 0.10 1 93/13/17 12:32 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.U 2 0.30 0.3/14/17 17:43 16887-00-6 6 Fluoride 0.36 mg/L 2.0 1.0 2 03/14/17 17:43 16887-00-6 6 9 6 9<	Chromium	0.82J	_	1.0	0.054	1	03/14/17 13:00	03/22/17 15:06	7440-47-3	В
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 13:20 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 346 mg/L 5.0 5.0 5.0 1 03/13/17 13:35 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.0 Std. Units 0.10 0.10 1 03/13/17 12:32 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.C Chloride 19.5 mg/L 2.0 1.0 2 03/14/17 17:43 16887-00-6 Fluoride 0.36 mg/L 0.20 0.10 1 03/14/17 17:30 16984-48-8	Selenium	<0.086	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 15:06	7782-49-2	
Mercury										



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Sample: S-BMW-1D	Lab ID:	60239429007	Collecte	d: 03/08/17	7 10:37	Received: 03/	/10/17 03:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	376	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:41	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:41	7440-41-7	
Boron	185	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:41	7440-42-8	
Calcium	146000	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:41	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:41	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:41	7439-92-1	
Lithium	13.7	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:41	7439-93-2	
Molybdenum	<1.3	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:41	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.026	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 15:18	7440-36-0	
Arsenic	0.22J	ug/L	1.0	0.052	1	03/14/17 13:00	03/22/17 15:18	7440-38-2	В
Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 15:18	7440-43-9	
Chromium	1.2	ug/L	1.0	0.054	1	03/14/17 13:00	03/22/17 15:18	7440-47-3	В
Selenium	<0.086	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 15:18	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/14/17 13:00	03/22/17 15:18	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.046	ug/L	0.20	0.046	1	03/15/17 09:30	03/15/17 13:22	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	483	mg/L	5.0	5.0	1		03/13/17 13:35		
4500H+ pH, Electrometric	Analytical	Method: SM 45	600-H+B						
pH at 25 Degrees C	6.9	Std. Units	0.10	0.10	1		03/13/17 11:56		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	5.0	mg/L	1.0	0.50	1		03/14/17 18:10	16887-00-6	
Fluoride	0.25	mg/L	0.20	0.10	1		03/14/17 18:10	16984-48-8	
Sulfate	34.4	mg/L	5.0	2.5	5		03/14/17 18:51		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Barium 699 ug/L 5.0 0.91 1 03/14/17 13:00 03/22/17 17:48 7440-39-3 Beryllium <0.16	Sample: S-BMW-3D	Lab ID:	60239429008	Collecte	d: 03/08/1	7 12:02	Received: 03/	10/17 03:45 Ma	atrix: Water	
Barium 699 ug/L 5.0 0.91 1 03/14/17 13:00 03/22/17 17:48 7440-39-3 Beryllium <0.16	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium	200.7 Metals, Total	Analytica	l Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Boron 69.4J Ug/L 100 3.5 1 03/14/17 13:00 03/22/17 17:48 7440-42-8 744	Barium	699	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:48	7440-39-3	
Calcium 120000 ug/L 100 36.0 1 03/14/17 13:00 03/22/17 17:48 7440-70-2 CADalt 40.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 17:48 7440-748-4 Labed 42.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 17:48 7439-92-1 Lithium 21.5 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 17:48 7439-93-2 Molybdenum 41.3 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 17:48 7439-93-2 200.8 Molybdenum 41.3 ug/L 10.0 0.26 1 03/14/17 13:00 03/22/17 17:48 7439-93-2 200.8 Molybdenum 41.0 0.026 1 03/14/17 13:00 03/22/17 15:21 7440-36-0 439-98-7 439-98-7 440-36-0 439-98-7 440-36-0 440-36-0 440-36-0 430-34-0 440-36-0 440-36-0 440-36-0 440-36-0 440-36-0 440-36-0 440-36-0 440-39-0 440-39-0 440-39-0 <td>Beryllium</td> <td><0.16</td> <td>ug/L</td> <td>1.0</td> <td>0.16</td> <td>1</td> <td>03/14/17 13:00</td> <td>03/22/17 17:48</td> <td>7440-41-7</td> <td></td>	Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:48	7440-41-7	
Cobalt <0.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 17:48 7440-48-4 4 4 4 4 4 4 4 4 03/14/17 13:00 03/22/17 17:48 7439-92-1 4 1 03/14/17 13:00 03/22/17 17:48 7439-93-2 4 439-93-2 4 4 03/14/17 13:00 03/22/17 17:48 7439-93-2 4 439-98-7 4 439-98-7 4 4 40-30-3 0 0 0 0 0 0 <	Boron	69.4J	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:48	7440-42-8	
Lead	Calcium	120000	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:48	7440-70-2	
Lithium 21.5 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 17:48 7439-93-2 7440-36-0 74	Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:48	7440-48-4	
Molybdenum <1.3 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 17:48 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 0.026 1 03/14/17 13:00 03/22/17 15:21 7440-36-0 Arsenic 0.086J ug/L 0.50 0.018 1 03/14/17 13:00 03/22/17 15:21 7440-38-2 B Cadmium <0.018 ug/L 0.50 0.018 1 03/14/17 13:00 03/22/17 15:21 7440-43-9 B Chromium 0.70J ug/L 1.0 0.054 1 03/14/17 13:00 03/22/17 15:21 7440-43-9 B Selenium <0.086 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:21 7440-43-9 B Thallium <0.036 ug/L 1.0 0.036 1 03/14/17 13:00 03/22/17 15:21 7440-43-9 B Thallium <0.036 ug/L 1.0<	Lead	<2.4	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:48	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 <0.026 1 0.03/14/17 13:00 0.3/22/17 15:21 7440-36-0 0.086J ug/L 1.0 0.052 1 0.3/14/17 13:00 0.3/22/17 15:21 7440-36-0 0.086J ug/L 0.50 0.018 1 0.3/14/17 13:00 0.3/22/17 15:21 7440-38-2 B 0.70J ug/L 1.0 0.054 1 0.3/14/17 13:00 0.3/22/17 15:21 7440-38-2 B 0.086 ug/L 1.0 0.086 1 0.3/14/17 13:00 0.3/22/17 15:21 7440-38-2 B 0.086 ug/L 0.086 1 0.3/14/17 13:00 0.3/22/17 15:21 7440-38-2 B 0.3/14/17 13:00 0.3/22/17 15:21 7440-43-9 B 0.3/14/17 13:00 0.3/22/17 15:21 7440-43-9 P 740-44-3-9 0.3/14/17 13:00 0.3/22/17 15:21 7440-43-9 P 740-40-43-9 0.3/14/17 13:00 0.3/14/17 13:00 0.3/14/17 13:00 0.3/15/17 13:25 7430-49-2 7440-28-0 7470 Mercury Analytical Method: SM 2540C That 5.0 5.0 1 0.3/13/17 13:35	Lithium	21.5	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:48	7439-93-2	
Antimony	Molybdenum	<1.3	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:48	7439-98-7	
Arsenic	200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Arsenic	Antimony	<0.026	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 15:21	7440-36-0	
Chromium O.70J ug/L 1.0 0.054 1 03/14/17 13:00 03/22/17 15:21 7440-47-3 B Selenium C.0.086 ug/L C.0.036 ug/L	Arsenic	0.086J	ū			1	03/14/17 13:00			В
Selenium	Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 15:21	7440-43-9	
Thallium	Chromium	0.70J	ug/L	1.0	0.054	1	03/14/17 13:00	03/22/17 15:21	7440-47-3	В
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 13:25 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 424 mg/L 5.0 5.0 1 03/13/17 13:36 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 03/13/17 12:08 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 8.2 mg/L 1.0 0.50 1 03/14/17 19:04 16887-00-6 Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	Selenium	<0.086	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 15:21	7782-49-2	
Mercury <0.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 13:25 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 424 mg/L 5.0 5.0 1 03/13/17 13:36 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 03/13/17 12:08 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 8.2 mg/L 1.0 0.50 1 03/14/17 19:04 16887-00-6 Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	Thallium	<0.036	ug/L	1.0	0.036	1	03/14/17 13:00	03/22/17 15:21	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 424 mg/L 5.0 5.0 1 03/13/17 13:36 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 03/13/17 12:08 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 8.2 mg/L 1.0 0.50 1 03/14/17 19:04 16887-00-6 Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Total Dissolved Solids	Mercury	<0.046	ug/L	0.20	0.046	1	03/15/17 09:30	03/15/17 13:25	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 03/13/17 12:08 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 8.2 mg/L 1.0 0.50 1 03/14/17 19:04 16887-00-6 Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	2540C Total Dissolved Solids	Analytica	Method: SM 25	540C						
pH at 25 Degrees C 7.1 Std. Units 0.10 0.10 1 03/13/17 12:08 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 8.2 mg/L 1.0 0.50 1 03/14/17 19:04 16887-00-6 Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	Total Dissolved Solids	424	mg/L	5.0	5.0	1		03/13/17 13:36		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 8.2 mg/L 1.0 0.50 1 03/14/17 19:04 16887-00-6 Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	4500H+ pH, Electrometric	Analytica	Method: SM 45	500-H+B						
Chloride 8.2 mg/L 1.0 0.50 1 03/14/17 19:04 16887-00-6 Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		03/13/17 12:08		H6
Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Fluoride 0.26 mg/L 0.20 0.10 1 03/14/17 19:04 16984-48-8	Chloride	8.2	mg/L	1.0	0.50	1		03/14/17 19:04	16887-00-6	
, and the second se	Fluoride		Ū							
	Sulfate	21.9	mg/L	2.0	1.0	2				



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

200.7 Metals, Total	Sample: S-UMW-DUP-1	Lab ID:	60239429009	Collecte	d: 03/09/1	7 08:00	Received: 03/	/10/17 03:45 Ma	atrix: Water	
Barium 127 ug/L 5.0 0.91 1 03/14/17 13:00 03/22/17 17:50 7440-39-3 Beryllium 40.16 ug/L 1.0 0.16 1 03/14/17 13:00 03/22/17 17:50 7440-41-7 740-41-7 8000 24400 ug/L 100 3.5 1 03/14/17 13:00 03/22/17 17:50 7440-41-7 7440-41-7 740-31-7 740-3	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Renyllium	200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	hod: EP	A 200.7			
Boron 24400 ug/L 100 3.5 1 03/14/17 13:00 03/22/17 17:50 7440-42-8 A 1 400 42-8 A 1 03/14/17 13:00 03/22/17 17:50 7440-42-8 A 1 03/14/17 13:00 03/22/17 17:50 7440-48-8 A 1 03/14/17 13:00 03/22/17 17:50 7440-48-8 A 1 03/14/17 13:00 03/22/17 17:50 7440-48-8 A 1 03/14/17 13:00 03/22/17 17:50 7439-92-1 A 1 03/14/17 13:00 03/22/17 17:50 7439-93-1 A 1 03/14/17 13:00 03/22/17 15:20 7439-93-1 A 1 03/14/17 13:00 03/22/17 15:20 7440-38-2 A 1 03/14/17 13:00 03/22/17 15:24	Barium	127	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:50	7440-39-3	
Calcium 300000 ug/L 1 00 36.0 1 03/14/17 13:00 03/22/17 17:50 7440-70-2 Cobalt 40.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 17:50 7440-78-2 Lead 22.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 17:50 7490-98-2 Lithium 29.4 ug/L 10.0 2.9 1 03/14/17 13:00 03/22/17 17:50 7439-98-7 200.8 MET ICPMS Analytical Whod: EPA 2008 Preparative Wethod: EPA 2008 1 03/14/17 13:00 03/22/17 15:24 7440-36-0 Antimony 0.037J ug/L 1.0 0.026 1 03/14/17 13:00 03/22/17 15:24 7440-36-0 Arsenic 2.0 ug/L 1.0 0.026 1 03/14/17 13:00 03/22/17 15:24 7440-36-0 Arsenic 2.0 ug/L 0.50 0.018 1 03/14/17 13:00 03/22/17 15:24 7440-36-0 Cadmium -0.046 ug/L 1.0	Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:50	7440-41-7	
Cobalt <0.73 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 17:50 7440-48-4 Lead <2.4 ug/L 5.0 0.73 1 03/14/17 13:00 03/22/17 17:50 7440-48-4 Lead <2.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 17:50 7439-93-2 Value 100 2.9 1 03/14/17 13:00 03/22/17 17:50 7439-93-2 7439-93-2 1 03/14/17 13:00 03/22/17 17:50 7439-93-2 7439-93-2 1 00.05 1 03/14/17 13:00 03/22/17 17:50 7439-93-2 7439-93-2 7439-93-2 1 00.05 1 03/14/17 13:00 03/22/17 15:24 7440-36-0 7439-93-2 1 00.05 1 03/14/17 13:00 03/22/17 15:24 7440-36-0 0 00.05 1 03/14/17 13:00 03/22/17 15:24 7440-36-0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Boron	24400	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:50	7440-42-8	
Lead <2.4 ug/L 5.0 2.4 1 03/14/17 13:00 03/22/17 17:50 7439-92-1 1439-93-2 1410 2.9 1 03/14/17 13:00 03/22/17 17:50 7439-93-2 7440-349-2 7440-349-2 7440-349-2 7440-349-2 7440-349-2 7440-349-2 7440-349-2 7440-349-2 7440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-447-3 8440-4	Calcium	300000	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:50	7440-70-2	
Lithium 1830 ug/L 20.0 2.9 1 03/14/17 13:00 03/22/17 17:50 7439-93-2 7439-98-7 1830 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 17:50 7439-98-7 7439-9	Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:50	7440-48-4	
Molybdenum 1830 ug/L 20.0 1.3 1 03/14/17 13:00 03/22/17 17:50 7439-98-7 200.8 MET ICPMS Analytical Wethod: EPA 2018 Preparative Method: EPA 2018 Preparative Method: EPA 2018 0.026 1 0 03/14/17 13:00 03/22/17 15:24 7440-36-0 03/22/17 15:24 7440-36-0 03/22/17 15:24 7440-36-0 03/22/17 15:24 7440-38-2 03/22/17 15:2	Lead	<2.4	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:50	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EVA 200.8 Antimony Analytical Method: EPA 200.8 Preparation Method: EVA 200.8 Antimony Arsenic 2.0 ug/L 1.0 0.026 1 03/14/17 13:00 03/22/17 15:24 7440-36-0 Arsenic 2.0 ug/L 1.0 0.052 1 03/14/17 13:00 03/22/17 15:24 7440-38-2 Cadmium 4.0.018 ug/L 4.0 0.050 0.018 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 Belenium 4.0.086 ug/L 4.0 0.054 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 Belenium 4.0.086 ug/L 4.0 0.086 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 Belenium 4.0.036 ug/L 4.0 0.086 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 Belenium 4.0.036 ug/L 4.0 0.086 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 Belenium 4.0.036 ug/L 4.0 0.036 1 03/14/17 13:00 03/22/17 15:24 7440-28-0 7470 Mercury Analytical Belenium 4.0.046 ug/L 4.0 0.0 0.046 1 03/14/17 13:00 03/22/17 15:25 7440-28-0 7470 Mercury Analytical Belenium 4.0.046 ug/L 5.0 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 7450 Mercury Analytical Belenium 5.0 0.046 ug/L 5.0 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 7450 Mercury Analytical Belenium 5.0 0.046 ug/L 5.0 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 7450 Mercury Analytical Belenium 5.0 0.046 ug/L 5.0 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 7470 Mercury Analytical Belenium 5.0 0.046 ug/L 5.0 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 7450 Mercury Analytical Belenium 5.0 0.046 ug/L 5.0 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 7450 Mercury Analytical Belenium 5.0 0.046 ug/L 5.0 0.04	Lithium	29.4	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:50	7439-93-2	
Antimony	Molybdenum	1830	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:50	7439-98-7	
Arsenic 2.0 ug/L 1.0 0.052 1 03/14/17 13:00 03/22/17 15:24 7440-38-2 Cadmium 40.018 ug/L 0.50 0.018 1 03/14/17 13:00 03/22/17 15:24 7440-43-9 Chromium 0.46J ug/L 1.0 0.054 1 03/14/17 13:00 03/22/17 15:24 7440-43-9 B Selenium 4.086 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:24 7440-43-9 B Selenium 4.086 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 B Selenium 4.0 0.086 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 B Selenium 4.0 0.0 0.0 0.0 0.0 0.0 03/14/17 13:00 03/22/17 15:24 7440-47-3 B B Challenium 4.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 <th< td=""><td>200.8 MET ICPMS</td><td>Analytical</td><td>Method: EPA 20</td><td>00.8 Prepa</td><td>aration Meth</td><td>hod: EP</td><td>A 200.8</td><td></td><td></td><td></td></th<>	200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	hod: EP	A 200.8			
Cadmium	Antimony	0.037J	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 15:24	7440-36-0	
Chromium 0.46J ug/L 1.0 0.054 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 B Selenium 4.0.086 ug/L 1.0 0.086 1 03/14/17 13:00 03/22/17 15:24 7440-47-3 B Thallium 4.0.036 ug/L 1.0 0.036 1 03/14/17 13:00 03/22/17 15:24 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Preparation Method: EPA 7470 Mercury 4.0.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1380 mg/L 5.0 5.0 1 03/13/17 15:25 7439-97-6 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 90.10 0.10 0.1 0.3/13/17 14:30 0.3/13/17 14:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 1.0 0.50	Arsenic	2.0	ug/L	1.0	0.052	1	03/14/17 13:00	03/22/17 15:24	7440-38-2	
Selenium	Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 15:24	7440-43-9	
Thallium <0.036 ug/L 1.0 0.036 1 03/14/17 13:00 03/22/17 15:24 7440-28-0 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury <0.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C 5.0 5.0 1 03/13/17 15:25 7439-97-6 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B 9.10 0.10 1 03/13/17 14:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 4 0.50 1 03/14/17 19:31 16887-00-6 6 Fluoride 18.7 mg/L 1.0 0.50 1 03/14/17 19:31 16887-00-6 6 Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	Chromium	0.46J	ug/L	1.0	0.054	1	03/14/17 13:00	03/22/17 15:24	7440-47-3	В
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.046 ug/L 0.20 0.046 1 03/15/17 09:30 03/15/17 13:27 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1380 mg/L 5.0 5.0 5.0 1 03/13/17 15:25 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 03/13/17 14:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.C Chloride 18.7 mg/L 1.0 0.50 1 03/14/17 19:31 16887-00-6 Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	Selenium	<0.086	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 15:24	7782-49-2	
Mercury <a< td=""><td>Thallium</td><td><0.036</td><td>ug/L</td><td>1.0</td><td>0.036</td><td>1</td><td>03/14/17 13:00</td><td>03/22/17 15:24</td><td>7440-28-0</td><td></td></a<>	Thallium	<0.036	ug/L	1.0	0.036	1	03/14/17 13:00	03/22/17 15:24	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 1380 mg/L 5.0 5.0 1 03/13/17 15:25 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 03/13/17 14:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 18.7 mg/L 1.0 0.50 1 03/14/17 19:31 16887-00-6 Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Total Dissolved Solids 1380 mg/L 5.0 5.0 1 03/13/17 15:25 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 03/13/17 14:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 18.7 mg/L 1.0 0.50 1 03/14/17 19:31 16887-00-6 Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	Mercury	<0.046	ug/L	0.20	0.046	1	03/15/17 09:30	03/15/17 13:27	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 0.3/13/17 14:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 18.7 mg/L 1.0 0.50 1 03/14/17 19:31 16887-00-6 Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 03/13/17 14:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 18.7 mg/L 1.0 0.50 1 03/14/17 19:31 16887-00-6 Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	Total Dissolved Solids	1380	mg/L	5.0	5.0	1		03/13/17 15:25		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 18.7 mg/L 1.0 0.50 1 03/14/17 19:31 16887-00-6 Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
Chloride 18.7 mg/L 1.0 0.50 1 03/14/17 19:31 16887-00-6 Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	pH at 25 Degrees C	7.7	Std. Units	0.10	0.10	1		03/13/17 14:30		H6
Fluoride 0.68 mg/L 0.20 0.10 1 03/14/17 19:31 16984-48-8	300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
,	Chloride	18.7	mg/L	1.0	0.50	1		03/14/17 19:31	16887-00-6	
9	Fluoride	0.68	J	0.20	0.10	1		03/14/17 19:31	16984-48-8	
Sulfate 754 mg/L 100 50.0 100 03/14/17 19:44 14808-79-8	Sulfate	754	•	100	50.0	100		03/14/17 19:44	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Sample: S-UMW-FB-1	Lab ID:	60239429010	Collecte	d: 03/08/17	7 14:00	Received: 03/	/10/17 03:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	<0.91	ug/L	5.0	0.91	1	03/14/17 13:00	03/22/17 17:53	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	03/14/17 13:00	03/22/17 17:53	7440-41-7	
Boron	47.6J	ug/L	100	3.5	1	03/14/17 13:00	03/22/17 17:53	7440-42-8	
Calcium	64.3J	ug/L	100	36.0	1	03/14/17 13:00	03/22/17 17:53	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	03/14/17 13:00	03/22/17 17:53	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	03/14/17 13:00	03/22/17 17:53	7439-92-1	
Lithium	<2.9	ug/L	10.0	2.9	1	03/14/17 13:00	03/22/17 17:53	7439-93-2	
Molybdenum	<1.3	ug/L	20.0	1.3	1	03/14/17 13:00	03/22/17 17:53	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.026	ug/L	1.0	0.026	1	03/14/17 13:00	03/22/17 15:15	7440-36-0	
Arsenic	<0.052	ug/L	1.0	0.052	1	03/14/17 13:00			
Cadmium	<0.018	ug/L	0.50	0.018	1	03/14/17 13:00	03/22/17 15:15	7440-43-9	
Chromium	0.48J	ug/L	1.0	0.054	1	03/14/17 13:00	03/22/17 15:15	7440-47-3	В
Selenium	<0.086	ug/L	1.0	0.086	1	03/14/17 13:00	03/22/17 15:15	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	03/14/17 13:00	03/22/17 15:15	7440-28-0	
7470 Mercury	Analytical	Method: EPA 74	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.046	ug/L	0.20	0.046	1	03/15/17 09:30	03/15/17 13:29	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		03/13/17 13:36		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.9	Std. Units	0.10	0.10	1		03/13/17 12:27		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00						
Chloride	<0.50	mg/L	1.0	0.50	1		03/14/17 19:58	16887-00-6	
Fluoride	<0.10	mg/L	0.20	0.10	1		03/14/17 19:58	16984-48-8	
Sulfate	<0.50	mg/L	1.0	0.50	1		03/14/17 19:58	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

Date: 04/03/2017 04:32 PM

Pace Project No.: 60239429

QC Batch: 468825 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010

1919000

MS

METHOD BLANK: 1918996 Matrix: Water

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010 Blank Reporting MDL Parameter Units Result Limit Analyzed Qualifiers Mercury ug/L < 0.046 0.20 0.046 03/15/17 12:41 LABORATORY CONTROL SAMPLE: 1918997 LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers 5 Mercury 4.8 96 80-120 ug/L MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1918999 1918998 MS MSD MSD MS 60239429001 Spike Spike MS MSD % Rec Max Parameter Units Result Conc. Result % Rec % Rec RPD RPD Conc. Result Limits Qual Mercury < 0.046 5 5 4.6 4.7 92 93 75-125 2 20 ug/L

60239431001 MS MSD MS MSD Spike Spike % Rec Max Parameter Units Conc. % Rec % Rec Limits RPD RPD Qual Result Conc. Result Result Mercury ug/L <0.046 5 5 4.6 4.7 90 75-125 20

MSD

1919001

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

QC Batch: 468651 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010

METHOD BLANK: 1918411 Matrix: Water

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	03/22/17 17:21	
Beryllium	ug/L	<0.16	1.0	0.16	03/22/17 17:21	
Boron	ug/L	<3.5	100	3.5	03/22/17 17:21	
Calcium	ug/L	<36.0	100	36.0	03/22/17 17:21	
Cobalt	ug/L	< 0.73	5.0	0.73	03/22/17 17:21	
Lead	ug/L	<2.4	5.0	2.4	03/22/17 17:21	
Lithium	ug/L	<2.9	10.0	2.9	03/22/17 17:21	
Molybdenum	ug/L	<1.3	20.0	1.3	03/22/17 17:21	

LABORATORY CONTROL SAMPLE:	1918412	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	1050	105	85-115	
Boron	ug/L	1000	993	99	85-115	
Calcium	ug/L	10000	10700	107	85-115	
Cobalt	ug/L	1000	1070	107	85-115	
Lead	ug/L	1000	1040	104	85-115	
Lithium	ug/L	1000	1040	104	85-115	
Molybdenum	ug/L	1000	1070	107	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 19184	13		1918414							
Parameter	6 Units	0239429001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	123	1000	1000	1170	1170	104	105	70-130		20	
Beryllium	ug/L	<0.16	1000	1000	1060	1060	106	106	70-130	0	20	
Boron	ug/L	325	1000	1000	1330	1350	100	102	70-130	1	20	
Calcium	ug/L	71600	10000	10000	81300	83200	97	117	70-130	2	20	
Cobalt	ug/L	< 0.73	1000	1000	1030	1030	103	103	70-130	0	20	
Lead	ug/L	<2.4	1000	1000	1000	1000	100	100	70-130	0	20	
Lithium	ug/L	10.1	1000	1000	1060	1060	105	105	70-130	0	20	
Molybdenum	ug/L	35.7	1000	1000	1090	1090	106	106	70-130	0	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	TE: 19184	15		1918416							
	C	0000404004	MS	MSD	MC	MSD	MS	MCD	0/ Doo		May	
Parameter	Units	0239431001 Result	Spike Conc.	Spike Conc.	MS Result	Result	% Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	102	1000	1000	1160	1120	106	102	70-130	3	20	
Beryllium	ug/L	< 0.16	1000	1000	1080	1040	108	104	70-130	4	20	
Boron	ug/L	394	1000	1000	1440	1400	104	101	70-130	2	20	
Calcium	ug/L	78200	10000	10000	90900	87900	127	98	70-130	3	20	
Cobalt	ug/L	1.1J	1000	1000	1070	1050	107	105	70-130	2	20	
Lead	ug/L	<2.4	1000	1000	1040	1020	104	102	70-130	2	20	
Lithium	ug/L	14.1	1000	1000	1080	1040	107	103	70-130	3	20	
Molybdenum	ug/L	75.0	1000	1000	1180	1160	110	108	70-130	2	20	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

QC Batch: 468653 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010

METHOD BLANK: 1918422 Matrix: Water

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	03/22/17 14:39	
Arsenic	ug/L	0.060J	1.0	0.052	03/22/17 14:39	
Cadmium	ug/L	<0.018	0.50	0.018	03/22/17 14:39	
Chromium	ug/L	0.27J	1.0	0.054	03/22/17 14:39	
Selenium	ug/L	<0.086	1.0	0.086	03/22/17 14:39	
Thallium	ug/L	< 0.036	1.0	0.036	03/22/17 14:39	

LABORATORY CONTROL SAMPLE:	1918423					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	40.0	100	85-115	
Arsenic	ug/L	40	40.7	102	85-115	
Cadmium	ug/L	40	40.7	102	85-115	
Chromium	ug/L	40	40.5	101	85-115	
Selenium	ug/L	40	41.6	104	85-115	
Thallium	ug/L	40	36.6	91	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 191842	24		1918425							
Parameter	6 Units	60239429001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.041J	40	40	41.3	41.1	103	103	70-130		20	
Arsenic	ug/L	1.1	40	40	42.2	42.1	103	103	70-130	0	20	
Cadmium	ug/L	< 0.018	40	40	40.5	40.8	101	102	70-130	1	20	
Chromium	ug/L	1.5	40	40	41.0	42.0	99	101	70-130	2	20	
Selenium	ug/L	< 0.086	40	40	40.5	39.2	101	98	70-130	3	20	
Thallium	ug/L	0.17J	40	40	37.8	38.6	94	96	70-130	2	20	

MATRIX SPIKE & MATRIX SP	IKE DUPLICA	TE: 19184:	 26		1918427							
Parameter	60 Units	0239431001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.37J	40	40	41.3	41.3	102	102	70-130	_		
Arsenic Cadmium	ug/L ug/L	1.8 0.047J	40 40	40 40	42.8 40.7	42.7 40.2	102 102	102 100	70-130 70-130	_	20 20	

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Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1918426 1918427												
	60	0239431001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chromium	ug/L	0.52J	40	40	41.3	41.0	102	101	70-130	1	20	
Selenium	ug/L	1.4	40	40	40.8	40.9	98	99	70-130	0	20	
Thallium	ug/L	< 0.036	40	40	38.0	38.4	95	96	70-130	1	20	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

QC Batch: 468478 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60239429005, 60239429006, 60239429007, 60239429008, 60239429010

METHOD BLANK: 1917978 Matrix: Water

Associated Lab Samples: 60239429005, 60239429006, 60239429007, 60239429008, 60239429010

Blank Reporting

ParameterUnitsResultLimitMDLAnalyzedQualifiersTotal Dissolved Solidsmg/L<5.0</td>5.003/13/17 13:31

LABORATORY CONTROL SAMPLE: 1917979

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 985 99 80-120

SAMPLE DUPLICATE: 1917980

60239532001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 893 7 10 **Total Dissolved Solids** 956 mg/L

SAMPLE DUPLICATE: 1917981

Date: 04/03/2017 04:32 PM

ParameterUnits60239431003 ResultDup ResultRPDMax RPDQualifiersTotal Dissolved Solidsmg/L581576110

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Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

QC Batch: 468517 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60239429002, 60239429003, 60239429004, 60239429009

METHOD BLANK: 1918045 Matrix: Water

Associated Lab Samples: 60239429002, 60239429003, 60239429004, 60239429009

Blank Reporting

Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 03/13/17 15:14

LABORATORY CONTROL SAMPLE: 1918046

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Total Dissolved Solids mg/L 1000 999 100 80-120

SAMPLE DUPLICATE: 1918047

60239509001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 1920 10 **Total Dissolved Solids** 1890 1 mg/L

SAMPLE DUPLICATE: 1918048

Date: 04/03/2017 04:32 PM

60239446005 Dup Max RPD RPD Parameter Units Result Result Qualifiers 251 **Total Dissolved Solids** mg/L 282 12 10 D6

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

QC Batch: 468641 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60239429001

METHOD BLANK: 1918378 Matrix: Water

Associated Lab Samples: 60239429001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 03/14/17 11:13

LABORATORY CONTROL SAMPLE: 1918379

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 965 96 80-120

SAMPLE DUPLICATE: 1918380

60239429001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 314 312 10 **Total Dissolved Solids** 1 mg/L

SAMPLE DUPLICATE: 1918381

Date: 04/03/2017 04:32 PM

60239431001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 330 **Total Dissolved Solids** mg/L 340 3 10

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

 QC Batch:
 468451
 Analysis Method:
 SM 4500-H+B

 QC Batch Method:
 SM 4500-H+B
 Analysis Description:
 4500H+B pH

 Associated Lab Samples:
 60239429005, 60239429006, 60239429007, 60239429008, 60239429010

SAMPLE DUPLICATE: 1917909

Date: 04/03/2017 04:32 PM

		60239294001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.0	8.1		 1	5 H6



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

QC Batch: 468452 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60239429009

SAMPLE DUPLICATE: 1917910

Date: 04/03/2017 04:32 PM

60239346001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.0 pH at 25 Degrees C 5 H6 Std. Units 6.8 3



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

QC Batch: 468453 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004

SAMPLE DUPLICATE: 1917912

Date: 04/03/2017 04:32 PM

 Parameter
 Units
 Result
 Dup Result
 RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.2
 7.2
 1
 5 H6



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

QC Batch: 468377 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010

METHOD BLANK: 1917755 Matrix: Water

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	03/14/17 09:30	
Fluoride	mg/L	<0.10	0.20	0.10	03/14/17 09:30	
Sulfate	mg/L	< 0.50	1.0	0.50	03/14/17 09:30	

LABORATORY CONTROL SAMPLE:	1917756					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		5.1	103	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	5.4	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1917757 1917758												
			MS	MSD								
	6	60239429001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	18.8	10	10	30.4	29.0	117	103	80-120	5	15	
Fluoride	mg/L	0.34	2.5	2.5	2.9	2.9	103	104	80-120	1	15	
Sulfate	mg/L	51.0	25	25	79.7	83.5	115	130	80-120	5	15	M1

MATRIX SPIKE SAMPLE:	1917759						
		60239429002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	18.9	500	536	103	80-120	
Fluoride	mg/L	0.72	2.5	3.5	110	80-120	
Sulfate	mg/L	738	500	1340	120	80-120	

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Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-1D Lab ID: 60239429001 Collected: 03/09/17 13:43 Received: 03/10/17 03:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.525 ± 0.369 (0.178) C:NA T:87%	pCi/L	03/30/17 12:26	13982-63-3	
Radium-228	EPA 904.0	0.270 ± 0.391 (0.842) C:63% T:91%	pCi/L	03/31/17 14:33	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-2D Lab ID: 60239429002 Collected: 03/09/17 11:04 Received: 03/10/17 03:45 Matrix: Water

PWS: Site ID: Sample Type:

1 443.	Site ib.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.063 ± 0.285 (0.673) C:NA T:93%	pCi/L	03/30/17 12:26	13982-63-3	
Radium-228	EPA 904.0	1.13 ± 0.551 (0.946) C:64% T:82%	pCi/L	03/31/17 14:33	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-3D Lab ID: 60239429003 Collected: 03/09/17 09:43 Received: 03/10/17 03:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0662 ± 0.389 (0.795) C:NA T:90%	pCi/L	03/30/17 12:26	13982-63-3	
Radium-228	EPA 904.0	0.785 ± 0.486 (0.914) C:68% T:77%	pCi/L	03/31/17 14:33	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-4D Lab ID: 60239429004 Collected: 03/09/17 08:48 Received: 03/10/17 03:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.064 ± 0.290 (0.684) C:NA T:92%	pCi/L	03/30/17 12:42	13982-63-3	
Radium-228	EPA 904.0	0.231 ± 0.377 (0.819) C:65% T:91%	pCi/L	03/31/17 14:33	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-5D Lab ID: 60239429005 Collected: 03/08/17 14:05 Received: 03/10/17 03:45 Matrix: Water

PWS: Site ID: Sample Type:

FWS.	Site ID.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.197 ± 0.387 (0.708) C:NA T:92%	pCi/L	03/30/17 12:42	13982-63-3	
Radium-228	EPA 904.0	0.544 ± 0.398 (0.778) C:71% T:87%	pCi/L	03/31/17 14:33	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-6D Lab ID: 60239429006 Collected: 03/08/17 14:48 Received: 03/10/17 03:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.122 ± 0.293 (0.566) C:NA T:94%	pCi/L	03/30/17 12:45	13982-63-3	
Radium-228	EPA 904.0	0.683 ± 0.408 (0.753) C:70% T:88%	pCi/L	03/31/17 14:33	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-BMW-1D Collected: 03/08/17 10:37 Received: 03/10/17 03:45 Matrix: Water Lab ID: 60239429007

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.122 ± 0.413 (0.798) C:NA T:93%	pCi/L	03/30/17 12:45	13982-63-3	
Radium-228	EPA 904.0	0.537 ± 0.422 (0.838) C:70% T:82%	pCi/L	03/31/17 14:34	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-BMW-3D Collected: 03/08/17 12:02 Received: 03/10/17 03:45 Matrix: Water Lab ID: 60239429008

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.382 ± 0.501 (0.834) C:NA T:89%	pCi/L	03/30/17 12:45	13982-63-3	
Radium-228	EPA 904.0	0.300 ± 0.374 (0.791) C:64% T:89%	pCi/L	03/31/17 14:34	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-DUP-1 Lab ID: 60239429009 Collected: 03/09/17 08:00 Received: 03/10/17 03:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.000 ± 0.407 (0.860) C:NA T:91%	pCi/L	03/30/17 12:45	13982-63-3	
Radium-228	EPA 904.0	0.597 ± 0.404 (0.768) C:68% T:85%	pCi/L	03/31/17 14:34	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-FB-1 Lab ID: 60239429010 Collected: 03/08/17 14:00 Received: 03/10/17 03:45 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.398 ± 0.322 (0.180) C:NA T:88%	pCi/L	03/30/17 12:53	13982-63-3	
Radium-228	EPA 904.0	0.253 ± 0.366 (0.787) C:71% T:87%	pCi/L	03/31/17 14:34	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-1D MS Lab ID: 60239429011 Collected: 03/09/17 13:43 Received: 03/10/17 03:45 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac Units CAS No. **Parameters** Analyzed Qual EPA 903.1 91.37%REC ± NA (NA) Radium-226 pCi/L 03/30/17 12:53 13982-63-3 Radium-228 EPA 904.0 104.05 %REC ± NA (NA) pCi/L 03/31/17 14:34 15262-20-1

C:NA T:NA



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Sample: S-UMW-1D MSD Lab ID: 60239429012 Collected: 03/09/17 13:43 Received: 03/10/17 03:45 Matrix: Water

PWS: Site ID: Sample Type:

Method Act ± Unc (MDC) Carr Trac Units CAS No. **Parameters** Analyzed Qual EPA 903.1 85.03%REC 7.20RPD ± NA Radium-226 pCi/L 03/30/17 13:00 13982-63-3 (NA) EPA 904.0 100.61 %REC 3.36 RPD ± Radium-228 pCi/L 03/31/17 14:34 15262-20-1 NA (NA) C:NA T:NA



QUALITY CONTROL - RADIOCHEMISTRY

pCi/L

03/30/17 12:26

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Radium-226

QC Batch: 252849 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010, 60239429011, 60239429012

METHOD BLANK: 1243931 Matrix: Water

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010, 60239429011, 60239429012

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

0.201 ± 0.306 (0.181) C:NA T:88%

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

QC Batch: 252851 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010, 60239429011, 60239429012

METHOD BLANK: 1243933 Matrix: Water

Associated Lab Samples: 60239429001, 60239429002, 60239429003, 60239429004, 60239429005, 60239429006, 60239429007,

60239429008, 60239429009, 60239429010, 60239429011, 60239429012

ParameterAct \pm Unc (MDC) Carr TracUnitsAnalyzedQualifiersRadium-2280.0383 \pm 0.325 (0.747) C:68% T:93%pCi/L03/31/17 14:33

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

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.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 04/03/2017 04:32 PM

B Analyte was detected in the associated method blank.

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

H6 Analysis initiated outside of the 15 minute EPA required holding time.

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



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

_ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytic Batch
60239429001	S-UMW-1D	EPA 200.7	468651	EPA 200.7	468726
0239429002	S-UMW-2D	EPA 200.7	468651	EPA 200.7	468726
0239429003	S-UMW-3D	EPA 200.7	468651	EPA 200.7	468726
0239429004	S-UMW-4D	EPA 200.7	468651	EPA 200.7	468726
0239429005	S-UMW-5D	EPA 200.7	468651	EPA 200.7	468726
0239429006	S-UMW-6D	EPA 200.7	468651	EPA 200.7	468726
0239429007	S-BMW-1D	EPA 200.7	468651	EPA 200.7	468726
0239429008	S-BMW-3D	EPA 200.7	468651	EPA 200.7	468726
0239429009	S-UMW-DUP-1	EPA 200.7	468651	EPA 200.7	468726
0239429010	S-UMW-FB-1	EPA 200.7	468651	EPA 200.7	468726
0239429001	S-UMW-1D	EPA 200.8	468653	EPA 200.8	468727
0239429002	S-UMW-2D	EPA 200.8	468653	EPA 200.8	468727
0239429003	S-UMW-3D	EPA 200.8	468653	EPA 200.8	468727
0239429004	S-UMW-4D	EPA 200.8	468653	EPA 200.8	468727
0239429005	S-UMW-5D	EPA 200.8	468653	EPA 200.8	468727
0239429006	S-UMW-6D	EPA 200.8	468653	EPA 200.8	468727
0239429007	S-BMW-1D	EPA 200.8	468653	EPA 200.8	468727
0239429008	S-BMW-3D	EPA 200.8	468653	EPA 200.8	468727
0239429009	S-UMW-DUP-1	EPA 200.8	468653	EPA 200.8	468727
0239429010	S-UMW-FB-1	EPA 200.8	468653	EPA 200.8	468727
0239429001	S-UMW-1D	EPA 7470	468825	EPA 7470	468843
0239429002	S-UMW-2D	EPA 7470	468825	EPA 7470	468843
0239429003	S-UMW-3D	EPA 7470	468825	EPA 7470	468843
0239429004	S-UMW-4D	EPA 7470	468825	EPA 7470	468843
0239429005	S-UMW-5D	EPA 7470	468825	EPA 7470	468843
0239429006	S-UMW-6D	EPA 7470	468825	EPA 7470	468843
0239429007	S-BMW-1D	EPA 7470	468825	EPA 7470	468843
0239429008	S-BMW-3D	EPA 7470	468825	EPA 7470	468843
0239429009	S-UMW-DUP-1	EPA 7470	468825	EPA 7470	468843
0239429010	S-UMW-FB-1	EPA 7470	468825	EPA 7470	468843
0239429001	S-UMW-1D	EPA 903.1	252849		
0239429002	S-UMW-2D	EPA 903.1	252849		
0239429003	S-UMW-3D	EPA 903.1	252849		
0239429004	S-UMW-4D	EPA 903.1	252849		
0239429005	S-UMW-5D	EPA 903.1	252849		
0239429006	S-UMW-6D	EPA 903.1	252849		
0239429007	S-BMW-1D	EPA 903.1	252849		
0239429008	S-BMW-3D	EPA 903.1	252849		
0239429009	S-UMW-DUP-1	EPA 903.1	252849		
0239429010	S-UMW-FB-1	EPA 903.1	252849		
0239429011	S-UMW-1D MS	EPA 903.1	252849		
0239429012	S-UMW-1D MSD	EPA 903.1	252849		
0239429001	S-UMW-1D	EPA 904.0	252851		
0239429002	S-UMW-2D	EPA 904.0	252851		
0239429003	S-UMW-3D	EPA 904.0	252851		
0239429004	S-UMW-4D	EPA 904.0	252851		
0239429005	S-UMW-5D	EPA 904.0	252851		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60239429

Date: 04/03/2017 04:32 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60239429006	S-UMW-6D	EPA 904.0	 252851		
60239429007	S-BMW-1D	EPA 904.0	252851		
60239429008	S-BMW-3D	EPA 904.0	252851		
60239429009	S-UMW-DUP-1	EPA 904.0	252851		
60239429010	S-UMW-FB-1	EPA 904.0	252851		
60239429011	S-UMW-1D MS	EPA 904.0	252851		
60239429012	S-UMW-1D MSD	EPA 904.0	252851		
60239429001	S-UMW-1D	SM 2540C	468641		
60239429002	S-UMW-2D	SM 2540C	468517		
60239429003	S-UMW-3D	SM 2540C	468517		
60239429004	S-UMW-4D	SM 2540C	468517		
60239429005	S-UMW-5D	SM 2540C	468478		
60239429006	S-UMW-6D	SM 2540C	468478		
60239429007	S-BMW-1D	SM 2540C	468478		
60239429008	S-BMW-3D	SM 2540C	468478		
60239429009	S-UMW-DUP-1	SM 2540C	468517		
60239429010	S-UMW-FB-1	SM 2540C	468478		
0239429001	S-UMW-1D	SM 4500-H+B	468453		
0239429002	S-UMW-2D	SM 4500-H+B	468453		
0239429003	S-UMW-3D	SM 4500-H+B	468453		
0239429004	S-UMW-4D	SM 4500-H+B	468453		
0239429005	S-UMW-5D	SM 4500-H+B	468451		
0239429006	S-UMW-6D	SM 4500-H+B	468451		
0239429007	S-BMW-1D	SM 4500-H+B	468451		
60239429008	S-BMW-3D	SM 4500-H+B	468451		
60239429009	S-UMW-DUP-1	SM 4500-H+B	468452		
60239429010	S-UMW-FB-1	SM 4500-H+B	468451		
60239429001	S-UMW-1D	EPA 300.0	468377		
0239429002	S-UMW-2D	EPA 300.0	468377		
0239429003	S-UMW-3D	EPA 300.0	468377		
0239429004	S-UMW-4D	EPA 300.0	468377		
0239429005	S-UMW-5D	EPA 300.0	468377		
0239429006	S-UMW-6D	EPA 300.0	468377		
0239429007	S-BMW-1D	EPA 300.0	468377		
0239429008	S-BMW-3D	EPA 300.0	468377		
0239429009	S-UMW-DUP-1	EPA 300.0	468377		
60239429010	S-UMW-FB-1	EPA 300.0	468377		



Sample Condition Upon Receipt



Client Name: bolder			
Courier: FedEx □ UPS □ VIA □ Clay □ I	PEX 🗆 ECI 🗅	Pace □ Xroads □	Client □ Other □
Tracking #: Pag	e Shipping Label Used	i? Yes□ Nøົ⊡	
Custody Seal on Cooler/Box Present: Yes ☐ No ☐	Seals intact: Yes	No □	
Packing Material: Bubble Wrap □ Bubble Bags [Foam	None ☐ Oth	er □
Thermometer Used: T-266 \ T-239 Type of	fice: Wet Blue Nor	ne	
Cooler Temperature (°C): As-read -0.5/13.6/15Corr. Fact	or CF (+1.5 oF +0.9 Correct	ed / 0/15-3/13-9	Date and initials of person examining contents:
Temperature should be above freezing to 6°C			N3/10/17
Chain of Custody present:	✓Yes □No □N/A		Y
Chain of Custody relinquished:	Yes □No □N/A		
Samples arrived within holding time:	Yes □No □N/A		
Short Hold Time analyses (<72hr):	✓Yes □No □N/A	PH	
Rush Turn Around Time requested:	□Yes ☑No □N/A		
Sufficient volume:	ØYes □No □N/A		
Correct containers used:	Øyes □No □N/A	3	
Pace containers used:	Yes No NA		ii)
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:	☐Yes ☑No ☐N/A		
Containers requiring pH preservation in compliance?	Øyes □No □N/A		
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)	***		
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Cyanide water sample checks: N/A			
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	N.	
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 t		Field Data Required	? Y / N
Person Contacted: Date/	Time:		
Comments/ Resolution:			
Jami Chiel		3/10/17	
Project Manager Review:	Date	e:	



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section C

Page:

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Page 47 of 47

Required Client Information: Requested Due Date/TAT: Address: EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl ITEM# 10 9 636-724-9191 Required Client Information (A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE St Charles, MO 63301 maddock@golder.com 820 South Main Street, Suite 100 Golder Associates SAMPLE ID ADDITIONAL COMMENTS S-UMW-DUP-1 S-UMW-FB-1 S-UMW-4D S-UMW-2D Standard Fax: 636-724-9323 S-BMW-3D S-BMW-1D S-UMW-6D S-UMW-5D S-UMW-3D S-UMW-1D DRINKING WATER Valid Matrix Codes NASTE WATER TO AR MED PWW WITH Required Project Information Copy To: CODE Project Number Report To: Mark Haddock (mhaddock@golder.com) urchase Order No. Name Jeffrey Ingram S MATRIX CODE S ₹ ₹ (see valid codes to left) RELINQUISHED BY / AFFILIATION 5 Š S S ₹ Ameren Sioux Energy Center - Bottom Ash 153-1406.0003A G G SAMPLE TYPE (G=GRAB C=COMP) G ດ G ഒ **G** G G DATE COMPOSITE SAMPLER NAME AND SIGNATURE TIME COLLECTED とたた PRINT Name of SAMPLER: 3/5/17 5/3/17/1037 313117 7448 W SIGNATURE of SAMPLER: 313117 3/9/17 14117 COMPOSITE END/GRAB 1202 SHE HOY P. H. 0343 2742 242 2/8 W DATE 63 SAMPLE TEMP AT COLLECTION Reference: Pace Project Address: Attention: nvoice Information 630 5 # OF CONTAINERS company Name t TIME Unpreserved W ą. 干 H₂SO₄ Preservatives 9285 HNO₃ 3 Jamie Church HCI NaOH Na₂S₂O₃ ACCEPTED BY / AFFILIATION Methanol Other **↓** Analysis Test**↓** Y/ N. Metals* z -DATE Signed (MM/DD/YY): Requested Analysis Filtered (Y/N) z Chloride/Fluoride/Sulfate 1 z TDS ۴ z W рΗ E z REGULATORY AGENCY Radium 226 & 228 P Site Location NPDES N UST 4161 STATE: DATE 3450 to TIME RCRA GROUND WATER MO 6.2 15-3 Ó Temp in °C Residual Chlorine (Y/N) 1298 and 1888 1818, NOW 16734 28PIN Received on Ice (Y/N) Pace Project No./ Lab I.D. 6229429 SAMPLE CONDITIONS DRINKING WATER Custody Sealed Cooler (Y/N) 689N Samples Intact 200





April 26, 2017

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on April 06, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jamie Church

jamie.church@pacelabs.com 314-838-7223

Project Manager

Enclosures

cc: Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates



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



CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification

Hawaii Certification

Illinois Certification

Indiana Certification lowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New Jersey/TNI Certification #: PA 051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Oregon/TNI Certification #: PA200002 Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8 Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C Wisconsin Certification

Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0 Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60241393001	S-BMW-3D	Water	04/05/17 11:37	04/06/17 03:50

(913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60241393001	S-BMW-3D	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Date: 04/26/2017 11:41 AM

Sample: S-BMW-3D	Lab ID:	60241393001	Collected	d: 04/05/17	7 11:37	Received: 04/06/17 03:50 Matrix: Water				
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
200.7 Metals, Total	Analytical I	Method: EPA 20	00.7 Prepa	ration Meth	od: EP	A 200.7				
Barium	684	ug/L	5.0	0.91	1	04/10/17 12:00	04/13/17 13:11	7440-39-3		
Beryllium	<0.16	ug/L	1.0	0.16	1	04/10/17 12:00	04/13/17 13:11	7440-41-7		
Boron	58.2J	ug/L	100	3.5	1	04/10/17 12:00	04/13/17 13:11	7440-42-8		
Calcium	105000	ug/L	100	36.0	1	04/10/17 12:00	04/13/17 13:11	7440-70-2		
Cobalt	<0.73	ug/L	5.0	0.73	1	04/10/17 12:00	04/13/17 13:11	7440-48-4		
Lead	<2.4	ug/L	5.0	2.4	1	04/10/17 12:00	04/13/17 13:11	7439-92-1		
Lithium	23.6	ug/L	10.0	2.9	1	04/10/17 12:00	04/13/17 13:11	7439-93-2		
Molybdenum	<1.3	ug/L	20.0	1.3	1	04/10/17 12:00	04/13/17 13:11	7439-98-7		
200.8 MET ICPMS	Analytical I	Method: EPA 20	00.8 Prepa	ration Meth	od: EP	A 200.8				
Antimony	0.041J	ug/L	1.0	0.026	1	04/07/17 10:40	04/10/17 12:37	7440-36-0		
Arsenic	<0.052	ug/L	1.0	0.052	1	04/07/17 10:40	04/10/17 12:37	7440-38-2		
Cadmium	<0.018	ug/L	0.50	0.018	1	04/07/17 10:40	04/10/17 12:37	7440-43-9		
Chromium	<0.054	ug/L	1.0	0.054	1	04/07/17 10:40	04/10/17 12:37	7440-47-3		
Selenium	0.10J	ug/L	1.0	0.086	1	04/07/17 10:40	04/11/17 13:15	7782-49-2		
Thallium	<0.036	ug/L	1.0	0.036	1	04/07/17 10:40	04/10/17 12:37	7440-28-0		
7470 Mercury	Analytical I	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470				
Mercury	<0.046	ug/L	0.20	0.046	1	04/06/17 15:30	04/07/17 10:23	7439-97-6		
2540C Total Dissolved Solids	Analytical I	Method: SM 25	40C							
Total Dissolved Solids	414	mg/L	5.0	5.0	1		04/06/17 15:38			
4500H+ pH, Electrometric	Analytical I	Method: SM 45	00-H+B							
pH at 25 Degrees C	7.3	Std. Units	0.10	0.10	1		04/12/17 11:42		H6	
300.0 IC Anions 28 Days	Analytical I	Method: EPA 3	0.00							
Chloride	8.5	mg/L	1.0	0.50	1		04/07/17 02:14	16887-00-6		
Fluoride	0.31	mg/L	0.20	0.10	1		04/07/17 02:14	16984-48-8		
Sulfate	24.6	mg/L	2.0	1.0	2		04/07/17 02:29			



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Date: 04/26/2017 11:41 AM

QC Batch: 471728 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60241393001

METHOD BLANK: 1931494 Matrix: Water

Associated Lab Samples: 60241393001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L <0.046 0.20 0.046 04/07/17 10:14

LABORATORY CONTROL SAMPLE: 1931495

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers 5.2 Mercury ug/L 105 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1931496 1931497

MS MSD MS 60241393001 Spike Spike MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual < 0.046 5 5 4.9 4.9 75-125 0 20 Mercury ug/L 98 98

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Date: 04/26/2017 11:41 AM

QC Batch: 472060 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60241393001

METHOD BLANK: 1933194 Matrix: Water

Associated Lab Samples: 60241393001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	04/13/17 12:34	
Beryllium	ug/L	<0.16	1.0	0.16	04/13/17 12:34	
Boron	ug/L	<3.5	100	3.5	04/13/17 12:34	
Calcium	ug/L	<36.0	100	36.0	04/13/17 12:34	
Cobalt	ug/L	< 0.73	5.0	0.73	04/13/17 12:34	
Lead	ug/L	<2.4	5.0	2.4	04/13/17 12:34	
Lithium	ug/L	<2.9	10.0	2.9	04/13/17 12:34	
Molybdenum	ug/L	<1.3	20.0	1.3	04/13/17 12:34	

LABORATORY CONTROL SAMPLE:	1933195					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	1040	104	85-115	
Boron	ug/L	1000	1040	104	85-115	
Calcium	ug/L	10000	9700	97	85-115	
Cobalt	ug/L	1000	1080	108	85-115	
Lead	ug/L	1000	1020	102	85-115	
Lithium	ug/L	1000	1090	109	85-115	
Molybdenum	ug/L	1000	1110	111	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	TE: 19331			1933197							
	6	0241357001	MS Spike	MSD Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	% Rec	RPD	RPD	Qual
Barium	ug/L	23.0	1000	1000	1060	1060	104	104	70-130	1	20	
Beryllium	ug/L	ND	1000	1000	1030	1040	103	103	70-130	1	20	
Boron	ug/L	3120	1000	1000	4120	4150	101	103	70-130	1	20	
Calcium	ug/L	30200	10000	10000	39000	38800	88	85	70-130	1	20	
Cobalt	ug/L	ND	1000	1000	1010	1020	101	102	70-130	1	20	
Lead	ug/L	ND	1000	1000	928	940	93	94	70-130	1	20	
Lithium	ug/L	17.7	1000	1000	1110	1120	109	111	70-130	1	20	
Molybdenum	ug/L	116	1000	1000	1200	1220	108	110	70-130	2	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Date: 04/26/2017 11:41 AM

MATRIX SPIKE SAMPLE:	1933198						
		60241525001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	 ug/L	124	1000	1170	104	70-130	
Beryllium	ug/L	ND	1000	1040	104	70-130	
Boron	ug/L	166	1000	1230	107	70-130	
Calcium	ug/L	91500	10000	101000	94	70-130	
Cobalt	ug/L	ND	1000	1060	105	70-130	
Lead	ug/L	121	1000	1110	99	70-130	
Lithium	ug/L	17.2	1000	1120	110	70-130	
Molybdenum	ug/L	29.9	1000	1140	111	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Date: 04/26/2017 11:41 AM

QC Batch: 471820 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60241393001

METHOD BLANK: 1931891 Matrix: Water

Associated Lab Samples: 60241393001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	< 0.026	1.0	0.026	04/10/17 10:38	
Arsenic	ug/L	< 0.052	1.0	0.052	04/10/17 10:38	
Cadmium	ug/L	<0.018	0.50	0.018	04/10/17 10:38	
Chromium	ug/L	< 0.054	1.0	0.054	04/10/17 10:38	
Selenium	ug/L	<0.086	1.0	0.086	04/11/17 12:15	
Thallium	ug/L	< 0.036	1.0	0.036	04/10/17 10:38	

LABORATORY CONTROL SAMPLE:	1931892	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	40.2	100	85-115	
Arsenic	ug/L	40	40.4	101	85-115	
Cadmium	ug/L	40	40.4	101	85-115	
Chromium	ug/L	40	41.4	103	85-115	
Selenium	ug/L	40	40.9	102	85-115	
Thallium	ug/L	40	37.5	94	85-115	

MATRIX SPIKE & MATRIX SPI	KE DUPLIC	CATE: 19318	93		1931894							
Parameter	Units	7563209001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	41.7	41.5	103	103	70-130	0	20	
Arsenic	ug/L	1.6	40	40	41.8	42.4	100	102	70-130	2	20	
Cadmium	ug/L	ND	40	40	39.3	38.7	98	97	70-130	1	20	
Chromium	ug/L	2.0	40	40	42.5	42.3	101	101	70-130	0	20	
Selenium	ug/L	ND	40	40	35.6	36.2	88	90	70-130	1	20	
Thallium	ug/L	ND	40	40	37.6	37.8	94	94	70-130	0	20	

MATRIX SPIKE & MATRIX SP	IKE DUPLIC	CATE: 19318	95		1931896							
Parameter	Units	7563209002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Max RPD	Qual
				Oone.		- TCSuit	70 IXCC	70 TCC	LIIIIII			— Quai
Antimony	ug/L	ND	40	40	42.3	42.2	104	104	70-130	0	20	
Arsenic	ug/L	1.6	40	40	42.4	42.5	102	102	70-130	0	20	
Cadmium	ug/L	ND	40	40	39.8	39.6	99	99	70-130	1	20	
Chromium	ug/L	2.9	40	40	43.6	43.7	102	102	70-130	0	20	
Selenium	ug/L	ND	40	40	35.9	33.8	89	84	70-130	6	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Date: 04/26/2017 11:41 AM

MATRIX CRIZE & MATRIX (SDIKE DUDI IC	NATE: 400404	25		4004000							
MATRIX SPIKE & MATRIX S	SPIKE DUPLIC	CATE: 193189	ย่อ MS	MSD	1931896							
		7563209002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Thallium	ug/L	ND	40	40	38.2	38.1	95	95	70-130	0	20	
MATRIX SPIKE & MATRIX S	SPIKE DUPLIC	CATE: 19318	97		1931898							
			MS	MSD								
		7563209003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	 ND	40	40	42.4	42.3	105	105	70-130	0	20	
Arsenic	ug/L	1.4	40	40	42.7	42.6	103	103	70-130	0	20	
Cadmium	ug/L	ND	40	40	39.1	39.3	98	98	70-130	1	20	
Chromium	ug/L	6.9	40	40	47.7	48.1	102	103	70-130	1	20	
Selenium	ug/L	ND	40	40	36.0	34.9	88	86	70-130	3	20	
Thallium	ug/L	ND	40	40	38.2	38.5	95	96	70-130	1	20	
MATRIX SPIKE & MATRIX S	SPIKE DUPLIC	CATE: 19318	99		1931900							
			MS	MSD								
		7563209004	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L		40	40	41.9	41.8	104	104	70-130	0	20	
Arsenic	ug/L	1.1	40	40	41.8	42.1	102	103	70-130	1	20	
Cadmium	ug/L	ND	40	40	39.4	38.9	98	97	70-130	1	20	
Chromium	ug/L	4.5	40	40	44.5	45.3	100	102	70-130	2	20	
Selenium	ug/L	ND	40	40	31.2	32.3	77	79	70-130	3	20	
Thallium	ug/L	ND	40	40	38.1	38.0	95	95	70-130	0	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

QC Batch: 471744 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60241393001

METHOD BLANK: 1931522 Matrix: Water

Associated Lab Samples: 60241393001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 04/06/17 15:35

LABORATORY CONTROL SAMPLE: 1931523

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 969 97 80-120

SAMPLE DUPLICATE: 1931524

Date: 04/26/2017 11:41 AM

60241391001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers **Total Dissolved Solids** 8970 10 D6 9970 11 mg/L

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

QC Batch: 472308 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60241393001

SAMPLE DUPLICATE: 1934027

Date: 04/26/2017 11:41 AM

60241275001 Dup Max Parameter Units Result Result **RPD** RPD Qualifiers 7.9 pH at 25 Degrees C 7.9 5 H6 Std. Units 0

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Date: 04/26/2017 11:41 AM

QC Batch: 471714 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60241393001

METHOD BLANK: 1931453 Matrix: Water

Associated Lab Samples: 60241393001

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	04/06/17 23:32	
Fluoride	mg/L	<0.10	0.20	0.10	04/06/17 23:32	
Sulfate	mg/L	<0.50	1.0	0.50	04/06/17 23:32	

LABORATORY CONTROL SAMPLE:	1931454					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIR	KE DUPLICA	TE: 19314	55		1931456							
			MS	MSD								
	6	0241402002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	672			931	916				2	15	
Fluoride	mg/L	ND	125	125	132	128	106	102	80-120	4	15	
Sulfate	mg/L	339	250	250	591	588	101	100	80-120	0	15	

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



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Sample: S-BMW-3D Lab ID: 60241393001 Collected: 04/05/17 11:37 Received: 04/06/17 03:50 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.04 ± 0.647 (0.638) C:NA T:87%	pCi/L	04/24/17 22:21	13982-63-3	
Radium-228	EPA 904.0	0.721 ± 0.393 (0.710) C:81% T:83%	pCi/L	04/24/17 16:38	15262-20-1	



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

QC Batch: 255654 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60241393001

METHOD BLANK: 1259160 Matrix: Water

Associated Lab Samples: 60241393001

ParameterAct \pm Unc (MDC) Carr TracUnitsAnalyzedQualifiersRadium-2260.321 \pm 0.447 (0.746) C:NA T:88%pCi/L04/24/17 22:04

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



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

QC Batch: 255790 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60241393001

METHOD BLANK: 1259874 Matrix: Water

Associated Lab Samples: 60241393001

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-228 0.408 \pm 0.295 (0.566) C:85% T:82% pCi/L 04/24/17 16:37

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

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.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 04/26/2017 11:41 AM

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

H6 Analysis initiated outside of the 15 minute EPA required holding time.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60241393

Date: 04/26/2017 11:41 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60241393001	S-BMW-3D	EPA 200.7	472060	EPA 200.7	472122
60241393001	S-BMW-3D	EPA 200.8	471820	EPA 200.8	471945
60241393001	S-BMW-3D	EPA 7470	471728	EPA 7470	471775
60241393001	S-BMW-3D	EPA 903.1	255654		
60241393001	S-BMW-3D	EPA 904.0	255790		
60241393001	S-BMW-3D	SM 2540C	471744		
60241393001	S-BMW-3D	SM 4500-H+B	472308		
60241393001	S-BMW-3D	EPA 300.0	471714		



Sample Condition Upon Receipt



Client Name:	Golder			
Courier: FedEx □	UPS □ VIA □ Clay □	PEX □ ECI □	Pace Xroads	Client □ Other □
Tracking #:		Pace Shipping Label Used	d? Yes □ No □	
Custody Seal on Coole	r/Box Present: Yes No 🗆	Seals intact: Yes	No 🗆	
Packing Material:	Bubble Wrap □ Bubble Ba	gs 🗆 🧪 Foam 🗀	None □ Oti	her □
Thermometer Used:	CF+1.5 CF+0.9 1-266 / T-239 , Typ	e of Ice: Wet Blue No	ne	I process
Cooler Temperature (°C	C): As-read 0 9/11-9 Corr. I	actor C +1.5 CF +0.9 Correct	ted 2.4/13.4	Date and initials of person examining contents:
Temperature should be abo	ve freezing to 6°C		- 11 1	N4/6/17
Chain of Custody presen	nt:	ZYes □No □N/A		2!
Chain of Custody relinqu	uished:	✓Yes □No □N/A		
Samples arrived within h	olding time:	✓Yes □No □N/A		
Short Hold Time analys	ses (<72hr):	Yes ONO ON/A	PH	
Rush Turn Around Tim	e requested:	□Yes ZNo □N/A	•	
Sufficient volume:		Yes □No □N/A		
Correct containers used:		Yes □No □N/A		
Pace containers used:		Yes ONO ON/A		
Containers intact:		Yes No N/A		
Unpreserved 5035A / TX	(1005/1006 soils frozen in 48hrs?	Yes No N/A		
Filtered volume received	for dissolved tests?	□Yes □No ∕□N/A		
Sample labels match CC	OC: Date / time / ID / analyses	ZYes □No □N/A		
Samples contain multiple	e phases? Matrix: ~T	Yes No N/A		
	preservation in compliance?	Yes □No □N/A	C	
(HNO ₃ , H ₂ SO ₄ , HCI<2; NaO (Exceptions: VOA, Micro, C	H>9 Sulfide, NaOH>10 Cyanide)	: 4.		
Cyanide water sample ch				
Lead acetate strip turns	dark? (Record only)	□Yes □No		
Potassium iodide test str	rip turns blue/purple? (Preserve)	□Yes □No		
Trip Blank present:		□Yes □No □N/A		
Headspace in VOA vials	(>6mm):	☐Yes ☐No ØN/A		
Samples from USDA Re	gulated Area: State:	□Yes □No ☑N/A		
Additional labels attache	d to 5035A / TX1005 vials in the t	field? □Yes □No ☑N/A		
Client Notification/ Res	colution: Copy Co	OC to Client? Y / N	Field Data Required	? Y / N
Person Contacted:	Da	ate/Time:		
Comments/ Resolution:				
-				
Project Manager Review	jam Chel _	Date	4/6/17	
1 Tojout Manager Iteview	-	Date	J	

Pace Analytical

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

Sioux Energy Center - Bottom Ash COLLECTED COMPOSITE START SAMPLER NAME AND SIGNATI PRINT Name of SAMPLE SIGNATURE of SAMPLE	Section		Section B	1 Infon	mation					v) =	Section C Invoice Information:	C formatio	Ü.						84				Page:	-	of	-	
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SIGNATURE of SAMPLER: JOHN W. 2017 FIT FI GOOD GOOD GOOD GOOD GOOD GOOD GOOD GOO	ļ	ge 2					SAMP	LER NAM	AND SI	GNATE	Ä	1	1	1	- 6	10							, uį c				es Inl (N/V)
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*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 involces not paid within 30 days.





June 27, 2017

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between June 07, 2017 and June 08, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jamie Church@nace

Project Manager

jamie.church@pacelabs.com 314-838-7223

Enclosures

cc: Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates



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



CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Guam Certification Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification lowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14

Nevada Certification #: PA014572015-1

New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051

New delacy, The definition of the 17.17.001

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002

Pennsylvania/TNI Certification #: 65-00282

rennsylvania/TNI Certification #. 65-0026

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8

Utah/TNI Certification #: PA014572015-5

USDA Soil Permit #: P330-14-00213

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 460198

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01 Arkansas Certification #: 15-016-0

Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212008A

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407

Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60246023001	S-UMW-1D	Water	06/07/17 12:30	06/08/17 04:10
60246023002	S-UMW-2D	Water	06/07/17 10:35	06/08/17 04:10
60246023003	S-UMW-3D	Water	06/07/17 09:40	06/08/17 04:10
60246023004	S-UMW-4D	Water	06/07/17 08:34	06/08/17 04:10
60246023005	S-UMW-5D	Water	06/07/17 08:45	06/08/17 04:10
60246023006	S-UMW-DUP-1	Water	06/07/17 08:00	06/08/17 04:10
60246023007	S-UMW-FB-1	Water	06/07/17 08:32	06/08/17 04:10
60245851001	S-BMW-1D	Water	06/06/17 15:00	06/07/17 04:25
60245851002	S-BMW-3D	Water	06/05/17 13:26	06/07/17 04:25
60245851003	S-UMW-6D	Water	06/06/17 15:00	06/07/17 04:25
60245851004	S-UMW-6D MS	Water	06/06/17 15:00	06/07/17 04:25
60245851005	S-UMW-6D MSD	Water	06/06/17 15:00	06/07/17 04:25



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

_ab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60246023001	S-UMW-1D	EPA 200.7		8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0246023002	S-UMW-2D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0246023003	S-UMW-3D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0246023004	S-UMW-4D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0246023005	S-UMW-5D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0246023006	S-UMW-DUP-1	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0246023007	S-UMW-FB-1	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0245851001	S-BMW-1D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0245851002	S-BMW-3D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
0245851003	S-UMW-6D	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60245851004	S-UMW-6D MS	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
60245851005	S-UMW-6D MSD	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Parameters Results Units PQL MDL DF Prepared Analyzed Compared 200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Barium 109 ug/L 5.0 0.91 1 06/16/17 10:25 06/16/17 17:30 744 Beryllium 0.24J ug/L 1.0 0.16 1 06/16/17 10:25 06/16/17 17:30 744 Boron 278 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 17:30 744 Calcium 53500 ug/L 100 36.0 1 06/16/17 10:25 06/16/17 17:30 744 Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 17:30 744 Lead <2.4 ug/L 5.0 2.4 1 06/16/17 10:25 06/16/17 17:30 743 Lithium 10.7 ug/L 10.0 2.9 1 06/16/17 10:25 06/16/17 17:30 743 200.8 MET ICPMS </th <th>CAS No. Qua</th> <th></th> <th></th> <th></th> <th>12.00</th> <th>: 06/07/17</th> <th>Collected</th> <th>60246023001</th> <th>Lab ID.</th> <th>Sample: S-UMW-1D</th>	CAS No. Qua				12.00	: 06/07/17	Collected	60246023001	Lab ID.	Sample: S-UMW-1D
Barium 109 ug/L 5.0 0.91 1 06/16/17 10:25 06/16/17 17:30 744 Beryllium 0.24J ug/L 1.0 0.16 1 06/16/17 10:25 06/16/17 17:30 744 Boron 278 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 17:30 744 Calcium 53500 ug/L 100 36.0 1 06/16/17 10:25 06/16/17 17:30 744 Cobalt 40.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 17:30 744 Lead 42.4 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 17:30 743 Lithium 10.7 ug/L 10.0 2.9 1 06/16/17 10:25 06/16/17 17:30 743 Molybdenum 36.4 ug/L 20.0 1.3 1 06/16/17 10:25 06/16/17 17:30 743 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/20/17 14:02 744 Arsenic 0.98J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 14:02 744 Cadmium 40.018 ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 14:02 744 Chromium 0.22J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 14:02 744		CAS No.	Analyzed	Prepared	DF	MDL	PQL	Units	Results	Parameters
Beryllium 0.24J ug/L 1.0 0.16 1 06/16/17 10:25 06/16/17 17:30 744 Boron 278 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 17:30 744 Calcium 53500 ug/L 100 36.0 1 06/16/17 10:25 06/16/17 17:30 744 Cobalt <0.73				A 200.7	od: EPA	ation Meth	00.7 Prepa	Method: EPA 2	Analytical	200.7 Metals, Total
Boron 278 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 17:30 744 Calcium 53500 ug/L 100 36.0 1 06/16/17 10:25 06/16/17 17:30 744 Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 17:30 743 Lead <2.4 ug/L 5.0 2.4 1 06/16/17 10:25 06/16/17 17:30 743 Lithium 10.7 ug/L 10.0 2.9 1 06/16/17 10:25 06/16/17 17:30 743 Molybdenum 36.4 ug/L 20.0 1.3 1 06/16/17 10:25 06/16/17 17:30 743 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/20/17 14:02 744 Arsenic 0.98J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 14:02 744	40-39-3	30 7440-39-3	06/16/17 17:30	06/16/17 10:25	1	0.91	5.0	ug/L	109	Barium
Boron 278 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 17:30 744 Calcium 53500 ug/L 100 36.0 1 06/16/17 10:25 06/16/17 17:30 744 Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 17:30 743 Lead <2.4 ug/L 5.0 2.4 1 06/16/17 10:25 06/16/17 17:30 743 Lithium 10.7 ug/L 10.0 2.9 1 06/16/17 10:25 06/16/17 17:30 743 Molybdenum 36.4 ug/L 20.0 1.3 1 06/16/17 10:25 06/16/17 17:30 743 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/20/17 14:02 744 Arsenic 0.98J ug/L 1.0 0.052 1 06/16/1	40-41-7 B	30 7440-41-7	06/16/17 17:30	06/16/17 10:25	1	0.16	1.0	ug/L	0.24J	Beryllium
Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 17:30 744 Lead <2.4	40-42-8	30 7440-42-8	06/16/17 17:30	06/16/17 10:25	1	3.5	100		278	Boron
Lead <2.4	40-70-2	30 7440-70-2	06/16/17 17:30	06/16/17 10:25	1	36.0	100	ug/L	53500	Calcium
Lithium 10.7 ug/L 10.0 2.9 1 06/16/17 10:25 06/16/17 17:30 743 Molybdenum 36.4 ug/L 20.0 1.3 1 06/16/17 10:25 06/16/17 17:30 743 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 0.026 1 06/16/17 10:25 06/20/17 14:02 744 Arsenic 0.98J ug/L 0.050 0.018 1 06/16/17 10:25 06/20/17 14:02 744 Cadmium 0.018 ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 14:02 744 Chromium 0.22J ug/L 0.054 1 06/16/17 10:25 06/20/17 14:02 744 	40-48-4	30 7440-48-4	06/16/17 17:30	06/16/17 10:25	1	0.73	5.0	ug/L	<0.73	Cobalt
Molybdenum 36.4 ug/L 20.0 1.3 1 06/16/17 10:25 06/16/17 17:30 743 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/20/17 14:02 744 Arsenic 0.98J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 14:02 744 Cadmium <0.018 ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 14:02 744 Chromium 0.22J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 14:02 744	39-92-1	30 7439-92-1	06/16/17 17:30	06/16/17 10:25	1	2.4	5.0	ug/L	<2.4	Lead
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/20/17 14:02 744 Arsenic 0.98J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 14:02 744 Cadmium <0.018 ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 14:02 744 Chromium 0.22J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 14:02 744	39-93-2	30 7439-93-2	06/16/17 17:30	06/16/17 10:25	1	2.9	10.0	ug/L	10.7	Lithium
Antimony	39-98-7	30 7439-98-7	06/16/17 17:30	06/16/17 10:25	1	1.3	20.0	ug/L	36.4	Molybdenum
Arsenic 0.98J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 14:02 744 Cadmium <0.018 ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 14:02 744 Chromium 0.22J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 14:02 744				A 200.8	od: EPA	ation Meth	00.8 Prepa	Method: EPA 2	Analytical	200.8 MET ICPMS
Arsenic 0.98J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 14:02 744 Cadmium <0.018 ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 14:02 744 Chromium 0.22J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 14:02 744	40-36-0	2 7440-36-0	06/20/17 14:02	06/16/17 10:25	1	0.026	1.0	ug/L	<0.026	Antimony
Chromium 0.22J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 14:02 744	40-38-2	2 7440-38-2	06/20/17 14:02	06/16/17 10:25	1	0.052	1.0	•	0.98J	Arsenic
- · · · · · · · · · · · · · · · · · · ·	40-43-9	2 7440-43-9	06/20/17 14:02	06/16/17 10:25	1	0.018	0.50	ug/L	<0.018	Cadmium
Selenium <0.086 ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 14:02 778	40-47-3	2 7440-47-3	06/20/17 14:02	06/16/17 10:25	1	0.054	1.0	ug/L	0.22J	Chromium
	82-49-2	2 7782-49-2	06/20/17 14:02	06/16/17 10:25	1	0.086	1.0	ug/L	<0.086	Selenium
Thallium <0.036 ug/L 1.0 0.036 1 06/16/17 10:25 06/20/17 14:02 744	40-28-0	2 7440-28-0	06/20/17 14:02	06/16/17 10:25	1	0.036	1.0	ug/L	<0.036	Thallium
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470				7470	od: EPA	ation Metho	470 Prepar	Method: EPA 7	Analytical	7470 Mercury
Mercury <0.046 ug/L 0.20 0.046 1 06/19/17 10:08 06/19/17 15:30 743	39-97-6	30 7439-97-6	06/19/17 15:30	06/19/17 10:08	1	0.046	0.20	ug/L	<0.046	Mercury
2540C Total Dissolved Solids Analytical Method: SM 2540C							40C	Method: SM 25	Analytical	2540C Total Dissolved Solids
Total Dissolved Solids 268 mg/L 5.0 5.0 1 06/13/17 09:33		33	06/13/17 09:33		1	5.0	5.0	mg/L	268	Total Dissolved Solids
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B							00-H+B	Method: SM 45	Analytical	4500H+ pH, Electrometric
pH at 25 Degrees C 7.7 Std. Units 0.10 0.10 1 06/12/17 12:46	H6	16	06/12/17 12:46		1	0.10	0.10	Std. Units	7.7	pH at 25 Degrees C
300.0 IC Anions 28 Days Analytical Method: EPA 300.0							00.0	Method: EPA 3	Analytical	300.0 IC Anions 28 Days
Chloride 17.0 mg/L 1.0 0.50 1 06/12/17 19:51 168	887-00-6	51 16887-00-6	06/12/17 19:51		1	0.50	1.0	ma/L	17.0	Chloride
Fluoride 0.34 mg/L 0.20 0.10 1 06/12/17 19:51 169								ŭ		
Sulfate 36.6 mg/L 2.0 1.0 2 06/12/17 20:07 148								-		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Parameters Results Units PQL MDL DF Prepared Analyzed 200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Barium 96.8 ug/L 5.0 0.91 1 06/16/17 16:55 06/20/17 18:18 Beryllium <0.16 ug/L 1.0 0.16 1 06/16/17 16:55 06/20/17 18:18 Boron 24200 ug/L 100 3.5 1 06/16/17 16:55 06/20/17 18:18 Calcium 244000 ug/L 100 36.0 1 06/16/17 16:55 06/20/17 18:18 Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 16:55 06/20/17 18:18 Lead 3.0J ug/L 5.0 2.4 1 06/16/17 16:55 06/20/17 18:18 Lithium 18.6 ug/L 10.0 2.9 1 06/16/17 16:55 06/20/17 18:18 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8		
Barium 96.8 ug/L 5.0 0.91 1 06/16/17 16:55 06/20/17 18:18 Beryllium <0.16 ug/L 1.0 0.16 1 06/16/17 16:55 06/20/17 18:18 Boron 24200 ug/L 100 3.5 1 06/16/17 16:55 06/20/17 18:18 Calcium 244000 ug/L 100 36.0 1 06/16/17 16:55 06/20/17 18:18 Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 16:55 06/20/17 18:18 Lead 3.0J ug/L 5.0 2.4 1 06/16/17 16:55 06/20/17 18:18 Lithium 18.6 ug/L 10.0 2.9 1 06/16/17 16:55 06/20/17 18:18 Molybdenum 2170 ug/L 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	CAS No.	Qual
Beryllium <0.16 ug/L 1.0 0.16 1 06/16/17 16:55 06/20/17 18:18 Boron 24200 ug/L 100 3.5 1 06/16/17 16:55 06/20/17 18:18 Calcium 244000 ug/L 100 36.0 1 06/16/17 16:55 06/20/17 18:18 Cobalt <0.73		
Boron 24200 ug/L 100 3.5 1 06/16/17 16:55 06/20/17 18:18 Calcium 244000 ug/L 100 36.0 1 06/16/17 16:55 06/20/17 18:18 Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 16:55 06/20/17 18:18 Lead 3.0J ug/L 5.0 2.4 1 06/16/17 16:55 06/20/17 18:18 Lithium 18.6 ug/L 10.0 2.9 1 06/16/17 16:55 06/20/17 18:18 Molybdenum 2170 ug/L 20.0 1.3 1 06/16/17 16:55 06/20/17 18:18 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	3 7440-39-3	
Calcium 244000 ug/L 100 36.0 1 06/16/17 16:55 06/20/17 18:18 Cobalt <0.73	3 7440-41-7	
Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 16:55 06/20/17 18:18 Lead 3.0J ug/L 5.0 2.4 1 06/16/17 16:55 06/20/17 18:18 Lithium 18.6 ug/L 10.0 2.9 1 06/16/17 16:55 06/20/17 18:18 Molybdenum 2170 ug/L 20.0 1.3 1 06/16/17 16:55 06/20/17 18:18 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	3 7440-42-8	
Lead 3.0J ug/L 5.0 2.4 1 06/16/17 16:55 06/20/17 18:18 Lithium 18.6 ug/L 10.0 2.9 1 06/16/17 16:55 06/20/17 18:18 Molybdenum 2170 ug/L 20.0 1.3 1 06/16/17 16:55 06/20/17 18:18 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	3 7440-70-2	
Lithium 18.6 ug/L 10.0 2.9 1 06/16/17 16:55 06/20/17 18:18 Molybdenum 2170 ug/L 20.0 1.3 1 06/16/17 16:55 06/20/17 18:18 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	3 7440-48-4	
Molybdenum 2170 ug/L 20.0 1.3 1 06/16/17 16:55 06/20/17 18:18 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	3 7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8	3 7439-93-2	
	3 7439-98-7	
Antimony 0.044J ug/L 1.0 0.026 1 06/16/17 16:55 06/20/17 14:20		
	3 7440-36-0	
Arsenic 1.9 ug/L 1.0 0.052 1 06/16/17 16:55 06/20/17 14:28	3 7440-38-2	
Cadmium 0.24J ug/L 0.50 0.018 1 06/16/17 16:55 06/20/17 14:20	3 7440-43-9	
Chromium 0.12J ug/L 1.0 0.054 1 06/16/17 16:55 06/20/17 14:20	3 7440-47-3	
Selenium <0.086 ug/L 1.0 0.086 1 06/16/17 16:55 06/20/17 14:20	3 7782-49-2	
Thallium 0.10J ug/L 1.0 0.036 1 06/16/17 16:55 06/20/17 14:26	3 7440-28-0	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470		
Mercury <0.046 ug/L 0.20 0.046 1 06/19/17 10:08 06/19/17 15:32	2 7439-97-6	
2540C Total Dissolved Solids Analytical Method: SM 2540C		
Total Dissolved Solids 1220 mg/L 5.0 5.0 1 06/13/17 09:33	3	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B		
pH at 25 Degrees C 7.9 Std. Units 0.10 0.10 1 06/12/17 12:33	3	H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0		
Chloride 19.1 mg/L 2.0 1.0 2 06/13/17 10:54	1 16887-00-6	
Fluoride 0.78 mg/L 0.20 0.10 1 06/12/17 20:38	3 16984-48-8	
Sulfate 784 mg/L 100 50.0 100 06/12/17 20:53		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Sample: S-UMW-3D	Lab ID:	60246023003	Collecte	d: 06/07/17	7 09:40	Received: 06/	08/17 04:10 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	70.5	ug/L	5.0	0.91	1	06/16/17 16:55	06/20/17 18:23	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	06/16/17 16:55	06/20/17 18:23	7440-41-7	
Boron	24200	ug/L	100	3.5	1	06/16/17 16:55	06/20/17 18:23	7440-42-8	
Calcium	231000	ug/L	100	36.0	1	06/16/17 16:55	06/20/17 18:23	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	06/16/17 16:55	06/20/17 18:23	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	06/16/17 16:55	06/20/17 18:23	7439-92-1	
Lithium	16.7	ug/L	10.0	2.9	1	06/16/17 16:55	06/20/17 18:23	7439-93-2	
Molybdenum	3920	ug/L	20.0	1.3	1	06/16/17 16:55	06/20/17 18:23	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	0.030J	ug/L	1.0	0.026	1	06/16/17 16:55	06/20/17 14:31	7440-36-0	
Arsenic	0.23J	ug/L	1.0	0.052	1	06/16/17 16:55	06/20/17 14:31	7440-38-2	
Cadmium	0.53	ug/L	0.50	0.018	1	06/16/17 16:55	06/20/17 14:31	7440-43-9	
Chromium	0.67J	ug/L	1.0	0.054	1	06/16/17 16:55	06/20/17 14:31	7440-47-3	
Selenium	0.17J	ug/L	1.0	0.086	1	06/16/17 16:55	06/20/17 14:31	7782-49-2	
Thallium	0.052J	ug/L	1.0	0.036	1	06/16/17 16:55	06/20/17 14:31	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.046	ug/L	0.20	0.046	1	06/19/17 10:08	06/19/17 15:35	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1130	mg/L	5.0	5.0	1		06/13/17 09:33		
4500H+ pH, Electrometric	Analytical	Method: SM 45	600-H+B						
pH at 25 Degrees C	7.8	Std. Units	0.10	0.10	1		06/12/17 12:28		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	21.5	mg/L	2.0	1.0	2		06/12/17 21:24	16887-00-6	
Fluoride	0.94	mg/L	0.20	0.10	1		06/12/17 21:09	16984-48-8	
Sulfate	664	mg/L	50.0	25.0	50		06/12/17 21:39	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Sample: S-UMW-4D	Lab ID:	Lab ID: 60246023004 Collected: 06/07/17 08:34 Received: 06/08/17 04:10 Ma							
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical I	Method: EPA 20	0.7 Prepa	ration Meth	nod: EP/	A 200.7			
Barium	67.5	ug/L	5.0	0.91	1	06/16/17 16:55	06/20/17 18:25	7440-39-3	
Beryllium	0.20J	ug/L	1.0	0.16	1	06/16/17 16:55	06/20/17 18:25	7440-41-7	В
Boron	21600	ug/L	100	3.5	1	06/16/17 16:55	06/20/17 18:25	7440-42-8	
Calcium	174000	ug/L	100	36.0	1	06/16/17 16:55	06/20/17 18:25	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	06/16/17 16:55	06/20/17 18:25	7440-48-4	
Lead	3.4J	ug/L	5.0	2.4	1	06/16/17 16:55	06/20/17 18:25	7439-92-1	
Lithium	31.9	ug/L	10.0	2.9	1	06/16/17 16:55	06/20/17 18:25	7439-93-2	
Molybdenum	6120	ug/L	20.0	1.3	1	06/16/17 16:55	06/20/17 18:25	7439-98-7	
200.8 MET ICPMS	Analytical I	Method: EPA 20	0.8 Prepa	ration Meth	nod: EP/	A 200.8			
Antimony	0.043J	ug/L	1.0	0.026	1	06/16/17 16:55	06/20/17 14:37	7440-36-0	
Arsenic	< 0.052	ug/L	1.0	0.052	1	06/16/17 16:55	06/20/17 14:37	7440-38-2	
Cadmium	0.91	ug/L	0.50	0.018	1	06/16/17 16:55	06/20/17 14:37	7440-43-9	
Chromium	0.13J	ug/L	1.0	0.054	1	06/16/17 16:55	06/20/17 14:37	7440-47-3	
Selenium	0.12J	ug/L	1.0	0.086	1	06/16/17 16:55	06/20/17 14:37	7782-49-2	
Thallium	0.083J	ug/L	1.0	0.036	1	06/16/17 16:55	06/20/17 14:37	7440-28-0	
7470 Mercury	Analytical I	Method: EPA 74	170 Prepai	ration Meth	od: EPA	7470			
Mercury	<0.046	ug/L	0.20	0.046	1	06/19/17 10:08	06/19/17 15:37	7439-97-6	
2540C Total Dissolved Solids	Analytical I	Method: SM 25	40C						
Total Dissolved Solids	947	mg/L	5.0	5.0	1		06/13/17 09:34		
4500H+ pH, Electrometric	Analytical I	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.1	Std. Units	0.10	0.10	1		06/12/17 12:24		H6
300.0 IC Anions 28 Days	Analytical I	Method: EPA 30	0.00						
Chloride	26.6	mg/L	2.0	1.0	2		06/12/17 22:56	16887-00-6	
Fluoride	0.70	mg/L	0.20	0.10	1		06/12/17 22:41	16984-48-8	
Sulfate	439	mg/L	50.0	25.0	50		06/12/17 21:55	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Sample: S-UMW-5D	Lab ID:	60246023005	Collected: 06/07/17 08:45			Received: 06/	atrix: Water		
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Barium	284	ug/L	5.0	0.91	1	06/16/17 16:55	06/20/17 18:27	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	06/16/17 16:55	06/20/17 18:27	7440-41-7	
Boron	7240	ug/L	100	3.5	1	06/16/17 16:55	06/20/17 18:27	7440-42-8	
Calcium	82900	ug/L	100	36.0	1	06/16/17 16:55	06/20/17 18:27	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	06/16/17 16:55	06/20/17 18:27	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	06/16/17 16:55	06/20/17 18:27	7439-92-1	
Lithium	24.7	ug/L	10.0	2.9	1	06/16/17 16:55	06/20/17 18:27	7439-93-2	
Molybdenum	270	ug/L	20.0	1.3	1	06/16/17 16:55	06/20/17 18:27	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Antimony	<0.026	ug/L	1.0	0.026	1	06/16/17 16:55	06/20/17 14:40	7440-36-0	
Arsenic	0.41J	ug/L	1.0	0.052	1	06/16/17 16:55	06/20/17 14:40	7440-38-2	
Cadmium	0.028J	ug/L	0.50	0.018	1	06/16/17 16:55	06/20/17 14:40	7440-43-9	
Chromium	0.26J	ug/L	1.0	0.054	1	06/16/17 16:55	06/20/17 14:40	7440-47-3	
Selenium	0.11J	ug/L	1.0	0.086	1	06/16/17 16:55	06/20/17 14:40	7782-49-2	
Thallium	0.038J	ug/L	1.0	0.036	1	06/16/17 16:55	06/20/17 14:40	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.046	ug/L	0.20	0.046	1	06/19/17 10:08	06/19/17 15:39	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	384	mg/L	5.0	5.0	1		06/13/17 09:34		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	7.3	Std. Units	0.10	0.10	1		06/12/17 12:26		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00						
Chloride	27.6	mg/L	2.0	1.0	2		06/12/17 23:27	16887-00-6	
Fluoride	0.53	mg/L	0.20	0.10	1		06/12/17 23:12	16984-48-8	
Sulfate	40.0	mg/L	5.0	2.5	5		06/13/17 11:09	14808-79-8	
Juliate	40.0	ilig/L	5.0	2.3	J		00/13/17 11.09	14000-13-0	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Danie ve ete ve		Lab ID: 60246023006 Collected: 06/07/17 08:00 Received: 06/08/17 04:10 Mat							
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 20	00.7 Prepa	ration Meth	od: EP	A 200.7			
Barium	104	ug/L	5.0	0.91	1	06/16/17 16:55	06/20/17 18:30	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	06/16/17 16:55	06/20/17 18:30	7440-41-7	
Boron	357	ug/L	100	3.5	1	06/16/17 16:55	06/20/17 18:30	7440-42-8	
Calcium	55700	ug/L	100	36.0	1	06/16/17 16:55	06/20/17 18:30	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	06/16/17 16:55	06/20/17 18:30	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	06/16/17 16:55	06/20/17 18:30	7439-92-1	
Lithium	7.2J	ug/L	10.0	2.9	1	06/16/17 16:55	06/20/17 18:30	7439-93-2	
Molybdenum	34.9	ug/L	20.0	1.3	1	06/16/17 16:55	06/20/17 18:30	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 20	00.8 Prepa	ration Meth	od: EP	A 200.8			
Antimony	0.034J	ug/L	1.0	0.026	1	06/16/17 16:55	06/20/17 14:53	7440-36-0	
Arsenic	0.93J	ug/L	1.0	0.052	1	06/16/17 16:55	06/20/17 14:53	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	06/16/17 16:55	06/20/17 14:53	7440-43-9	
Chromium	0.069J	ug/L	1.0	0.054	1	06/16/17 16:55	06/20/17 14:53	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	06/16/17 16:55	06/20/17 14:53	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	06/16/17 16:55	06/20/17 14:53	7440-28-0	
7470 Mercury	Analytical	Method: EPA 74	470 Prepai	ration Meth	od: EPA	7470			
Mercury	<0.046	ug/L	0.20	0.046	1	06/19/17 10:08	06/19/17 15:41	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	282	mg/L	5.0	5.0	1		06/13/17 09:34		
4500H+ pH, Electrometric	Analytical	Method: SM 45	00-H+B						
pH at 25 Degrees C	8.9	Std. Units	0.10	0.10	1		06/09/17 12:43		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 30	0.00						
Chloride	17.0	mg/L	1.0	0.50	1		06/12/17 23:43	16887-00-6	
Fluoride	0.36	mg/L	0.20	0.10	1		06/12/17 23:43	16984-48-8	
Sulfate	37.1	mg/L	2.0	1.0	2		06/12/17 23:58	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Sample: S-UMW-FB-1	Lab ID:	60246023007	Collected	d: 06/07/1	7 08:32	Received: 06/	08/17 04:10 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	<0.91	ug/L	5.0	0.91	1	06/16/17 16:55	06/20/17 18:32	7440-39-3	
Beryllium	0.18J	ug/L	1.0	0.16	1	06/16/17 16:55	06/20/17 18:32	7440-41-7	В
Boron	44.4J	ug/L	100	3.5	1	06/16/17 16:55	06/20/17 18:32	7440-42-8	
Calcium	<36.0	ug/L	100	36.0	1	06/16/17 16:55	06/20/17 18:32	7440-70-2	
Cobalt	< 0.73	ug/L	5.0	0.73	1	06/16/17 16:55	06/20/17 18:32	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	06/16/17 16:55	06/20/17 18:32	7439-92-1	
Lithium	<2.9	ug/L	10.0	2.9	1	06/16/17 16:55	06/20/17 18:32	7439-93-2	
Molybdenum	<1.3	ug/L	20.0	1.3	1	06/16/17 16:55	06/20/17 18:32	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.026	ug/L	1.0	0.026	1	06/16/17 16:55	06/20/17 14:50	7440-36-0	
Arsenic	<0.052	ug/L	1.0	0.052	1	06/16/17 16:55	06/20/17 14:50	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	06/16/17 16:55	06/20/17 14:50	7440-43-9	
Chromium	0.11J	ug/L	1.0	0.054	1	06/16/17 16:55	06/20/17 14:50	7440-47-3	
Selenium	<0.086	ug/L	1.0	0.086	1	06/16/17 16:55	06/20/17 14:50	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	06/16/17 16:55	06/20/17 14:50	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	7470			
Mercury	<0.046	ug/L	0.20	0.046	1	06/19/17 10:08	06/19/17 15:43	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		06/13/17 09:35		
4500H+ pH, Electrometric	Analytical	Method: SM 45	600-H+B						
pH at 25 Degrees C	5.3	Std. Units	0.10	0.10	1		06/12/17 12:21		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	<0.50	mg/L	1.0	0.50	1		06/13/17 00:29	16887-00-6	
Fluoride	<0.10	mg/L	0.20	0.10	1		06/13/17 00:29	16984-48-8	
Sulfate	<0.50	mg/L	1.0	0.50	1		06/13/17 00:29		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Barium 332 ug/L 5.0 0.91 1 06/14/17 17:00 06/19/17 17:12 7440-39-3 Beryllium 0.36J ug/L 1.0 0.16 1 06/14/17 17:00 06/19/17 17:12 7440-41-7 B Boron 179 ug/L 100 3.5. 1 06/14/17 17:00 06/19/17 17:12 7440-42-8 Calcium 118000 ug/L 100 3.6.0 1 06/14/17 17:00 06/19/17 17:12 7440-42-8 Calcium 118000 ug/L 100 3.6.0 1 06/14/17 17:00 06/19/17 17:12 7440-42-8 Calcium 13.0 ug/L 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 Calcium 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 Calcium 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 Calcium 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 Calcium 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-93-7 Calcium 13.0 ug/L 10.0 0.026 1 06/14/17 17:00 06/19/17 17:12 7439-93-7 Calcium 13.0 ug/L 10.0 0.026 1 06/14/17 17:00 06/16/17 22:58 7440-36-0 Calcium 13.0 ug/L 10.0 0.026 1 06/14/17 17:00 06/16/17 22:58 7440-36-0 Calcium 13.0 ug/L 10.0 0.026 1 06/14/17 17:00 06/16/17 22:58 7440-38-0 Calcium 20.16 ug/L 20.0 1.1 0 0.054 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.18 ug/L 20.0 0.054 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 1.0 0.054 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 1.0 0.054 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.086 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.086 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.086 1 06/14/1	Sample: S-BMW-1D	Lab ID:	60245851001	Collected	d: 06/06/1	7 15:00	Received: 06/	/07/17 04:25 Ma	atrix: Water	
Barium 332 ug/L 5.0 0.91 1 06/14/17 17:00 06/19/17 17:12 7440-39-3 Beryllium 0.36J ug/L 1.0 0.16 1 06/14/17 17:00 06/19/17 17:12 7440-41-7 B Boron 179 ug/L 100 3.5. 1 06/14/17 17:00 06/19/17 17:12 7440-42-8 Calcium 118000 ug/L 100 3.6.0 1 06/14/17 17:00 06/19/17 17:12 7440-42-8 Calcium 118000 ug/L 100 3.6.0 1 06/14/17 17:00 06/19/17 17:12 7440-42-8 Calcium 13.0 ug/L 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 Calcium 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 Calcium 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 Calcium 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 Calcium 13.0 ug/L 10.0 2.9 1 06/14/17 17:00 06/19/17 17:12 7439-93-7 Calcium 13.0 ug/L 10.0 0.026 1 06/14/17 17:00 06/19/17 17:12 7439-93-7 Calcium 13.0 ug/L 10.0 0.026 1 06/14/17 17:00 06/16/17 22:58 7440-36-0 Calcium 13.0 ug/L 10.0 0.026 1 06/14/17 17:00 06/16/17 22:58 7440-36-0 Calcium 13.0 ug/L 10.0 0.026 1 06/14/17 17:00 06/16/17 22:58 7440-38-0 Calcium 20.16 ug/L 20.0 1.1 0 0.054 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.18 ug/L 20.0 0.054 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 1.0 0.054 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 1.0 0.054 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.046 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.086 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.086 1 06/14/17 17:00 06/16/17 22:58 7440-39-0 Calcium 20.086 ug/L 20.0 0.086 1 06/14/1	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium	200.7 Metals, Total	Analytica	Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Boron	Barium	332	ug/L	5.0	0.91	1	06/14/17 17:00	06/19/17 17:12	7440-39-3	
Calcium 118000 ug/L 100 36.0 1 06/14/17 17:00 06/19/17 17:12 7440-70-2 Cobalt <0.73 ug/L 5.0 0.73 1 06/14/17 17:00 06/19/17 17:12 7440-70-2 7440-48-4 Lead <2.4 ug/L 5.0 2.4 1 06/14/17 17:00 06/19/17 17:12 7439-92-1 400	Beryllium	0.36J	ug/L	1.0	0.16	1	06/14/17 17:00	06/19/17 17:12	7440-41-7	В
Cobalt	Boron	179	ug/L	100	3.5	1	06/14/17 17:00	06/19/17 17:12	7440-42-8	
	Calcium	118000	ug/L	100	36.0	1	06/14/17 17:00	06/19/17 17:12	7440-70-2	
Molybdenum	Cobalt	<0.73	ug/L	5.0	0.73	1	06/14/17 17:00	06/19/17 17:12	7440-48-4	
Molybdenum 41.3 ug/L 20.0 1.3 1 06/14/17 17:00 06/19/17 17:12 7439-98-7	Lead	<2.4	ug/L	5.0	2.4	1	06/14/17 17:00	06/19/17 17:12	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.026 40.026 40.026 40.026 40.026 40.026 40.041/17 17:00 60/14/17 17:00 60/16/17 22:58 7440-36-0 60/16/17 22:58 7440-38-2 Cadmium 40.018 40.018<!--</td--><td>Lithium</td><td>13.0</td><td>ug/L</td><td>10.0</td><td>2.9</td><td>1</td><td>06/14/17 17:00</td><td>06/19/17 17:12</td><td>7439-93-2</td><td>В</td>	Lithium	13.0	ug/L	10.0	2.9	1	06/14/17 17:00	06/19/17 17:12	7439-93-2	В
Antimony	Molybdenum	<1.3	ug/L	20.0	1.3	1	06/14/17 17:00	06/19/17 17:12	7439-98-7	
Arsenic 0.16J ug/L 1.0 0.052 1 06/14/17 17:00 06/16/17 22:58 7440-38-2 Cadmium	200.8 MET ICPMS	Analytica	Method: EPA 2	00.8 Prepa	aration Meth	nod: EP	A 200.8			
Arsenic 0.16J ug/L 1.0 0.052 1 06/14/17 17:00 06/16/17 22:58 7440-38-2 Cadmium	Antimony	<0.026	ug/L	1.0	0.026	1	06/14/17 17:00	06/16/17 22:58	7440-36-0	
Chromium O.16J ug/L O.054 1 06/14/17 17:00 06/16/17 22:58 7440-47-3 Selenium O.086 ug/L O.086/If 17:22:58 T440-47-3 T440-48-8	Arsenic	0.16J	•	1.0	0.052	1	06/14/17 17:00	06/16/17 22:58	7440-38-2	
Selenium	Cadmium	<0.018	ug/L	0.50	0.018	1	06/14/17 17:00	06/16/17 22:58	7440-43-9	
Thallium	Chromium	0.16J	ug/L	1.0	0.054	1	06/14/17 17:00	06/16/17 22:58	7440-47-3	
Analytical Method: EPA 7470 Preparation Method: EPA 7470 Analytical Method: EPA 7470 Preparation Method: EPA 7470 Analytical Method: EPA 7470 Preparation Method: EPA 7470 Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 2540C Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.2 Std. Units 0.10 0.10 1 06/09/17 12:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.6 mg/L 1.0 0.50 1 06/08/17 22:30 16887-00-6 Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	Selenium	<0.086	ug/L	1.0	0.086	1	06/14/17 17:00	06/16/17 22:58	7782-49-2	
Mercury <0.046 ug/L 0.20 0.046 1 06/16/17 09:58 06/16/17 15:14 7439-97-6	Thallium	<0.036	ug/L	1.0	0.036	1	06/14/17 17:00	06/16/17 22:58	7440-28-0	
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 475 mg/L 5.0 5.0 1 06/09/17 07:41 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.2 Std. Units 0.10 0.10 1 06/09/17 12:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.6 mg/L 1.0 0.50 1 06/08/17 22:30 16887-00-6 Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	7470 Mercury	Analytica	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Total Dissolved Solids 475 mg/L 5.0 5.0 1 06/09/17 07:41 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.2 Std. Units 0.10 0.10 1 06/09/17 12:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.6 mg/L 1.0 0.50 1 06/08/17 22:30 16887-00-6 Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	Mercury	<0.046	ug/L	0.20	0.046	1	06/16/17 09:58	06/16/17 15:14	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.2 Std. Units 0.10 0.10 1 06/09/17 12:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.6 mg/L 1.0 0.50 1 06/08/17 22:30 16887-00-6 Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	2540C Total Dissolved Solids	Analytica	Method: SM 25	540C						
pH at 25 Degrees C 7.2 Std. Units 0.10 0.10 1 06/09/17 12:30 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.6 mg/L 1.0 0.50 1 06/08/17 22:30 16887-00-6 Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	Total Dissolved Solids	475	mg/L	5.0	5.0	1		06/09/17 07:41		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 5.6 mg/L 1.0 0.50 1 06/08/17 22:30 16887-00-6 Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	4500H+ pH, Electrometric	Analytica	Method: SM 45	500-H+B						
Chloride 5.6 mg/L 1.0 0.50 1 06/08/17 22:30 16887-00-6 Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	pH at 25 Degrees C	7.2	Std. Units	0.10	0.10	1		06/09/17 12:30		H6
Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	300.0 IC Anions 28 Days	Analytica	Method: EPA 3	0.00						
Fluoride 0.24 mg/L 0.20 0.10 1 06/08/17 22:30 16984-48-8	Chloride	5.6	mg/L	1.0	0.50	1		06/08/17 22:30	16887-00-6	
	Fluoride		ū			1		06/08/17 22:30	16984-48-8	
	Sulfate	36.1	mg/L	5.0	2.5	5				



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Sample: S-BMW-3D	Lab ID:	60245851002	Collecte	d: 06/05/17	7 13:26	Received: 06/	07/17 04:25 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Barium	665	ug/L	5.0	0.91	1	06/14/17 17:00	06/19/17 17:19	7440-39-3	
Beryllium	0.38J	ug/L	1.0	0.16	1	06/14/17 17:00	06/19/17 17:19	7440-41-7	В
Boron	42.4J	ug/L	100	3.5	1	06/14/17 17:00	06/19/17 17:19	7440-42-8	
Calcium	97100	ug/L	100	36.0	1	06/14/17 17:00	06/19/17 17:19	7440-70-2	
Cobalt	< 0.73	ug/L	5.0	0.73	1	06/14/17 17:00	06/19/17 17:19	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	06/14/17 17:00	06/19/17 17:19	7439-92-1	
Lithium	22.8	ug/L	10.0	2.9	1	06/14/17 17:00	06/19/17 17:19	7439-93-2	В
Molybdenum	<1.3	ug/L	20.0	1.3	1	06/14/17 17:00	06/19/17 17:19	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	aration Meth	od: EP	A 200.8			
Antimony	<0.026	ug/L	1.0	0.026	1	06/14/17 17:00	06/16/17 23:01	7440-36-0	
Arsenic	< 0.052	ug/L	1.0	0.052	1	06/14/17 17:00	06/16/17 23:01	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	06/14/17 17:00	06/16/17 23:01	7440-43-9	
Chromium	0.17J	ug/L	1.0	0.054	1	06/14/17 17:00	06/16/17 23:01	7440-47-3	
Selenium	< 0.086	ug/L	1.0	0.086	1	06/14/17 17:00	06/16/17 23:01	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	06/14/17 17:00	06/16/17 23:01	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.046	ug/L	0.20	0.046	1	06/16/17 09:58	06/16/17 15:20	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
Total Dissolved Solids	407	mg/L	5.0	5.0	1		06/08/17 08:01		
4500H+ pH, Electrometric	Analytical	Method: SM 45	600-H+B						
pH at 25 Degrees C	7.2	Std. Units	0.10	0.10	1		06/07/17 16:13		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	8.1	mg/L	1.0	0.50	1		06/08/17 23:32	16887-00-6	
Fluoride	0.27	mg/L	0.20	0.10	1		06/08/17 23:32		
Sulfate	26.1	mg/L	2.0	1.0	2		06/08/17 23:47		



ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Barium 112 ug/L 5.0 0.91 1 06/16/17 10:25 06/16/17 16:44 7440-39-3 Beryllium 0.26J ug/L 1.0 0.16 1 06/16/17 10:25 06/16/17 16:44 7440-41-7 Boron 781 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 16:44 7440-70-2 Cobalt 40.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7440-70-2 Cobalt 40.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7440-8-4 Lead 42.4 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 Lithium 13.2 ug/L 10.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-93-2 Molybdenum 115 ug/L 20.0 1.3 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.030J ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.030J ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.056 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.056 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.056 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.056 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.056 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.056 1 06/16/17 10:25 06/20/17 13:03 7440-38-9 Chromium 0.10J ug/L 1.0 0.056 1 06/16/17 10:25 06/20/17	Sample: S-UMW-6D	Lab ID:	60245851003	Collected	d: 06/06/1	7 15:00	Received: 06/	/07/17 04:25 Ma	atrix: Water	
Barium 112 ug/L 5.0 0.91 1 06/16/17 10:25 06/16/17 16:44 7440-39-3 Beryllium 0.26J ug/L 1.0 0.16 1 06/16/17 10:25 06/16/17 16:44 7440-41-7 BB oron 781 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 16:44 7440-42-8 Calcium 69600 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 16:44 7440-42-8 Cobalt 40.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7440-42-8 Cobalt 40.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7440-48-4 Lead 42.4 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 Lithium 13.2 ug/L 10.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 10:0 0.99 1 06/16/17 10:25	Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Beryllium 0.26J ug/L 1.0 0.16 l 1 06/16/17 10:25 06/16/17 16:44 740-41-7 BB Oron 781 ug/L 100 3.5 l 1 06/16/17 10:25 06/16/17 10:44 740-42-8 06/16/17 10:44 7440-42-8 06/16/17 10:25 06/16/17 16:44 7440-42-8 06/16/17 10:25 06/16/17 16:44 7440-42-8 06/16/17 10:25 06/16/17 10:25 06/16/17 16:44 7440-42-8 06/16/17 10:25 06/16/17 10:25 06/16/17 16:44 7440-82-8 06/16/17 10:25 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 00.0 2.9 1 06/16/17 10:25 06/16/17	200.7 Metals, Total	Analytical	l Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	A 200.7			
Boron 781 ug/L 100 3.5 1 06/16/17 10:25 06/16/17 16:44 7440-42-8 Calcium 69600 ug/L 100 36.5 1 06/16/17 10:25 06/16/17 16:44 7440-70-2 Calcium 69600 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7440-70-2 Calcium 69600 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7440-740-84 Calcium 69600 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 Calcium 69600 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 Calcium 1 1 1 1 1 1 1 1 1 1 1 1 1 1 06/16/17 10:25 06/16/17 16:44 7439-92-1 1 <t< td=""><td>Barium</td><td>112</td><td>ug/L</td><td>5.0</td><td>0.91</td><td>1</td><td>06/16/17 10:25</td><td>06/16/17 16:44</td><td>7440-39-3</td><td></td></t<>	Barium	112	ug/L	5.0	0.91	1	06/16/17 10:25	06/16/17 16:44	7440-39-3	
Calcium 69600 ug/L 100 36.0 1 06/16/17 10:25 06/16/17 16:44 7440-70-2 Cobalt <0.73	Beryllium	0.26J	ug/L	1.0	0.16	1	06/16/17 10:25	06/16/17 16:44	7440-41-7	В
Cobalt <0.73 ug/L 5.0 0.73 1 06/16/17 10:25 06/16/17 16:44 7440-48-4 7440-48-4 Lead <2.4 ug/L 5.0 2.4 1 06/16/17 10:25 06/16/17 16:44 7439-99:1 1 1 06/16/17 10:25 06/16/17 16:44 7439-99:2 1 06/16/17 10:25 06/16/17 16:44 7439-99:2 1 06/16/17 10:25 06/16/17 16:44 7439-99:2 1 06/16/17 10:25 06/16/17 16:44 7439-99:2 1 06/16/17 10:25 06/16/17 16:44 7439-99:2 1 06/16/17 10:25 06/16/17 16:44 7439-99:2 1 06/16/17 10:25 06/16/17 16:44 7439-99:2 1 06/16/17 10:25 06/16/17 10:25 06/20/17 13:03 7440-36-0 0 0.0 0.0 1 06/16/17 10:25 06/20/17 13:03 7440-36-0 0 0.0 0.0 0.0 0.0 0.0 0.0 06/16/17 10:25 06/20/17 13:03 7440-36-0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Boron	781	ug/L	100	3.5	1	06/16/17 10:25	06/16/17 16:44	7440-42-8	
Lead	Calcium	69600	ug/L	100	36.0	1	06/16/17 10:25	06/16/17 16:44	7440-70-2	
Lithium 13.2 ug/L 10.0 2.9 1 06/16/17 10:25 06/16/17 16:44 7439-93-2 Molybdenum 115 ug/L 20.0 1.3 1 06/16/17 10:25 06/16/17 16:44 7439-93-2 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/20/17 13:03 7440-36-0 Arsenic 0.14J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 13:03 7440-38-2 Cadmium 0.030J ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 13:03 7440-39-9 Chromium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Selenium <0.086 ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Selenium 4.0086 ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Selenium 4.0086 ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Selenium 4.0086 ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Selenium 4.0086 ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Selenium 4.0086 ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-28-0 B 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 4.0046 ug/L 0.20 0.046 1 06/22/17 16:50 06/23/17 09:12 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.0 Std. Units 0.10 0.10 0.10 1 06/09/17 07:41 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300. Chloride 19.5 mg/L 2.0 1.0 2 0.01 0.0 0.00/17 0.00 06/09/17 00:00 16/09/	Cobalt	<0.73	ug/L	5.0	0.73	1	06/16/17 10:25	06/16/17 16:44	7440-48-4	
Molybdenum 115 ug/L 20.0 1.3 1 06/16/17 10:25 06/16/17 16:44 7439-98-7 200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony <0.026 ug/L 1.0 0.026 1 06/16/17 10:25 06/20/17 13:03 7440-36-0 Arsenic 0.14J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 13:03 7440-38-2 Cadmium 0.030J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-38-2 Cadmium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-38-2 Cadmium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Chromium 0.10J ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Chromium 0.10J 0.036 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Chromium Chromium 0.00<	Lead	<2.4	ug/L	5.0	2.4	1	06/16/17 10:25	06/16/17 16:44	7439-92-1	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Antimony 40.026 40/L 1.0 0.026 1 06/16/17 10:25 06/20/17 13:03 7440-36-0 Arsenic 0.14J 40/L 1.0 0.052 1 06/16/17 10:25 06/20/17 13:03 7440-38-2 Cadmium 0.030J 40/L 0.50 0.018 1 06/16/17 10:25 06/20/17 13:03 7440-38-2 Cadmium 0.10J 40/L 0.50 0.018 1 06/16/17 10:25 06/20/17 13:03 7440-34-9 Chromium 0.10J 40/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-47-3 Selenium 40.086 40/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-47-3 Selenium 40.086 40/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-47-3 Selenium 40.086 40/L 40.086 40/L 40.086 40/L 40.086 40/L 40.086 40/L 40.09/L 40.09/L 40.00/L 40.00/L<td>Lithium</td><td>13.2</td><td>ug/L</td><td>10.0</td><td>2.9</td><td>1</td><td>06/16/17 10:25</td><td>06/16/17 16:44</td><td>7439-93-2</td><td></td>	Lithium	13.2	ug/L	10.0	2.9	1	06/16/17 10:25	06/16/17 16:44	7439-93-2	
Antimony	Molybdenum	115	ug/L	20.0	1.3	1	06/16/17 10:25	06/16/17 16:44	7439-98-7	
Arsenic	200.8 MET ICPMS	Analytical	l Method: EPA 2	00.8 Prepa	ration Meth	nod: EP	A 200.8			
Arsenic 0.14J ug/L 1.0 0.052 1 06/16/17 10:25 06/20/17 13:03 7440-38-2 Cadmium 0.030J ug/L 0.50 0.018 1 06/16/17 10:25 06/20/17 13:03 7440-43-9 Chromium 0.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-47-3 Selenium	Antimony	<0.026	ug/L	1.0	0.026	1	06/16/17 10:25	06/20/17 13:03	7440-36-0	
Chromium O.10J ug/L 1.0 0.054 1 06/16/17 10:25 06/20/17 13:03 7440-47-3 Selenium 4.0086 ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7440-47-3 Thallium O.11J ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7782-49-2 Thallium O.11J ug/L 1.0 0.036 1 06/16/17 10:25 06/20/17 13:03 7440-28-0 B 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 4.0046 ug/L 0.20 0.046 1 06/22/17 16:50 06/23/17 09:12 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 353 mg/L 5.0 5.0 1 06/09/17 07:41 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.0 Std. Units 0.10 0.10 1 06/09/17 12:31 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	Arsenic	0.14J	Ū	1.0	0.052	1	06/16/17 10:25	06/20/17 13:03	7440-38-2	
Selenium Co.086 Ug/L 1.0 0.086 1 06/16/17 10:25 06/20/17 13:03 7782-49-2 1.0 0.036 1 06/16/17 10:25 06/20/17 13:03 7440-28-0 B	Cadmium	0.030J	ug/L	0.50	0.018	1	06/16/17 10:25	06/20/17 13:03	7440-43-9	
Thallium 0.11J ug/L 1.0 0.036 1 06/16/17 10:25 06/20/17 13:03 7440-28-0 B 7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 EPA 7470 Value Val	Chromium	0.10J	ug/L	1.0	0.054	1	06/16/17 10:25	06/20/17 13:03	7440-47-3	
7470 Mercury Analytical Method: EPA 7470 Preparation Method: EPA 7470 Mercury 40.046 ug/L 0.20 0.046 1 06/22/17 16:50 06/23/17 09:12 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 353 mg/L 5.0 5.0 1 06/09/17 07:41 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B PH at 25 Degrees C 7.0 Std. Units 0.10 0.10 1 06/09/17 12:31 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	Selenium	<0.086	ug/L	1.0	0.086	1	06/16/17 10:25	06/20/17 13:03	7782-49-2	
Mercury <0.046 ug/L 0.20 0.046 1 06/22/17 16:50 06/23/17 09:12 7439-97-6 2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 353 mg/L 5.0 5.0 1 06/09/17 07:41 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.0 Std. Units 0.10 0.10 1 06/09/17 12:31 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 60/09/17 00:03 16984-48-8	Thallium	0.11J	ug/L	1.0	0.036	1	06/16/17 10:25	06/20/17 13:03	7440-28-0	В
2540C Total Dissolved Solids Analytical Method: SM 2540C Total Dissolved Solids 353 mg/L 5.0 5.0 1 06/09/17 07:41 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.0 Std. Units 0.10 0.10 1 06/09/17 12:31 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Total Dissolved Solids 353 mg/L 5.0 5.0 1 06/09/17 07:41 4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.0 Std. Units 0.10 0.10 1 06/09/17 12:31 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	Mercury	<0.046	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:12	7439-97-6	
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B pH at 25 Degrees C 7.0 Std. Units 0.10 0.10 1 06/09/17 12:31 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
pH at 25 Degrees C 7.0 Std. Units 0.10 0.10 1 06/09/17 12:31 H6 300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	Total Dissolved Solids	353	mg/L	5.0	5.0	1		06/09/17 07:41		
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	4500H+ pH, Electrometric	Analytical	Method: SM 45	500-H+B						
Chloride 19.5 mg/L 2.0 1.0 2 06/09/17 20:59 16887-00-6 Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	pH at 25 Degrees C	7.0	Std. Units	0.10	0.10	1		06/09/17 12:31		H6
Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Fluoride 0.37 mg/L 0.20 0.10 1 06/09/17 00:03 16984-48-8	Chloride	19.5	mg/L	2.0	1.0	2		06/09/17 20:59	16887-00-6	
S Control of the cont	Fluoride	0.37	Ū		0.10			06/09/17 00:03	16984-48-8	
Juliate J.O	Sulfate	31.8	mg/L	5.0	2.5	5				



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 481141 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60245851001, 60245851002

METHOD BLANK: 1970874 Matrix: Water

Associated Lab Samples: 60245851001, 60245851002

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L <0.046 0.20 0.046 06/16/17 14:27

LABORATORY CONTROL SAMPLE: 1970875

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 4.9 98 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1970876 1970877

MS MSD 60245849009 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 5 5 4.6 4.7 75-125 2 20 Mercury ug/L < 0.046 91 93



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 481494 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

METHOD BLANK: 1972826 Matrix: Water

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

Blank Reporting

Parameter Units Result Limit MDL Analyzed Qualifiers

Mercury ug/L <0.046 0.20 0.046 06/19/17 14:50

LABORATORY CONTROL SAMPLE: 1972827

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 4.4 88 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1972828 1972829

MS MSD 60246016001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 5 5 4.5 75-125 3 20 Mercury ug/L < 0.046 4.6 92 90

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 482248 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60245851003

METHOD BLANK: 1975364 Matrix: Water

Associated Lab Samples: 60245851003

ParameterUnitsBlank Reporting ResultReporting LimitMDLAnalyzedQualifiersMercuryug/L<0.046</td>0.200.04606/23/17 09:08

LABORATORY CONTROL SAMPLE: 1975365

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 4.6 92 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1975366 1975367

MS MSD 60245851003 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual 5 5 75-125 9 20 Mercury ug/L < 0.046 4.8 4.4 95 87

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1975368 1975369

MS MSD MS MSD MS MSD 60246227005 Spike Spike % Rec Max % Rec **RPD** RPD Parameter Units Result Conc. Conc. Result Result % Rec Limits Qual 5 Mercury ug/L 0.054J 5 4.6 4.3 90 85 75-125 6 20

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 481055 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60245851001, 60245851002

METHOD BLANK: 1970475 Matrix: Water

Associated Lab Samples: 60245851001, 60245851002

_		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	06/19/17 16:31	
Beryllium	ug/L	0.49J	1.0	0.16	06/19/17 16:31	
Boron	ug/L	<3.5	100	3.5	06/19/17 16:31	
Calcium	ug/L	36.1J	100	36.0	06/19/17 16:31	
Cobalt	ug/L	< 0.73	5.0	0.73	06/19/17 16:31	
Lead	ug/L	<2.4	5.0	2.4	06/19/17 16:31	
Lithium	ug/L	3.3J	10.0	2.9	06/19/17 16:31	
Molybdenum	ug/L	<1.3	20.0	1.3	06/19/17 16:31	

.	11.5	Spike	LCS	LCS	% Rec	0 ""
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	1000	1020	102	85-115	
Beryllium	ug/L	1000	1010	101	85-115	
Boron	ug/L	1000	901	90	85-115	
Calcium	ug/L	10000	9440	94	85-115	
Cobalt	ug/L	1000	1050	105	85-115	
Lead	ug/L	1000	1070	107	85-115	
Lithium	ug/L	1000	999	100	85-115	
Molybdenum	ug/L	1000	1070	107	85-115	

MATRIX SPIKE SAMPLE:	1970477						
Damanatan	L be to	60245849006	Spike	MS	MS	% Rec	0 1:0
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	249	1000	1280	103	70-130	
Beryllium	ug/L	0.52J	1000	1020	102	70-130	
Boron	ug/L	696	1000	1640	94	70-130	
Calcium	ug/L	128000	10000	137000	99	70-130	
Cobalt	ug/L	2.2J	1000	1030	102	70-130	
Lead	ug/L	<2.4	1000	1050	105	70-130	
Lithium	ug/L	33.0	1000	1080	104	70-130	
Molybdenum	ug/L	2.6J	1000	1090	109	70-130	

MATRIX SPIKE SAMPLE:	1970478						
		60245849009	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	291	1000	1320	103	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

MATRIX SPIKE SAMPLE:	1970478						
_		60245849009	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Beryllium	ug/L	0.28J	1000	1020	102	70-130	
Boron	ug/L	80.0J	1000	1010	93	70-130	
Calcium	ug/L	128000	10000	137000	96	70-130	
Cobalt	ug/L	1.6J	1000	1020	102	70-130	
Lead	ug/L	<2.4	1000	1040	104	70-130	
Lithium	ug/L	34.8	1000	1080	105	70-130	
Molybdenum	ug/L	1.6J	1000	1080	108	70-130	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 481289 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60245851003, 60246023001

METHOD BLANK: 1971503 Matrix: Water

Associated Lab Samples: 60245851003, 60246023001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	06/16/17 16:42	
Beryllium	ug/L	0.38J	1.0	0.16	06/16/17 16:42	
Boron	ug/L	<3.5	100	3.5	06/16/17 16:42	
Calcium	ug/L	<36.0	100	36.0	06/16/17 16:42	
Cobalt	ug/L	< 0.73	5.0	0.73	06/16/17 16:42	
Lead	ug/L	<2.4	5.0	2.4	06/16/17 16:42	
Lithium	ug/L	<2.9	10.0	2.9	06/16/17 16:42	
Molybdenum	ug/L	<1.3	20.0	1.3	06/16/17 16:42	

LABORATORY CONTROL SAMPLE	: 1971504	Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Barium	ug/L	1000	1060	106	85-115	
Beryllium	ug/L	1000	1060	106	85-115	
Boron	ug/L	1000	942	94	85-115	
Calcium	ug/L	10000	9650	97	85-115	
Cobalt	ug/L	1000	1070	107	85-115	
Lead	ug/L	1000	1080	108	85-115	
Lithium	ug/L	1000	1060	106	85-115	
Molybdenum	ug/L	1000	1080	108	85-115	

MATRIX SPIKE & MATRIX SPIR	KE DUPLICA	TE: 19715	05		1971506							
			MS	MSD								
	6	0245851003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	112	1000	1000	1180	1170	106	106	70-130	1	20	
Beryllium	ug/L	0.26J	1000	1000	1070	1060	107	106	70-130	1	20	
Boron	ug/L	781	1000	1000	1760	1730	98	95	70-130	2	20	
Calcium	ug/L	69600	10000	10000	80200	78000	107	84	70-130	3	20	
Cobalt	ug/L	< 0.73	1000	1000	1060	1050	106	105	70-130	0	20	
Lead	ug/L	<2.4	1000	1000	1070	1060	107	106	70-130	1	20	
Lithium	ug/L	13.2	1000	1000	1090	1090	108	107	70-130	1	20	
Molybdenum	ug/L	115	1000	1000	1210	1200	110	109	70-130	1	20	

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Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

MATRIX SPIKE SAMPLE:	1971507						
		60246016006	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	 ug/L		1000	1190	108	70-130	
Beryllium	ug/L	0.28J	1000	1070	107	70-130	
Boron	ug/L	6500	1000	7600	110	70-130	
Calcium	ug/L	160000	10000	172000	114	70-130	
Cobalt	ug/L	6.1	1000	1060	105	70-130	
Lead	ug/L	<2.4	1000	1060	106	70-130	
Lithium	ug/L	17.2	1000	1140	112	70-130	
Molybdenum	ug/L	346	1000	1460	111	70-130	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 481360 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

METHOD BLANK: 1971823 Matrix: Water

Associated Lab Samples: 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	06/20/17 18:05	
Beryllium	ug/L	0.31J	1.0	0.16	06/20/17 18:05	
Boron	ug/L	3.9J	100	3.5	06/20/17 18:05	
Calcium	ug/L	<36.0	100	36.0	06/20/17 18:05	
Cobalt	ug/L	< 0.73	5.0	0.73	06/20/17 18:05	
Lead	ug/L	<2.4	5.0	2.4	06/20/17 18:05	
Lithium	ug/L	<2.9	10.0	2.9	06/20/17 18:05	
Molybdenum	ug/L	<1.3	20.0	1.3	06/20/17 18:05	

LABORATORY CONTROL SAMPLE	E: 1971824				_	
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
- unameter						Qualificio
Barium	ug/L	1000	965	96	85-115	
Beryllium	ug/L	1000	982	98	85-115	
Boron	ug/L	1000	927	93	85-115	
Calcium	ug/L	10000	9650	97	85-115	
Cobalt	ug/L	1000	984	98	85-115	
Lead	ug/L	1000	985	98	85-115	
Lithium	ug/L	1000	945	94	85-115	
Molybdenum	ug/L	1000	994	99	85-115	

MATRIX SPIKE & MATRIX SI	PIKE DUPLICA	TE: 19718	25		1971826							
			MS	MSD								
	6	0246016001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	ug/L	128	1000	1000	1150	1130	103	100	70-130	2	20	
Beryllium	ug/L	<0.16	1000	1000	1050	1020	105	102	70-130	2	20	
Boron	ug/L	351	1000	1000	1340	1340	99	98	70-130	0	20	
Calcium	ug/L	74300	10000	10000	83900	83500	96	92	70-130	1	20	
Cobalt	ug/L	0.89J	1000	1000	1020	994	101	99	70-130	2	20	
Lead	ug/L	<2.4	1000	1000	1010	992	101	99	70-130	2	20	
Lithium	ug/L	11.5	1000	1000	1030	1010	102	100	70-130	2	20	
Molybdenum	ug/L	67.3	1000	1000	1110	1090	104	102	70-130	2	20	

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Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

MATRIX SPIKE SAMPLE:	1971827						
		60246023002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Barium	 ug/L	96.8	1000	1090	99	70-130	
Beryllium	ug/L	<0.16	1000	1010	101	70-130	
Boron	ug/L	24200	1000	25400	121	70-130	
Calcium	ug/L	244000	10000	254000	106	70-130	
Cobalt	ug/L	< 0.73	1000	984	98	70-130	
Lead	ug/L	3.0J	1000	961	96	70-130	
Lithium	ug/L	18.6	1000	1050	103	70-130	
Molybdenum	ug/L	2170	1000	3160	99	70-130	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 481057 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60245851001, 60245851002

METHOD BLANK: 1970480 Matrix: Water

Associated Lab Samples: 60245851001, 60245851002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	06/16/17 21:56	
Arsenic	ug/L	< 0.052	1.0	0.052	06/16/17 21:56	
Cadmium	ug/L	< 0.018	0.50	0.018	06/16/17 21:56	
Chromium	ug/L	< 0.054	1.0	0.054	06/16/17 21:56	
Selenium	ug/L	< 0.086	1.0	0.086	06/16/17 21:56	
Thallium	ug/L	< 0.036	1.0	0.036	06/16/17 21:56	

LABORATORY CONTROL SAMPLE:	1970481					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	40.2	101	85-115	
Arsenic	ug/L	40	39.9	100	85-115	
Cadmium	ug/L	40	39.7	99	85-115	
Chromium	ug/L	40	40.4	101	85-115	
Selenium	ug/L	40	39.6	99	85-115	
Thallium	ug/L	40	38.0	95	85-115	

MATRIX SPIKE SAMPLE:	1970482						
		60245849004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	0.12J	40	40.5	101	70-130	
Arsenic	ug/L	0.48J	40	40.3	100	70-130	
Cadmium	ug/L	0.18J	40	38.8	97	70-130	
Chromium	ug/L	0.26J	40	39.8	99	70-130	
Selenium	ug/L	0.87J	40	37.9	93	70-130	
Thallium	ug/L	0.041J	40	39.7	99	70-130	

MATRIX SPIKE & MATRIX SPI			MS	MSD	1970484							
	6	60245849009	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	0.090J	40	40	40.5	40.1	101	100	70-130	1	20	
Arsenic	ug/L	0.52J	40	40	40.8	39.8	101	98	70-130	2	20	
Cadmium	ug/L	0.043J	40	40	39.2	38.6	98	96	70-130	2	20	
Chromium	ug/L	0.16J	40	40	40.0	39.2	100	98	70-130	2	20	
Selenium	ug/L	1.1	40	40	38.8	38.0	94	92	70-130	2	20	
Thallium	ug/L	< 0.036	40	40	39.6	39.2	99	98	70-130	1	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 481290 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60245851003, 60246023001

METHOD BLANK: 1971508 Matrix: Water

Associated Lab Samples: 60245851003, 60246023001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	06/20/17 12:56	
Arsenic	ug/L	< 0.052	1.0	0.052	06/20/17 12:56	
Cadmium	ug/L	< 0.018	0.50	0.018	06/20/17 12:56	
Chromium	ug/L	< 0.054	1.0	0.054	06/20/17 12:56	
Selenium	ug/L	< 0.086	1.0	0.086	06/20/17 12:56	
Thallium	ug/L	0.043J	1.0	0.036	06/20/17 12:56	

LABORATORY CONTROL SAMPLE:	1971509					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
				70 IXEC		Qualifiers
Antimony	ug/L	40	39.2	98	85-115	
Arsenic	ug/L	40	38.7	97	85-115	
Cadmium	ug/L	40	39.0	97	85-115	
Chromium	ug/L	40	39.5	99	85-115	
Selenium	ug/L	40	39.3	98	85-115	
Thallium	ug/L	40	37.0	92	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLICA	ATE: 19715 ²	10		1971511							
			MS	MSD								
	6	0245851003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	<0.026	40	40	39.0	38.9	97	97	70-130	0	20	
Arsenic	ug/L	0.14J	40	40	38.9	39.1	97	97	70-130	1	20	
Cadmium	ug/L	0.030J	40	40	38.0	38.4	95	96	70-130	1	20	
Chromium	ug/L	0.10J	40	40	39.4	39.5	98	99	70-130	0	20	
Selenium	ug/L	<0.086	40	40	36.8	37.2	92	93	70-130	1	20	
Thallium	ug/L	0.11J	40	40	39.1	39.0	97	97	70-130	0	20	

MATRIX SPIKE SAMPLE:	1971512						
		60246016002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	0.18J	40	38.9	97	70-130	
Arsenic	ug/L	0.62J	40	38.6	95	70-130	
Cadmium	ug/L	0.35J	40	37.0	92	70-130	
Chromium	ug/L	0.11J	40	39.0	97	70-130	
Selenium	ug/L	0.12J	40	35.2	88	70-130	
Thallium	ug/L	0.041J	40	40.2	100	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 481363 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

METHOD BLANK: 1971832 Matrix: Water

Associated Lab Samples: 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	< 0.026	1.0	0.026	06/20/17 14:11	
Arsenic	ug/L	< 0.052	1.0	0.052	06/20/17 14:11	
Cadmium	ug/L	<0.018	0.50	0.018	06/20/17 14:11	
Chromium	ug/L	< 0.054	1.0	0.054	06/20/17 14:11	
Selenium	ug/L	<0.086	1.0	0.086	06/20/17 14:11	
Thallium	ug/L	<0.036	1.0	0.036	06/20/17 14:11	

LABORATORY CONTROL SAMPLE	E: 1971833					
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
- arameter						Qualificis
Antimony	ug/L	40	38.4	96	85-115	
Arsenic	ug/L	40	38.2	95	85-115	
Cadmium	ug/L	40	38.4	96	85-115	
Chromium	ug/L	40	39.4	99	85-115	
Selenium	ug/L	40	38.8	97	85-115	
Thallium	ug/L	40	36.8	92	85-115	

MATRIX SPIKE & MATRIX S	PIKE DUPLIC	ATE: 19718:	34		1971835							
	,	20040040004	MS	MSD	MC	MCD	MC	MCD	0/ Das		N4=	
Parameter	Units	60246016001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Farameter	UIIIS		Conc.	CONC.	Resuit	Kesuit	70 KEC	% Kec	LIIIIII	KFD	KPD	Quai
Antimony	ug/L	0.37J	40	40	38.9	38.6	96	96	70-130	1	20	
Arsenic	ug/L	1.8	40	40	40.8	40.5	97	97	70-130	1	20	
Cadmium	ug/L	0.063J	40	40	37.8	37.5	94	94	70-130	1	20	
Chromium	ug/L	0.12J	40	40	39.2	38.9	98	97	70-130	1	20	
Selenium	ug/L	1.5	40	40	39.0	38.4	94	92	70-130	2	20	
Thallium	ug/L	0.10J	40	40	38.6	38.6	96	96	70-130	0	20	

MATRIX SPIKE SAMPLE:	1971836						
		60246023003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	0.030J	40	37.9	95	70-130	
Arsenic	ug/L	0.23J	40	38.8	96	70-130	
Cadmium	ug/L	0.53	40	37.0	91	70-130	
Chromium	ug/L	0.67J	40	39.0	96	70-130	
Selenium	ug/L	0.17J	40	35.6	89	70-130	
Thallium	ug/L	0.052J	40	40.0	100	70-130	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 480117 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60245851002

METHOD BLANK: 1966536 Matrix: Water

Associated Lab Samples: 60245851002

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 06/08/17 07:57

LABORATORY CONTROL SAMPLE: 1966537

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 967 97 80-120

SAMPLE DUPLICATE: 1966538

60245753007 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 470 2 10 **Total Dissolved Solids** 460 mg/L

SAMPLE DUPLICATE: 1966539

Date: 06/27/2017 01:48 PM

ParameterUnits60245829001 ResultDup ResultMax ResultMax ResultTotal Dissolved Solidsmg/L60806110110

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 480253 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60245851001, 60245851003

METHOD BLANK: 1967043 Matrix: Water

Associated Lab Samples: 60245851001, 60245851003

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 06/09/17 07:34

LABORATORY CONTROL SAMPLE: 1967044

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 955 96 80-120

SAMPLE DUPLICATE: 1967045

60245849009 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 532 2 10 **Total Dissolved Solids** 521 mg/L

SAMPLE DUPLICATE: 1967046

60245851003 Dup Max RPD Parameter Units Result Result **RPD** Qualifiers 353 **Total Dissolved Solids** mg/L 323 9 10

SAMPLE DUPLICATE: 1967047

Date: 06/27/2017 01:48 PM

60245890001 Dup Max Parameter Units Result Result **RPD RPD** Qualifiers 1050 2 10 **Total Dissolved Solids** mg/L 1020

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 480719 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

METHOD BLANK: 1969196 Matrix: Water

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

Blank Reporting

ParameterUnitsResultLimitMDLAnalyzedQualifiersTotal Dissolved Solidsmg/L<5.0</td>5.006/13/17 09:30

LABORATORY CONTROL SAMPLE: 1969197

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 956 96 80-120

SAMPLE DUPLICATE: 1969198

60246023002 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 1220 **Total Dissolved Solids** 1210 1 10 mg/L

SAMPLE DUPLICATE: 1969199

Date: 06/27/2017 01:48 PM

60246063001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 2420 **Total Dissolved Solids** mg/L 2500 3 10



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 480064 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60245851002

SAMPLE DUPLICATE: 1966201

Date: 06/27/2017 01:48 PM

 Parameter
 Units
 Result Result
 Result RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.0
 7.1
 1
 5 H6

(913)599-5665



QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 480445 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60245851001, 60245851003, 60246023006

SAMPLE DUPLICATE: 1968061

Date: 06/27/2017 01:48 PM

 Parameter
 Units
 60245851003 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.0
 7.1
 0
 5 H6



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 480652 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023007

SAMPLE DUPLICATE: 1969048

 Parameter
 Units
 60246023007 Result
 Dup Result
 Max RPD
 RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 5.3
 5.4
 1
 5 H6

SAMPLE DUPLICATE: 1969049

Date: 06/27/2017 01:48 PM

		60246016001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.6	0		5 H6

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 480265 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60245851001, 60245851002, 60245851003

METHOD BLANK: 1967081 Matrix: Water

Associated Lab Samples: 60245851001, 60245851002, 60245851003

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	06/08/17 21:59	
Fluoride	mg/L	<0.10	0.20	0.10	06/08/17 21:59	
Sulfate	mg/L	<0.50	1.0	0.50	06/08/17 21:59	

LABORATORY CONTROL SAMPLE:	1967082					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L		5.1	102	90-110	
Fluoride	mg/L	2.5	2.6	106	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1967083 19670												
			MS	MSD								
	6	0245851003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Fluoride	mg/L	0.37	2.5	2.5	3.0	3.0	104	104	80-120	0	15	
Sulfate	mg/L	31.8	25	25	57.1	57.2	101	101	80-120	0	15	

MATRIX SPIKE SAMPLE:	1967214						
		60246008001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	125	50	183	115	80-120	
Fluoride	mg/L	ND	25	25.9	103	80-120	
Sulfate	mg/L	27.5	50	76.9	99	80-120	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Chloride

Date: 06/27/2017 01:48 PM

QC Batch: 480432 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60245851003

METHOD BLANK: 1967966 Matrix: Water

Associated Lab Samples: 60245851003

ParameterUnitsBlank Reporting ResultReporting LimitMDLAnalyzedQualifiersChloridemg/L<0.50</td>1.00.5006/09/17 08:44

LABORATORY CONTROL SAMPLE: 1967967

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1967968 1967969

mg/L

MS MSD 60245849009 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Chloride 5 5 80-120 mg/L 10.9 16.6 16.6 114 114 0 15

 MATRIX SPIKE SAMPLE:
 1967970

 60245851003
 Spike
 MS
 MS
 % Rec

 Parameter
 Units
 Result
 Conc.
 Result
 % Rec
 Limits
 Qualifiers

19.5

10

31.0

115

80-120

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 480615 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

METHOD BLANK: 1968961 Matrix: Water

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Chloride	 mg/L	<0.50	1.0	0.50	06/12/17 08:52	
Fluoride	mg/L	<0.10	0.20	0.10	06/12/17 08:52	
Sulfate	mg/L	< 0.50	1.0	0.50	06/12/17 08:52	

LABORATORY CONTROL SAMPLE:	1968962					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	5	5.1	101	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIR	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1968963 1968964											
			MS	MSD								
	6	0246016001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	20.5	25	25	46.8	46.6	105	104	80-120	0	15	
Fluoride	mg/L	0.26	2.5	2.5	2.8	2.8	102	103	80-120	1	15	
Sulfate	mg/L	49.2	25	25	74.8	74.6	102	101	80-120	0	15	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

QC Batch: 480760 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60246023002, 60246023005

METHOD BLANK: 1969311 Matrix: Water

Associated Lab Samples: 60246023002, 60246023005

Reporting Blank MDL Limit Qualifiers Parameter Units Result Analyzed Chloride < 0.50 1.0 0.50 06/13/17 09:11 mg/L Sulfate mg/L < 0.50 1.0 0.50 06/13/17 09:11

1969312 LABORATORY CONTROL SAMPLE: Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 5.0 99 90-110 mg/L Sulfate 5 4.6 93 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1969314 1969313 MSD MS 60246271001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 18.1 50 50 66.8 66.5 98 97 80-120 15 Sulfate mg/L 64.9 50 50 114 114 99 98 80-120 0 15

MATRIX SPIKE SAMPLE: 1969402 MS MS 60246226001 % Rec Spike Qualifiers Parameter Units Result Conc. Result % Rec Limits Sulfate 27.2 10 37.2 100 80-120 mg/L

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-1D Lab ID: 60246023001 Collected: 06/07/17 12:30 Received: 06/08/17 04:10 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0552 ± 0.325 (0.663) C:NA T:98%	pCi/L	06/21/17 21:42	13982-63-3	
Radium-228	EPA 904.0	0.367 ± 0.320 (0.642) C:81% T:91%	pCi/L	06/26/17 15:14	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-2D Lab ID: 60246023002 Collected: 06/07/17 10:35 Received: 06/08/17 04:10 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.335 ± 0.381 (0.601) C:NA T:95%	pCi/L	06/21/17 21:42	13982-63-3	
Radium-228	EPA 904.0	0.825 ± 0.386 (0.617) C:76% T:84%	pCi/L	06/26/17 15:14	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-3D Lab ID: 60246023003 Collected: 06/07/17 09:40 Received: 06/08/17 04:10 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.318 ± 0.330 (0.492) C:NA T:98%	pCi/L	06/21/17 21:42	13982-63-3	
Radium-228	EPA 904.0	0.833 ± 0.393 (0.645) C:77% T:85%	pCi/L	06/26/17 15:14	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-4D Lab ID: 60246023004 Collected: 06/07/17 08:34 Received: 06/08/17 04:10 Matrix: Water

PWS: Site ID: Sample Type

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.184 ± 0.319 (0.570) C:NA T:94%	pCi/L	06/21/17 21:42	13982-63-3	
Radium-228	EPA 904.0	0.992 ± 0.417 (0.656) C:78% T:90%	pCi/L	06/26/17 15:15	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-5D Lab ID: 60246023005 Collected: 06/07/17 08:45 Received: 06/08/17 04:10 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.225 ± 0.271 (0.414) C:NA T:96%	pCi/L	06/21/17 21:42	13982-63-3	
Radium-228	EPA 904.0	0.967 ± 0.449 (0.756) C:79% T:85%	pCi/L	06/26/17 15:15	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-DUP-1 Lab ID: 60246023006 Collected: 06/07/17 08:00 Received: 06/08/17 04:10 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.292 ± 0.345 (0.543) C:NA T:95%	pCi/L	06/21/17 21:42	13982-63-3	
Radium-228	EPA 904.0	0.260 ± 0.316 (0.667) C:77% T:91%	pCi/L	06/26/17 15:15	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-FB-1 Lab ID: 60246023007 Collected: 06/07/17 08:32 Received: 06/08/17 04:10 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.297 ± 0.359 (0.547) C:NA T:73%	pCi/L	06/21/17 21:56	13982-63-3	
Radium-228	EPA 904.0	-0.148 ± 0.291 (0.729) C:76% T:79%	pCi/L	06/26/17 15:15	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-BMW-1D Lab ID: 60245851001 Collected: 06/06/17 15:00 Received: 06/07/17 04:25 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.276 ± 0.288 (0.406) C:NA T:95%	pCi/L	06/20/17 20:37	13982-63-3	
Radium-228	EPA 904.0	0.858 ± 0.555 (1.09) C:76% T:90%	pCi/L	06/23/17 12:45	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-BMW-3D Lab ID: 60245851002 Collected: 06/05/17 13:26 Received: 06/07/17 04:25 Matrix: Water

PWS: Site ID: Sample Type:

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.11 ± 0.517 (0.159) C:NA T:92%	pCi/L	06/20/17 20:37	13982-63-3	
Radium-228	EPA 904.0	0.862 ± 0.488 (0.906) C:78% T:85%	pCi/L	06/23/17 12:45	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-6D Lab ID: 60245851003 Collected: 06/06/17 15:00 Received: 06/07/17 04:25 Matrix: Water

PWS: Site ID: Sample Type:

FWS.	Site ID.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.361 ± 0.271 (0.140) C:NA T:101%	pCi/L	06/20/17 20:37	13982-63-3	
Radium-228	EPA 904.0	0.883 ± 0.520 (0.984) C:80% T:84%	pCi/L	06/23/17 12:45	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Sample: S-UMW-6D MS Lab ID: 60245851004 Collected: 06/06/17 15:00 Received: 06/07/17 04:25 Matrix: Water

PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	79.5 %REC +/- NA (NA) C:NA T:NA	pCi/L	06/20/17 20:37	13982-63-3	
Radium-228	EPA 904.0	89.68 %REC ± NA (NA) C:NA T:NA	pCi/L	06/23/17 12:45	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

EPA 904.0

Pace Project No.: 60246023

Radium-228

Sample: S-UMW-6D MSD Lab ID: 60245851005 Collected: 06/06/17 15:00 Received: 06/07/17 04:25 Matrix: Water PWS: Site ID: Sample Type: Method Act ± Unc (MDC) Carr Trac **Parameters** Units Analyzed CAS No. Qual EPA 903.1 82.7 %REC 3.88 RPD +/- NA Radium-226 pCi/L 06/20/17 20:37 13982-63-3 (NA) C:NA T:NA

88.96 %REC 0.81 RPD ±

pCi/L

06/23/17 12:45 15262-20-1

NA (NA)

C:NA T:NA



QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 261763 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

METHOD BLANK: 1288843 Matrix: Water

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.361 ± 0.329 (0.665) C:77% T:81%
 pCi/L
 06/26/17 11:28

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 261523 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60245851001, 60245851002, 60245851003, 60245851004, 60245851005

METHOD BLANK: 1287930 Matrix: Water

Associated Lab Samples: 60245851001, 60245851002, 60245851003, 60245851004, 60245851005

Parameter Act ± Unc (MDC) Carr Trac Units Analyzed Qualifiers

Radium-226 0.255 ± 0.234 (0.138) C:NA T:102% pCi/L 06/20/17 20:21

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

QC Batch: 261663 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

METHOD BLANK: 1288497 Matrix: Water

Associated Lab Samples: 60246023001, 60246023002, 60246023003, 60246023004, 60246023005, 60246023006, 60246023007

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-226
 0.445 ± 0.381 (0.516) C:NA T:99%
 pCi/L
 06/21/17 21:26

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

 QC Batch:
 261754
 Analysis Method:
 EPA 904.0

 QC Batch Method:
 EPA 904.0
 Analysis Description:
 904.0 Radium 228

 Associated Lab Samples:
 60245851001, 60245851002, 60245851003, 60245851004, 60245851005

METHOD BLANK: 1288829 Matrix: Water

Associated Lab Samples: 60245851001, 60245851002, 60245851003, 60245851004, 60245851005

 Parameter
 Act ± Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.690 ± 0.358 (0.620) C:77% T:86%
 pCi/L
 06/23/17 11:51

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

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.

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 06/27/2017 01:48 PM

B Analyte was detected in the associated method blank.

H6 Analysis initiated outside of the 15 minute EPA required holding time.



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60245851001	S-BMW-1D	EPA 200.7	481055	EPA 200.7	481081
60245851002	S-BMW-3D	EPA 200.7	481055	EPA 200.7	481081
60245851003	S-UMW-6D	EPA 200.7	481289	EPA 200.7	481371
60246023001	S-UMW-1D	EPA 200.7	481289	EPA 200.7	481371
60246023002	S-UMW-2D	EPA 200.7	481360	EPA 200.7	481503
60246023003	S-UMW-3D	EPA 200.7	481360	EPA 200.7	481503
60246023004	S-UMW-4D	EPA 200.7	481360	EPA 200.7	481503
60246023005	S-UMW-5D	EPA 200.7	481360	EPA 200.7	481503
60246023006	S-UMW-DUP-1	EPA 200.7	481360	EPA 200.7	481503
60246023007	S-UMW-FB-1	EPA 200.7	481360	EPA 200.7	481503
60245851001	S-BMW-1D	EPA 200.8	481057	EPA 200.8	481080
60245851002	S-BMW-3D	EPA 200.8	481057	EPA 200.8	481080
60245851003	S-UMW-6D	EPA 200.8	481290	EPA 200.8	481370
60246023001	S-UMW-1D	EPA 200.8	481290	EPA 200.8	481370
60246023002	S-UMW-2D	EPA 200.8	481363	EPA 200.8	481509
60246023003	S-UMW-3D	EPA 200.8	481363	EPA 200.8	481509
60246023004	S-UMW-4D	EPA 200.8	481363	EPA 200.8	481509
60246023005	S-UMW-5D	EPA 200.8	481363	EPA 200.8	481509
60246023006	S-UMW-DUP-1	EPA 200.8	481363	EPA 200.8	481509
60246023007	S-UMW-FB-1	EPA 200.8	481363	EPA 200.8	481509
60245851001	S-BMW-1D	EPA 7470	481141	EPA 7470	481323
60245851002	S-BMW-3D	EPA 7470	481141	EPA 7470	481323
60245851003	S-UMW-6D	EPA 7470	482248	EPA 7470	482262
60246023001	S-UMW-1D	EPA 7470	481494	EPA 7470	481550
60246023002	S-UMW-2D	EPA 7470	481494	EPA 7470	481550
60246023003	S-UMW-3D	EPA 7470	481494	EPA 7470	481550
60246023004	S-UMW-4D	EPA 7470	481494	EPA 7470	481550
60246023005	S-UMW-5D	EPA 7470	481494	EPA 7470	481550
60246023006	S-UMW-DUP-1	EPA 7470	481494	EPA 7470	481550
60246023007	S-UMW-FB-1	EPA 7470	481494	EPA 7470	481550
60245851001	S-BMW-1D	EPA 903.1	261523		
0245851002	S-BMW-3D	EPA 903.1	261523		
60245851003	S-UMW-6D	EPA 903.1	261523		
0245851004	S-UMW-6D MS	EPA 903.1	261523		
60245851005	S-UMW-6D MSD	EPA 903.1	261523		
0246023001	S-UMW-1D	EPA 903.1	261663		
60246023002	S-UMW-2D	EPA 903.1	261663		
60246023003	S-UMW-3D	EPA 903.1	261663		
60246023004	S-UMW-4D	EPA 903.1	261663		
60246023005	S-UMW-5D	EPA 903.1	261663		
60246023006	S-UMW-DUP-1	EPA 903.1	261663		
20246022007	S-UMW-FB-1	EPA 903.1	261663		
60246023007					



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

ab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
0245851002	S-BMW-3D	EPA 904.0	 261754	_	
0245851003	S-UMW-6D	EPA 904.0	261754		
0245851004	S-UMW-6D MS	EPA 904.0	261754		
0245851005	S-UMW-6D MSD	EPA 904.0	261754		
0246023001	S-UMW-1D	EPA 904.0	261763		
0246023002	S-UMW-2D	EPA 904.0	261763		
0246023003	S-UMW-3D	EPA 904.0	261763		
0246023004	S-UMW-4D	EPA 904.0	261763		
0246023005	S-UMW-5D	EPA 904.0	261763		
0246023006	S-UMW-DUP-1	EPA 904.0	261763		
0246023007	S-UMW-FB-1	EPA 904.0	261763		
0245851001	S-BMW-1D	SM 2540C	480253		
0245851002	S-BMW-3D	SM 2540C	480117		
0245851003	S-UMW-6D	SM 2540C	480253		
0246023001	S-UMW-1D	SM 2540C	480719		
0246023002	S-UMW-2D	SM 2540C	480719		
0246023003	S-UMW-3D	SM 2540C	480719		
0246023004	S-UMW-4D	SM 2540C	480719		
0246023005	S-UMW-5D	SM 2540C	480719		
0246023006	S-UMW-DUP-1	SM 2540C	480719		
0246023007	S-UMW-FB-1	SM 2540C	480719		
0245851001	S-BMW-1D	SM 4500-H+B	480445		
0245851002	S-BMW-3D	SM 4500-H+B	480064		
0245851003	S-UMW-6D	SM 4500-H+B	480445		
0246023001	S-UMW-1D	SM 4500-H+B	480652		
0246023002	S-UMW-2D	SM 4500-H+B	480652		
0246023003	S-UMW-3D	SM 4500-H+B	480652		
0246023004	S-UMW-4D	SM 4500-H+B	480652		
0246023005	S-UMW-5D	SM 4500-H+B	480652		
0246023006	S-UMW-DUP-1	SM 4500-H+B	480445		
0246023007	S-UMW-FB-1	SM 4500-H+B	480652		
0245851001	S-BMW-1D	EPA 300.0	480265		
0245851002	S-BMW-3D	EPA 300.0	480265		
0245851003	S-UMW-6D	EPA 300.0	480265		
0245851003	S-UMW-6D	EPA 300.0	480432		
0246023001	S-UMW-1D	EPA 300.0	480615		
0246023002	S-UMW-2D	EPA 300.0	480615		
0246023002	S-UMW-2D	EPA 300.0	480760		
0246023003	S-UMW-3D	EPA 300.0	480615		
0246023004	S-UMW-4D	EPA 300.0	480615		
0246023005	S-UMW-5D	EPA 300.0	480615		

REPORT OF LABORATORY ANALYSIS

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Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60246023

Date: 06/27/2017 01:48 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60246023005	S-UMW-5D	EPA 300.0	480760		
60246023006 60246023007	S-UMW-DUP-1 S-UMW-FB-1	EPA 300.0 EPA 300.0	480615 480615		



Sample Condition Upon Receipt



Client Name: Goldw		
Courier: FedEx □ UPS □ VIA □ Clay □	PEX □ ECI □	Pace ☐ Xroads ☐ Client ☐ Other ☐
Tracking #: Pa	ce Shipping Label Used	d? Yes ☑ No □
Custody Seal on Cooler/Box Present: Yes ☑ No □	Seals intact: Yes	Í No □
Packing Material: Bubble Wrap Bubble Bags CF +2.9 (F +0.2) T-266 / (F-239) Type of	□ Foam □ of Ice:(Wet) Blue No	None
	ctor CF +2.9 OF +0.2 Correct	Date and initials of person
Cooler Temperature (°C): As-read 1.9/13.2 Corr. Fac Temperature should be above freezing to 6°C	tor si	examining contents:
Chain of Custody present:	□Yes □No □N/A	
Chain of Custody relinquished:	DYES DNO DN/A	
Samples arrived within holding time:	☐Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes □No □N/A	Nu
Rush Turn Around Time requested:	□Yes □No □N/A	
Sufficient volume:	Yes No N/A	
Correct containers used:	ØYes □No □N/A	
Pace containers used:	Ves □No □N/A	
Containers intact:	Yes □No □N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	□Yes □No □MA	
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:	□Yes □No □N/A	
Containers requiring pH preservation in compliance?	□Yes □No (7) HA	
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	1,6/8	
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 fiel	d? □Yes □No □N/A	
Client Notification/ Resolution: Copy COC		Field Data Required? Y / N
Person Contacted: Date	/Time:	
Comments/ Resolution:		
		0.047
Jami Chiel		6/9/17
Project Manager Review:	Dat	e:

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Invoice Information:

Section B
Required Project Information:
Report To: Mark Haddock (mhaddock@golder.com)

Copy To: Jeffrey Ingram

820 South Main Street, Suite 100

Address:

Required Client Information:

Section A

St Charles, MO 63301

Section C Attention: Company Name:

Address:

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

REGULATORY AGENCY

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SAMPLE ID Submitted Subm	Froject Numbrane Project Numbrane Project Numbrane Report Numb	Li (uai oi sanos	Pace Project Manager. Pace Profile #:	ie Church	Site Location		MANAGERIA	Continuos de la contraction de
School S	Standard Valid Matrix Codes WATER WATER DENEWRING WATER AR AR CO-LIMW-2D S-LIMW-5D S-LIMW-5D S-LIMW-5D S-LIMW-FB-1 S-LIMW-FB	COLLECT	١,,		100000000000000000000000000000000000000	CZ		
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CONTECTED CONTENT CO	Codes	COLLECT			Analysis Filtered (Y/P	N)		
### COMPOUNT ##	W W W W W W W W W W W W W W W W W W W) 0 0 0 0 0		Z Z Z	-			
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WIT G		D=O) BdVT B10MA	AMPLE TEMP AT CC ASO4 NO3	s _{2S} S _{2O3} lethanol wher hloride/Fluoride DS		esidual Chlorine		
WIT G		Ø DATE TIME DATE	2 2 1 - 1 1 - 1	1 0 0	N 2	3	28	/ KO LAD I.D.
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RELINQUISHED BY AFFILIATION DATE TIME ACCEPTED BY AFFILIATION DATE TIME SAMPLE CONDITIONS Tell sample and signature SAMPLER NAME AND SIGNATURE SIGNATURE of SAMPLER: Self 322 (MANDONY): (17/17)								
TOLL TANK LINE OF THE TIME ACCEPTED BY AFFILIATION DATE TIME SAMPLE CONDITIONS TOLL TANK LINE OF SAMPLER: SAMPLER: SCHOOL SAM			01/				7	
Telt source of sampler: Scampler: May My	- 4	RELINQUISHED BY / AFFILIATION		ACCEPTED BY / AFFILIATION		NE NE	SAMPLE CON	DITIONS
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: X-K X-y- SIGNATURE of SAMPLER: MANIED TYPE:		Ingum / 301 de	11)10	who was repring for	14/4			
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: \$\infty \int_{\text{COOle}} \int_{\t				Mary Logy X	160 1/18/19		7	7
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: 3 CK Tyr SIGNATURE of SAMPLER: Myc. (MMIDDITY): (pt 1 1 1 1 1 1 1 1 1						13.4	V Y	7
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: SCIR Type SIGNATURE of SAMPLER: Myc. (MMIDDIVY): (Р							6
SIGNATURE of SAMPLER: Mr. (MMIDDITY): [[[] [] [] [] [] [] [] [] [age	SAMPLER NAME AND	SIGNATURE			0.	1)	nlact
SIGNATURE of SAMPLER: My (MMIDDIVY): [[] [] F G G G G G G G G G G G G G G G G G G	÷ 60	PRINT Name of:	AMPLER: XCK		16*	uj du	(Y.V.) dy Se	1 886
	of 60	SIGNATURE of	<u> </u>		(g /	neT	ool Custo	Samp

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

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





July 18, 2017

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on June 28, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Jamie Church

jamie.church@pacelabs.com 314-838-7223

Project Manager

Enclosures

cc: Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates



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



CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

L-A-B DOD-ELAP Accreditation #: L2417

Alabama Certification #: 41590 Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH-0694

Delaware Certification

Florida/TNI Certification #: E87683 Georgia Certification #: C040

Guam Certification Hawaii Certification Idaho Certification Illinois Certification Indiana Certification Iowa Certification #: 391

Kansas/TNI Certification #: E-10358 Kentucky Certification #: 90133

Louisiana DHH/TNI Certification #: LA140008 Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: PA00091 Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Kansas Certification IDs 9608 Loiret Boulevard, Lenexa, KS 66219

WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Montana Certification #: Cert 0082

Nebraska Certification #: NE-05-29-14 Nevada Certification #: PA014572015-1 New Hampshire/TNI Certification #: 2976

New Jersey/TNI Certification #: PA 051 New Mexico Certification #: PA01457 New York/TNI Certification #: 10888 North Carolina Certification #: 42706

North Dakota Certification #: R-190 Oregon/TNI Certification #: PA200002 Pennsylvania/TNI Certification #: 65-00282 Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282 South Dakota Certification

Tennessee Certification #: TN2867

Texas/TNI Certification #: T104704188-14-8 Utah/TNI Certification #: PA014572015-5 USDA Soil Permit #: P330-14-00213 Vermont Dept. of Health: ID# VT-0282 Virgin Island/PADEP Certification Virginia/VELAP Certification #: 460198 Washington Certification #: C868 West Virginia DEP Certification #: 143

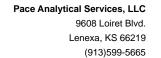
West Virginia DHHR Certification #: 9964C Wisconsin Certification

Wyoming Certification #: 8TMS-L

Nevada Certification #: KS000212008A Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070





SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60247465001	S-BMW-3D	Water	06/26/17 16:00	06/28/17 03:30

(913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247465001	S-BMW-3D	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Date: 07/18/2017 03:35 PM

Sample: S-BMW-3D	Lab ID:	60247465001	Collected	d: 06/26/1	7 16:00	Received: 06/	28/17 03:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
Barium	668	ug/L	5.0	0.91	1	06/28/17 16:50	06/30/17 19:32	7440-39-3	
Beryllium	<0.16	ug/L	1.0	0.16	1	06/28/17 16:50	06/30/17 19:32	7440-41-7	В
Boron	55.2J	ug/L	100	3.5	1	06/28/17 16:50	06/30/17 19:32	7440-42-8	
Calcium	102000	ug/L	100	36.0	1	06/28/17 16:50	06/30/17 19:32	7440-70-2	
Cobalt	<0.73	ug/L	5.0	0.73	1	06/28/17 16:50	06/30/17 19:32	7440-48-4	
Lead	<2.4	ug/L	5.0	2.4	1	06/28/17 16:50	06/30/17 19:32	7439-92-1	
Lithium	25.3	ug/L	10.0	2.9	1	06/28/17 16:50	06/30/17 19:32	7439-93-2	
Molybdenum	<1.3	ug/L	20.0	1.3	1	06/28/17 16:50	06/30/17 19:32	7439-98-7	
200.8 MET ICPMS	Analytical	Method: EPA 2	00.8 Prepa	ration Meth	od: EP	A 200.8			
Antimony	<0.026	ug/L	1.0	0.026	1	06/28/17 16:50	06/30/17 13:52	7440-36-0	
Arsenic	<0.052	ug/L	1.0	0.052	1	06/28/17 16:50	06/30/17 13:52	7440-38-2	
Cadmium	<0.018	ug/L	0.50	0.018	1	06/28/17 16:50	06/30/17 13:52	7440-43-9	
Chromium	0.31J	ug/L	1.0	0.054	1	06/28/17 16:50	06/30/17 13:52	7440-47-3	В
Selenium	<0.086	ug/L	1.0	0.086	1	06/28/17 16:50	06/30/17 13:52	7782-49-2	
Thallium	<0.036	ug/L	1.0	0.036	1	06/28/17 16:50	06/30/17 13:52	7440-28-0	
7470 Mercury	Analytical	Method: EPA 7	470 Prepa	ration Meth	od: EPA	A 7470			
Mercury	<0.046	ug/L	0.20	0.046	1	07/11/17 11:16	07/12/17 09:03	7439-97-6	
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
Total Dissolved Solids	408	mg/L	5.0	5.0	1		06/29/17 16:24		
4500H+ pH, Electrometric	Analytical	Method: SM 45	500-H+B						
pH at 25 Degrees C	7.0	Std. Units	0.10	0.10	1		06/28/17 13:17		H6
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	7.8	mg/L	1.0	0.50	1		07/08/17 00:43	16887-00-6	
Fluoride	0.29	mg/L	0.20	0.10	1		07/08/17 00:43		
Sulfate	26.4	mg/L	2.0	1.0	2		07/08/17 10:34		



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Date: 07/18/2017 03:35 PM

QC Batch: 484651 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury

Associated Lab Samples: 60247465001

METHOD BLANK: 1985098 Matrix: Water

Associated Lab Samples: 60247465001

ParameterUnitsBlank Reporting ResultReporting LimitMDLAnalyzedQualifiersMercuryug/L<0.046</td>0.200.04607/12/17 08:59

LABORATORY CONTROL SAMPLE: 1985099

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Mercury ug/L 4.4 88 80-120

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1985100 1985101

MS MSD MS MS 60247847002 Spike Spike MSD MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual ND 5 5 4.7 4.4 75-125 5 20 Mercury ug/L 94 89

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

QC Batch: 483134 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60247465001

METHOD BLANK: 1979063 Matrix: Water

1979064

ug/L

Associated Lab Samples: 60247465001

LABORATORY CONTROL SAMPLE:

Molybdenum

Date: 07/18/2017 03:35 PM

		Blank	Reporting			
Parameter	Units	Result	Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	07/02/17 12:18	
Beryllium	ug/L	0.31J	1.0	0.16	07/02/17 12:18	
Boron	ug/L	<3.5	100	3.5	06/30/17 19:20	
Calcium	ug/L	<36.0	100	36.0	07/02/17 12:18	
Cobalt	ug/L	< 0.73	5.0	0.73	06/30/17 19:20	
Lead	ug/L	<2.4	5.0	2.4	06/30/17 19:20	
Lithium	ug/L	<2.9	10.0	2.9	07/02/17 12:18	
Molybdenum	ug/L	<1.3	20.0	1.3	06/30/17 19:20	

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	993	99	85-115	
Boron	ug/L	1000	953	95	85-115	
Calcium	ug/L	10000	9710	97	85-115	
Cobalt	ug/L	1000	1040	104	85-115	
Lead	ug/L	1000	1050	105	85-115	
Lithium	ug/L	1000	1080	108	85-115	

1000

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 19790	65		1979066							
Parameter	6 Units	60247402001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	0.038 mg/L	1000	1000	1060	1050	103	101	70-130	2	20	
Beryllium	ug/L	ND	1000	1000	961	945	96	94	70-130	2	20	
Boron	ug/L	0.14 mg/L	1000	1000	1130	1120	99	98	70-130	1	20	
Calcium	ug/L	30.1 mg/L	10000	10000	39000	38200	89	82	70-130	2	20	
Cobalt	ug/L	ND	1000	1000	966	957	97	96	70-130	1	20	
Lead	ug/L	ND	1000	1000	929	920	93	92	70-130	1	20	
Lithium	ug/L	0.047 mg/L	1000	1000	1130	1110	109	107	70-130	2	20	
Molybdenum	ug/L	ND	1000	1000	1010	1000	101	100	70-130	1	20	

1050

105

85-115

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Date: 07/18/2017 03:35 PM

QC Batch: 483133 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET

Associated Lab Samples: 60247465001

METHOD BLANK: 1979050 Matrix: Water

Associated Lab Samples: 60247465001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	06/30/17 12:52	
Arsenic	ug/L	< 0.052	1.0	0.052	06/30/17 12:52	
Cadmium	ug/L	<0.018	0.50	0.018	06/30/17 12:52	
Chromium	ug/L	0.087J	1.0	0.054	06/30/17 12:52	
Selenium	ug/L	<0.086	1.0	0.086	06/30/17 12:52	
Thallium	ug/L	< 0.036	1.0	0.036	06/30/17 12:52	

LABORATORY CONTROL SAMPLE:	1979051					
		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	ug/L	40	38.5	96	85-115	
Arsenic	ug/L	40	40.9	102	85-115	
Cadmium	ug/L	40	38.2	95	85-115	
Chromium	ug/L	40	40.2	100	85-115	
Selenium	ug/L	40	38.2	95	85-115	
Thallium	ug/L	40	36.7	92	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLIC	ATE: 19790	52		1979053							
			MS	MSD								
		7568658001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	ug/L	0.64J	40	40	38.0	38.4	93	94	70-130	1	20	
Arsenic	ug/L	0.38J	40	40	40.5	40.1	100	99	70-130	1	20	
Cadmium	ug/L	< 0.089	40	40	35.1	34.9	88	87	70-130	1	20	
Chromium	ug/L	27.2	40	40	69.0	64.8	105	94	70-130	6	20	
Selenium	ug/L	<0.00043 mg/L	40	40	35.8	35.9	89	89	70-130	0	20	
Thallium	ug/L	0.00027J mg/L	40	40	39.0	38.9	97	97	70-130	0	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

QC Batch: 483338 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60247465001

METHOD BLANK: 1979902 Matrix: Water

Associated Lab Samples: 60247465001

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 06/29/17 16:18

LABORATORY CONTROL SAMPLE: 1979903

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 959 96 80-120

SAMPLE DUPLICATE: 1979904

60247576002 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 909 4 10 **Total Dissolved Solids** 947 mg/L

SAMPLE DUPLICATE: 1979905

Date: 07/18/2017 03:35 PM

60247365002 Dup Max RPD RPD Parameter Units Result Result Qualifiers 479 **Total Dissolved Solids** mg/L 470 2 10

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

QC Batch: 482985 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH

Associated Lab Samples: 60247465001

SAMPLE DUPLICATE: 1978459

Date: 07/18/2017 03:35 PM

 Parameter
 Units
 60246810003 Result
 Dup Result
 Max RPD
 Max RPD
 Qualifiers

 pH at 25 Degrees C
 Std. Units
 7.4
 7.5
 1
 5 H6

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Fluoride

Date: 07/18/2017 03:35 PM

QC Batch: 484403 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

mg/L

Associated Lab Samples: 60247465001

METHOD BLANK: 1984134 Matrix: Water

Associated Lab Samples: 60247465001

Blank Reporting Limit MDL Result Qualifiers Parameter Units Analyzed Chloride < 0.50 1.0 0.50 07/07/17 21:16 mg/L Fluoride mg/L < 0.10 0.20 0.10 07/07/17 21:16

LABORATORY CONTROL SAMPLE: 1984135 Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride 5 4.8 97 90-110 mg/L

2.5

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1984137 1984136 MSD MS 60247664001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits **RPD** RPD Qual Chloride mg/L 7.7 5 5 13.1 13.2 107 110 80-120 15 Fluoride mg/L 0.21 2.5 2.5 2.8 2.8 103 105 80-120 2 15

2.6

103

90-110

MATRIX SPIKE SAMPLE: 1984138 MS MS % Rec 60247665001 Spike % Rec Qualifiers Parameter Units Result Conc. Result Limits Chloride 3.9 5 8.8 99 80-120 mg/L ND 80-120 Fluoride mg/L 2.5 2.7 101

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.



AMEREN SIOUX ENERGY CTR-BOTT Project:

Pace Project No.: 60247465

Date: 07/18/2017 03:35 PM

QC Batch: 484481 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60247465001

METHOD BLANK: 1984615 Matrix: Water

Associated Lab Samples: 60247465001

Blank Reporting Limit MDL Qualifiers Parameter Units Result Analyzed Sulfate < 0.50 1.0 0.50 07/08/17 08:55

mg/L

LABORATORY CONTROL SAMPLE: 1984616

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Sulfate mg/L 5.1 101 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1984617 1984618

MS MSD 60247465001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Sulfate 80-120 2 mg/L 26.4 10 10 36.3 35.5 99 91 15

MATRIX SPIKE SAMPLE: 1984619 MS 60247466001 Spike MS % Rec % Rec Parameter Units Result Conc. Result Limits Qualifiers

Sulfate 23.8 102 80-120 mg/L 10 34.0

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.



ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Sample: S-BMW-3D Lab ID: 60247465001 Collected: 06/26/17 16:00 Received: 06/28/17 03:30 Matrix: Water

PWS: Site ID: Sample Type:

1 443.	Site ib.	Sample Type.				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.897 ± 0.498 (0.187) C:NA T:96%	pCi/L	07/12/17 11:23	13982-63-3	
Radium-228	EPA 904.0	1.64 ± 0.641 (0.985) C:79% T:80%	pCi/L	07/17/17 18:39	15262-20-1	



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

QC Batch: 264503 Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228

Associated Lab Samples: 60247465001

METHOD BLANK: 1302867 Matrix: Water

Associated Lab Samples: 60247465001

 Parameter
 Act \pm Unc (MDC) Carr Trac
 Units
 Analyzed
 Qualifiers

 Radium-228
 0.669 \pm 0.359 (0.629) C:76% T:82%
 pCi/L
 07/17/17 15:54

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

QC Batch: 264096 Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226

Associated Lab Samples: 60247465001

METHOD BLANK: 1300978 Matrix: Water

Associated Lab Samples: 60247465001

ParameterAct \pm Unc (MDC) Carr TracUnitsAnalyzedQualifiersRadium-226 0.300 ± 0.314 (0.442) C:NA T:96%pCi/L07/12/17 11:06

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

Date: 07/18/2017 03:35 PM

B Analyte was detected in the associated method blank.

H6 Analysis initiated outside of the 15 minute EPA required holding time.



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60247465

Date: 07/18/2017 03:35 PM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247465001	S-BMW-3D	EPA 200.7	483134	EPA 200.7	483166
60247465001	S-BMW-3D	EPA 200.8	483133	EPA 200.8	483165
60247465001	S-BMW-3D	EPA 7470	484651	EPA 7470	484817
60247465001	S-BMW-3D	EPA 903.1	264096		
60247465001	S-BMW-3D	EPA 904.0	264503		
60247465001	S-BMW-3D	SM 2540C	483338		
60247465001	S-BMW-3D	SM 4500-H+B	482985		
60247465001	S-BMW-3D	EPA 300.0	484403		
60247465001	S-BMW-3D	EPA 300.0	484481		



Sample Condition Upon Receipt



Client Name: () Older				,		
Courier: FedEx □ UPS □ VIA □	☐ Clay ☐ PI	EX 🗆 ECI 🗆	Pace □	Xroads 🗂	Client □ (Other □
Tracking #:	Pace	Shipping Label l	Jsed? Yes □	No/C		
Custody Seal on Cooler/Box Present: You	es∕⊡ No □	Seals intact: Ye	s ✓ No □	,		
Packing Material: Bubble Wrap ☐ CF +2.9 CF +0.2	Bubble Bags \Box	Foam	□ None	Oth	er 🗆	
Thermometer Used: T-266 / T-239	/ Type of I	Ice: Wet Blue	None	,	6	
Cooler Temperature (°C): As-read	// 4. oCorr. Facto	r CF +2.9 EF+92 Cor	rected /.6/	14.2	examining c	tials of person ontents:
Temperature should be above freezing to 6°C	<u> </u>				06/28	3/17
Chain of Custody present:		Yes No D	I/A		, -,	
Chain of Custody relinquished:	/	Yes No D	N/A			
Samples arrived within holding time:		✓Yes □No □I	N/A			
Short Hold Time analyses (<72hr):	,	Yes 🗆 No 🖂	NA PH			
Rush Turn Around Time requested:		□Yes ☑No □I	I/A			
Sufficient volume:		ZYes □No □I	√A			
Correct containers used:	,	∐Yes □No □	N/A			
Pace containers used:		Yes No D	√A			
Containers intact:		Yes No D	N/A			
Unpreserved 5035A / TX1005/1006 soils from	ozen in 48hrs?	□Yes □No	N/A			
Filtered volume received for dissolved tests	\$?	□Yes □No	N/A			
Sample labels match COC: Date / time / ID	/ analyses	ZYes □No □	N/A			
Samples contain multiple phases? Ma	atrix: WT	□Yes ☑No □	V/A			
Containers requiring pH preservation in cor (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH> (Exceptions: VOA, Micro, O&G, KS TPH, OK-DF	10 Cyanide)	ZYes □No □	N/A			
Cyanide water sample checks:	N/A	□Yes □No				
Lead acetate strip turns dark? (Record only Potassium iodide test strip turns blue/purple		□Yes □No				
Trip Blank present:	. (1,000,10)	□Yes □No □	N/A			
Headspace in VOA vials (>6mm):		□Yes □No ☑	N/A			
Samples from USDA Regulated Area:	State:		N/A			
Additional labels attached to 5035A / TX10		□Yes □No Ø	N/A	3		
Client Notification/ Resolution:	Copy COC to		ACCUSED AND ADDRESS OF THE ADDRESS O	Data Required?	Y / N	
Person Contacted:	Date/Ti	me:				
Comments/ Resolution:						
fami	Chel -		6/28/	17		
Project Manager Review:			Date:			

Pace Analytical"

CHAIN-OF-CUSTODY / Analytical Request Document

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

3 Pace Project No./ Lab I.D. (NY)Samples Intact DRINKING WATER 8841895×26911V SAMPLE CONDITIONS F-ALL-Q-020rev.08, 12-Oct-2007 Cooler (Y/N) OTHER 1/2/1 οĘ 82/2 Ice (Y/N) × по БеујереЯ GROUND WATER Page: Residual Chlorine (Y/N) 14.5 O" ni qrneT S REGULATORY AGENCY RCRA TIME 28/17 0330 Requested Analysis Filtered (Y/N) Site Location STATE 1-92-DATE NPDES UST لح 822 & 822 muibs. DATE Signed (MM/DD/YY): Z Ho CEPTED BY / AFFILIATION LDS Chloride/Fluoride/Sulfate Z *sletals 28/Amy 2 Test Test N/A TO DIMAN Other Methanol Jamie Church Preservatives Na₂S₂O₃ HOBN HCI 9285 H_O³ 3 ompany Name Yen 1250¢ 1200 Section C TIME Unpreserved ace Quote Address: 2 # OF CONTAINERS SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: 444 SIGNATURE of SAMPLER: SAMPLE TEMP AT COLLECTION Ameren Sioux Energy Center - Bottom Ash DATE 45 M LI-91-0091 6-2-9 TIME eport To: Mark Haddock (mhaddock@golder.com) DATE COLLECTED RELINQUISHED BY / AFFILIATION TIME COMPOSITE 153-1406.0003B START DATE Jeffrey Ingram Required Project Information: olar (5) O (1) O O O O G (GEGRAB CECOMP) BAYT BLIGMAS urchase Order No. Z Ž W N. T.V. M K 5 Y. TV. (see Asjid codes to left) **BDOD XINTAM** Project Name: Section B Copy To: 9 Valid Matrix Codes TS TS NOT SET DRINKING WATER WATER WASTE WATER Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg PRODUCT SOIL/SOLID Fax: 636-724-9323 MATRIX 820 South Main Street, Suite 100 S-BMW-3D - RML ADDITIONAL COMMENTS (A-Z, 0-9 / .-) Sample IDs MUST BE URIQUE maddock@golder.com St Charles, MO 63301 SAMPLE ID Golder Associates Required Client Information Od, Cr. Section A Required Client Information: 636-724-9191 equested Due Date/TAT: Section D Ba Sp EPA 200.7; EPA 200.8; Page 19 of 19 ddress hone: 7 a 10 12 ITEM #

mportant 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



December 04, 2017

Mark Haddock Golder Associates 820 S. Main St Suite 100 Saint Charles, MO 63301

RE: Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on November 15, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Project Manager

Enclosures

cc: Ryan Feldmann, Golder Jeffrey Ingram, Golder Associates John Suozzi, Golder Associates







CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 WY STR Certification #: 2456.01 Arkansas Certification #: 17-016-0 Illinois Certification #: 200030 lowa Certification #: 118

Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212018-1 Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407 Utah Certification #: KS00021

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60258160001	S-UMW-1D	Water	11/14/17 14:23	11/15/17 04:15
60258160002	S-UMW-2D	Water	11/13/17 14:18	11/15/17 04:15
60258160003	S-UMW-3D	Water	11/13/17 13:05	11/15/17 04:15
60258160004	S-UMW-4D	Water	11/13/17 12:05	11/15/17 04:15
60258160005	S-UMW-5D	Water	11/13/17 14:15	11/15/17 04:15
60258160006	S-UMW-6D	Water	11/13/17 15:50	11/15/17 04:15
60258160007	S-BMW-1D	Water	11/13/17 10:58	11/15/17 04:15
60258160008	S-BMW-3D	Water	11/13/17 08:45	11/15/17 04:15
60258160009	S-UMW-DUP-1	Water	11/13/17 08:45	11/15/17 04:15
60258160010	S-UMW-FB-1	Water	11/13/17 15:20	11/15/17 04:15



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60258160001	S-UMW-1D	EPA 200.7		7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	НММ	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160002	S-UMW-2D	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160003	S-UMW-3D	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160004	S-UMW-4D	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160005	S-UMW-5D	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160006	S-UMW-6D	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160007	S-BMW-1D	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160008	S-BMW-3D	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160009	S-UMW-DUP-1	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60258160010	S-UMW-FB-1	EPA 200.7	TDS	7	PASI-K

Lenexa, KS 66219 (913)599-5665



SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

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



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-UMW-1D	Lab ID:	60258160001	Collecte	d: 11/14/17	14:23	Received: 11/	15/17 04:15 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron	266	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 16:12	7440-42-8	В
Calcium	71200	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 16:12	7440-70-2	
Iron	677	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 16:12	7439-89-6	
Magnesium	21300	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 16:12	7439-95-4	
Manganese	125	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 16:12	7439-96-5	
Potassium	5320	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 16:12	7440-09-7	
Sodium	14500	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 16:12	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	320B						
Alkalinity, Total as CaCO3	207	mg/L	20.0	4.9	1		11/27/17 11:53		
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
Total Dissolved Solids	318	mg/L	5.0	5.0	1		11/21/17 09:29		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	18.7	mg/L	2.0	1.0	2		12/02/17 15:19	16887-00-6	
Fluoride	0.41	mg/L	0.20	0.10	1		12/01/17 12:50	16984-48-8	
Sulfate	49.1	mg/L	5.0	2.5	5		12/03/17 10:04	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-UMW-2D	Lab ID:	60258160002	Collected	d: 11/13/17	7 14:18	Received: 11/	15/17 04:15 Ma	atrix: Water	
Parameters	Results	Units	PQL _	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
Boron	22100	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:27	7440-42-8	
Calcium	224000	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:27	7440-70-2	
Iron	385	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:27	7439-89-6	
Magnesium	11400	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:27	7439-95-4	
Manganese	287	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:27	7439-96-5	
Potassium	24400	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:27	7440-09-7	
Sodium	69800	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:27	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
Alkalinity, Total as CaCO3	84.3	mg/L	20.0	4.9	1		11/17/17 19:09		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1000	mg/L	5.0	5.0	1		11/17/17 15:33		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	19.3	mg/L	2.0	1.0	2		12/02/17 17:14	16887-00-6	
Fluoride	0.70	mg/L	0.20	0.10	1		12/01/17 13:34	16984-48-8	
Sulfate	722	mg/L	50.0	25.0	50		12/03/17 10:47		



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-UMW-3D	Lab ID:	60258160003	Collecte	d: 11/13/17	13:05	Received: 11/15/17 04:15 Matrix: Water			
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
Boron	24100	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:29	7440-42-8	
Calcium	237000	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:29	7440-70-2	
Iron	1030	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:29	7439-89-6	
Magnesium	5750	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:29	7439-95-4	
Manganese	476	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:29	7439-96-5	
Potassium	18400	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:29	7440-09-7	
Sodium	81300	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:29	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
Alkalinity, Total as CaCO3	146	mg/L	20.0	4.9	1		11/21/17 10:14		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	1150	mg/L	5.0	5.0	1		11/17/17 15:34		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	20.4	mg/L	2.0	1.0	2		12/02/17 17:43	16887-00-6	
Fluoride	1.0	mg/L	0.20	0.10	1		12/01/17 13:49	16984-48-8	
Sulfate	710	mg/L	50.0	25.0	50		12/03/17 11:01	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-UMW-4D	Lab ID:	60258160004	04 Collected: 11/13/17 12:05 Re			Received: 11/15/17 04:15 Matrix: Water					
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual		
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7					
Boron	27000	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:32	7440-42-8			
Calcium	192000	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:32	7440-70-2			
Iron	7680	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:32	7439-89-6			
Magnesium	25300	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:32	7439-95-4			
Manganese	1650	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:32	7439-96-5			
Potassium	15100	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:32	7440-09-7			
Sodium	71600	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:32	7440-23-5			
2320B Alkalinity	Analytical	Method: SM 23	320B								
Alkalinity, Total as CaCO3	191	mg/L	20.0	4.9	1		11/21/17 10:21				
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C								
Total Dissolved Solids	1010	mg/L	5.0	5.0	1		11/17/17 15:36				
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00								
Chloride	25.4	mg/L	2.0	1.0	2		12/02/17 18:12	16887-00-6			
Fluoride	0.80	mg/L	0.20	0.10	1		12/01/17 14:04	16984-48-8			
Sulfate	544	mg/L	50.0	25.0	50		12/03/17 11:43	14808-79-8			



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-UMW-5D	Lab ID:	60258160005	Collecte	d: 11/13/17	14:15	Received: 11/	15/17 04:15 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron	3450	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:34	7440-42-8	
Calcium	70000	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:34	7440-70-2	
Iron	3300	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:34	7439-89-6	
Magnesium	15800	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:34	7439-95-4	
Manganese	414	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:34	7439-96-5	
Potassium	9120	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:34	7440-09-7	
Sodium	17800	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:34	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
Alkalinity, Total as CaCO3	227	mg/L	20.0	4.9	1		11/21/17 10:30		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	310	mg/L	5.0	5.0	1		11/17/17 15:36		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	25.8	mg/L	2.0	1.0	2		12/02/17 19:09	16887-00-6	
Fluoride	0.55	mg/L	0.20	0.10	1		12/01/17 14:19	16984-48-8	
Sulfate	18.3	mg/L	1.0	0.50	1		12/01/17 14:19	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-UMW-6D	Lab ID:	60258160006	Collected	d: 11/13/17	15:50	Received: 11/	15/17 04:15 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
Boron	1130	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:36	7440-42-8	
Calcium	81400	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:36	7440-70-2	
Iron	5990	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:36	7439-89-6	
Magnesium	19700	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:36	7439-95-4	
Manganese	442	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:36	7439-96-5	
Potassium	4370	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:36	7440-09-7	
Sodium	13600	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:36	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
Alkalinity, Total as CaCO3	198	mg/L	20.0	4.9	1		11/21/17 10:34		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	353	mg/L	5.0	5.0	1		11/17/17 15:45		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
Chloride	18.2	mg/L	1.0	0.50	1		12/01/17 14:34	16887-00-6	
Fluoride	0.43	mg/L	0.20	0.10	1		12/01/17 14:34	16984-48-8	
Sulfate	86.4	mg/L	10.0	5.0	10		12/03/17 11:57	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-BMW-1D	Lab ID:	60258160007	007 Collected: 11/13/17 10:58 Re			Received: 11/15/17 04:15 Matrix: Water					
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual		
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7					
Boron	241	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:38	7440-42-8	В		
Calcium	131000	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:38	7440-70-2			
Iron	9790	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:38	7439-89-6			
Magnesium	28400	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:38	7439-95-4			
Manganese	1060	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:38	7439-96-5			
Potassium	2520	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:38	7440-09-7			
Sodium	6360	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:38	7440-23-5			
2320B Alkalinity	Analytical	Method: SM 23	320B								
Alkalinity, Total as CaCO3	394	mg/L	20.0	4.9	1		11/21/17 10:40				
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C								
Total Dissolved Solids	450	mg/L	5.0	5.0	1		11/17/17 15:45				
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00								
Chloride	5.2	mg/L	1.0	0.50	1		12/01/17 14:49	16887-00-6			
Fluoride	0.28	mg/L	0.20	0.10	1		12/01/17 14:49	16984-48-8			
Sulfate	37.6	mg/L	2.0	1.0	2		12/03/17 12:12	14808-79-8			



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-BMW-3D	Lab ID:	60258160008	08 Collected: 11/13/17 08:45 Re			Received: 11/15/17 04:15 Matrix: Water					
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual		
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7					
Boron	109	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:41	7440-42-8	В		
Calcium	110000	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:41	7440-70-2			
Iron	7740	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:41	7439-89-6			
Magnesium	25400	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:41	7439-95-4			
Manganese	518	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:41	7439-96-5			
Potassium	3550	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:41	7440-09-7			
Sodium	6110	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:41	7440-23-5			
2320B Alkalinity	Analytical	Method: SM 23	20B								
Alkalinity, Total as CaCO3	344	mg/L	20.0	4.9	1		11/21/17 10:45				
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C								
Total Dissolved Solids	409	mg/L	5.0	5.0	1		11/17/17 15:46				
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00								
Chloride	8.7	mg/L	1.0	0.50	1		12/01/17 15:04	16887-00-6			
Fluoride	0.29	mg/L	0.20	0.10	1		12/01/17 15:04	16984-48-8			
Sulfate	27.5	mg/L	2.0	1.0	2		12/03/17 12:26	14808-79-8			



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-UMW-DUP-1	Lab ID:	60258160009	09 Collected: 11/13/17 08:45 R			Received: 11/15/17 04:15 Matrix: Water					
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual		
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7					
Boron	21700	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:43	7440-42-8			
Calcium	222000	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:43	7440-70-2			
Iron	380	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:43	7439-89-6			
Magnesium	11200	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:43	7439-95-4			
Manganese	284	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:43	7439-96-5			
Potassium	24000	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:43	7440-09-7			
Sodium	68500	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:43	7440-23-5			
2320B Alkalinity	Analytical	Method: SM 23	320B								
Alkalinity, Total as CaCO3	87.4	mg/L	20.0	4.9	1		11/21/17 10:59				
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C								
Total Dissolved Solids	1110	mg/L	5.0	5.0	1		11/17/17 15:46				
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00								
Chloride	19.4	mg/L	2.0	1.0	2		12/02/17 20:07	16887-00-6			
Fluoride	0.70	mg/L	0.20	0.10	1		12/01/17 15:48	16984-48-8			
Sulfate	720	mg/L	50.0	25.0	50		12/03/17 12:40	14808-79-8			



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Sample: S-UMW-FB-1	Lab ID:	60258160010	Collecte	d: 11/13/17	7 15:20	Received: 11/	15/17 04:15 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
Boron	98.1J	ug/L	100	3.5	1	11/18/17 12:30	11/26/17 14:45	7440-42-8	В
Calcium	39.4J	ug/L	100	36.0	1	11/18/17 12:30	11/26/17 14:45	7440-70-2	
Iron	<12.4	ug/L	50.0	12.4	1	11/18/17 12:30	11/26/17 14:45	7439-89-6	
Magnesium	<15.4	ug/L	50.0	15.4	1	11/18/17 12:30	11/26/17 14:45	7439-95-4	
Manganese	<1.8	ug/L	5.0	1.8	1	11/18/17 12:30	11/26/17 14:45	7439-96-5	
Potassium	<52.3	ug/L	500	52.3	1	11/18/17 12:30	11/26/17 14:45	7440-09-7	
Sodium	41.2J	ug/L	500	28.4	1	11/18/17 12:30	11/26/17 14:45	7440-23-5	В
2320B Alkalinity	Analytical	Method: SM 23	20B						
Alkalinity, Total as CaCO3	<4.9	mg/L	20.0	4.9	1		11/21/17 11:04		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		11/17/17 15:56		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	0.00						
Chloride	<0.50	mg/L	1.0	0.50	1		12/01/17 16:03	16887-00-6	
Fluoride	<0.10	mg/L	0.20	0.10	1		12/01/17 16:03	16984-48-8	
Sulfate	0.65J	mg/L	1.0	0.50	1		12/01/17 16:03	14808-79-8	



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

QC Batch: 503852 Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60258160001, 60258160002, 60258160003, 60258160004, 60258160005, 60258160006, 60258160007,

60258160008, 60258160009, 60258160010

METHOD BLANK: 2063356 Matrix: Water

Associated Lab Samples: 60258160001, 60258160002, 60258160003, 60258160004, 60258160005, 60258160006, 60258160007,

60258160008, 60258160009, 60258160010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	93.1J	100	3.5	11/26/17 16:10	
Calcium	ug/L	<36.0	100	36.0	11/26/17 16:10	
Iron	ug/L	<12.4	50.0	12.4	11/26/17 16:10	
Magnesium	ug/L	18.0J	50.0	15.4	11/26/17 16:10	
Manganese	ug/L	<1.8	5.0	1.8	11/26/17 16:10	
Potassium	ug/L	<52.3	500	52.3	11/26/17 16:10	
Sodium	ug/L	81.9J	500	28.4	11/26/17 16:10	

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Boron	ug/L	1000	1060	106	85-115	
Calcium	ug/L	10000	10500	105	85-115	
Iron	ug/L	10000	10600	106	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Manganese	ug/L	1000	1040	104	85-115	
Potassium	ug/L	10000	10400	104	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPLICA	ATE: 20633	58		2063359							
Parameter	6 Units	0258160001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	266	1000	1000	1300	1300	103	103	70-130	0	20	
Calcium	ug/L	71200	10000	10000	82200	81800	109	106	70-130	0	20	
Iron	ug/L	677	10000	10000	11000	11000	103	103	70-130	0	20	
Magnesium	ug/L	21300	10000	10000	31700	31800	104	105	70-130	0	20	
Manganese	ug/L	125	1000	1000	1150	1150	102	103	70-130	0	20	
Potassium	ug/L	5320	10000	10000	15600	15500	102	102	70-130	0	20	
Sodium	ug/L	14500	10000	10000	24900	24900	104	104	70-130	0	20	

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60258160

QC Batch: 503814 Analysis Method: SM 2320B QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60258160002

METHOD BLANK: 2062994 Matrix: Water

2062995

Associated Lab Samples: 60258160002

Blank Reporting Limit MDL Parameter Units Result Qualifiers Analyzed

Alkalinity, Total as CaCO3 <4.9 20.0 4.9 11/17/17 16:47 mg/L

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Alkalinity, Total as CaCO3 mg/L 500 523 105 90-110

SAMPLE DUPLICATE: 2062996

LABORATORY CONTROL SAMPLE:

60258189001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers ND 595 10 Alkalinity, Total as CaCO3 mg/L

SAMPLE DUPLICATE: 2062997

Date: 12/04/2017 11:25 AM

60258155003 Dup Max RPD RPD Parameter Units Result Result Qualifiers 367 Alkalinity, Total as CaCO3 mg/L 376 3 10

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



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

QC Batch: 504168 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60258160003, 60258160004, 60258160005, 60258160006, 60258160007, 60258160008, 60258160009,

60258160010

METHOD BLANK: 2065064 Matrix: Water

Associated Lab Samples: 60258160003, 60258160004, 60258160005, 60258160006, 60258160007, 60258160008, 60258160009,

60258160010

Blank Reporting Units MDL Qualifiers Parameter Result Limit Analyzed Alkalinity, Total as CaCO3 mg/L <4.9 20.0 4.9 11/21/17 10:11 2065065 LABORATORY CONTROL SAMPLE: LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Alkalinity, Total as CaCO3 455 91 90-110 mg/L 500 SAMPLE DUPLICATE: 2065066 60258160003 Dup Max RPD RPD Result Result Qualifiers Parameter Units 146 151 Alkalinity, Total as CaCO3 3 10 mg/L SAMPLE DUPLICATE: 2065067 60258160004 Dup Max Parameter Units Result Result RPD RPD Qualifiers Alkalinity, Total as CaCO3 mg/L 191 189 1 10

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



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

QC Batch: 504644 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60258160001

METHOD BLANK: 2067574 Matrix: Water

Associated Lab Samples: 60258160001

ParameterUnitsBlank ResultReporting LimitMDLAnalyzedQualifiersAlkalinity, Total as CaCO3mg/L<4.9</td>20.04.911/27/17 10:18

LABORATORY CONTROL SAMPLE: 2067575

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Alkalinity, Total as CaCO3 mg/L 500 492 98 90-110

SAMPLE DUPLICATE: 2067576

60258156006 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 416 431 3 10 Alkalinity, Total as CaCO3 mg/L

SAMPLE DUPLICATE: 2067577

60258160001 Dup Max RPD RPD Parameter Units Result Result Qualifiers 207 Alkalinity, Total as CaCO3 mg/L 217 5 10

SAMPLE DUPLICATE: 2067578

Date: 12/04/2017 11:25 AM

60258162001 Dup Max Parameter Units Result Result **RPD RPD** Qualifiers Alkalinity, Total as CaCO3 261 3 10 mg/L 269

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



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

QC Batch: 503795 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60258160002

METHOD BLANK: 2062895 Matrix: Water

Associated Lab Samples: 60258160002

Blank Reporting
Parameter Units Result Limit MDL Analyzed Qualifiers

Total Dissolved Solids mg/L <5.0 5.0 5.0 11/17/17 15:23

LABORATORY CONTROL SAMPLE: 2062896

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 979 98 80-120

SAMPLE DUPLICATE: 2062897

60258148001 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 967 959 10 **Total Dissolved Solids** 1 mg/L

SAMPLE DUPLICATE: 2062898

Date: 12/04/2017 11:25 AM

60258155004 Dup Max RPD RPD Parameter Units Result Result Qualifiers 6260 **Total Dissolved Solids** mg/L 6660 6 10

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



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

QC Batch: 503799 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60258160003, 60258160004, 60258160005, 60258160006, 60258160007, 60258160008, 60258160009,

60258160010

METHOD BLANK: 2062903 Matrix: Water

Associated Lab Samples: 60258160003, 60258160004, 60258160005, 60258160006, 60258160007, 60258160008, 60258160009,

60258160010

Parameter	Units	Blank Result	Reporting Limit	MDL		Analyz	zed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5	5.0	5.0	11/17/17	15:33	
LABORATORY CONTROL SAMPLE:	2062904							
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec		Rec nits	Qua	alifiers
Total Dissolved Solids	mg/L	1000	988	99		80-120		
SAMPLE DUPLICATE: 2062905		60258160003	Dun			Max		
Parameter	Units	Result	Dup Result	RPD		RPD		Qualifiers
Total Dissolved Solids	mg/L	1150	100	60	8		10	
SAMPLE DUPLICATE: 2062906								
		60258162004	Dup			Max		
Parameter	Units	Result	Result	RPD		RPD		Qualifiers
Total Dissolved Solids	mg/L	544	5-	46	0		10	

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



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

QC Batch: 504121 Analysis Method: SM 2540C

QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60258160001

METHOD BLANK: 2064804 Matrix: Water

Associated Lab Samples: 60258160001

ParameterUnitsBlank Reporting ResultReporting LimitMDLAnalyzedQualifiersTotal Dissolved Solidsmg/L<5.0</td>5.05.011/21/17 09:15

LABORATORY CONTROL SAMPLE: 2064805

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers **Total Dissolved Solids** mg/L 1000 964 96 80-120

SAMPLE DUPLICATE: 2064806

60258156006 Dup Max **RPD RPD** Parameter Units Result Result Qualifiers 528 3 10 **Total Dissolved Solids** 547 mg/L

SAMPLE DUPLICATE: 2064807

60258160001 Dup Max RPD RPD Parameter Units Result Result Qualifiers **Total Dissolved Solids** mg/L 318 313 2 10

SAMPLE DUPLICATE: 2064808

Date: 12/04/2017 11:25 AM

60258162001 Dup Max Parameter Units Result Result **RPD RPD** Qualifiers **Total Dissolved Solids** 471 1 10 mg/L 474

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



Project: AMEREN SIOUX ENERGY CTR-BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

QC Batch: 505276 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

60258160001, 60258160002, 60258160003, 60258160004, 60258160005, 60258160006, 60258160007, Associated Lab Samples:

60258160008, 60258160009, 60258160010

METHOD BLANK: 2069448 Matrix: Water

60258160001, 60258160002, 60258160003, 60258160004, 60258160005, 60258160006, 60258160007,Associated Lab Samples: Blank

60258160008, 60258160009, 60258160010

			Dialik		reporting							
Parameter		Units	Resul	t	Limit	MDL		Analyzed	Qua	alifiers		
Chloride		mg/L	<	 0.50	1.0)	0.50 12	/01/17 20:0	2			
Fluoride		mg/L	<	:0.10	0.20)	0.10 12	/01/17 20:02	2			
Sulfate		mg/L	<	<0.50	1.0)	0.50 12	/01/17 20:0	2			
LABORATORY CONTROL SA	MPLE: 206	9449										
			Spike	LCS	3	LCS	% Re	c				
Parameter		Units	Conc.	Resu	ult	% Rec	Limits	s Q	ualifiers			
Chloride		mg/L	5		4.8	97	9	0-110		-		
Fluoride		mg/L	2.5		2.4	95	9	0-110				
Sulfate		mg/L	5		4.9	99	9	0-110				
MATRIX SPIKE & MATRIX SP	IKE DUPLIC	ATE: 20694		1405	2069451							
	6	0258160001	MS Spike	MSD	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD		Qual
Fluoride	mg/L	0.41	2.5	2.5	2.8	2.6	96	89	80-120	7	15	
MATRIX SPIKE SAMPLE:	206	9452										
			602581	62001	Spike	MS	N	MS	% Rec			
Parameter		Units	Resi	ult	Conc.	Result	%	Rec	Limits		Qualif	iers
Fluoride		mg/L		0.41	2.5	2	2.9	98	80-	120		

Reporting

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



Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

QC Batch: 505661 Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60258160001, 60258160002, 60258160003, 60258160004, 60258160005, 60258160009

METHOD BLANK: 2071155 Matrix: Water

Associated Lab Samples: 60258160001, 60258160002, 60258160003, 60258160004, 60258160005, 60258160009

Blank Reporting

Parameter Units Result Limit MDL Analyzed Qualifiers

Chloride mg/L <0.50 1.0 0.50 12/02/17 14:50

LABORATORY CONTROL SAMPLE: 2071156

Spike LCS LCS % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Chloride mg/L 4.7 95 90-110

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2071157 2071158

MS MSD 60258160001 Spike Spike MS MSD MS MSD % Rec Max Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits RPD RPD Qual Chloride 80-120 0 mg/L 18.7 10 10 28.5 28.4 98 97 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.



AMEREN SIOUX ENERGY CTR-BOTT Project:

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

QC Batch: 505709 Analysis Method: EPA 300.0 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions

60258160001, 60258160002, 60258160003, 60258160004, 60258160006, 60258160007, 60258160008, Associated Lab Samples:

60258160009

METHOD BLANK: 2071670 Matrix: Water

Associated Lab Samples: Blank

60258160009

Reporting Units Limit MDL Qualifiers Parameter Result Analyzed Sulfate mg/L < 0.50 1.0 0.50 12/03/17 07:54

LABORATORY CONTROL SAMPLE: 2071671

LCS LCS Spike % Rec Parameter Units Conc. Result % Rec Limits Qualifiers Sulfate 5 5.0 101 90-110 mg/L

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2071673 2071672

MS MSD MSD MS 60258160001 Spike Spike MS MSD % Rec Max RPD RPD Parameter Units Result Conc. Conc. Result Result % Rec % Rec Limits Qual Sulfate mg/L 49.1 25 25 69.9 69.2 83 80 80-120 15

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



QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

Date: 12/04/2017 11:25 AM

B Analyte was detected in the associated method blank.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytica Batch
60258160001	S-UMW-1D	EPA 200.7	503852	EPA 200.7	503863
0258160002	S-UMW-2D	EPA 200.7	503852	EPA 200.7	503863
0258160003	S-UMW-3D	EPA 200.7	503852	EPA 200.7	503863
0258160004	S-UMW-4D	EPA 200.7	503852	EPA 200.7	503863
0258160005	S-UMW-5D	EPA 200.7	503852	EPA 200.7	503863
0258160006	S-UMW-6D	EPA 200.7	503852	EPA 200.7	503863
0258160007	S-BMW-1D	EPA 200.7	503852	EPA 200.7	503863
0258160008	S-BMW-3D	EPA 200.7	503852	EPA 200.7	503863
0258160009	S-UMW-DUP-1	EPA 200.7	503852	EPA 200.7	503863
0258160010	S-UMW-FB-1	EPA 200.7	503852	EPA 200.7	503863
0258160001	S-UMW-1D	SM 2320B	504644		
0258160002	S-UMW-2D	SM 2320B	503814		
0258160003	S-UMW-3D	SM 2320B	504168		
0258160004	S-UMW-4D	SM 2320B	504168		
0258160005	S-UMW-5D	SM 2320B	504168		
0258160006	S-UMW-6D	SM 2320B	504168		
0258160007	S-BMW-1D	SM 2320B	504168		
0258160008	S-BMW-3D	SM 2320B	504168		
0258160009	S-UMW-DUP-1	SM 2320B	504168		
0258160010	S-UMW-FB-1	SM 2320B	504168		
0258160001	S-UMW-1D	SM 2540C	504121		
0258160002	S-UMW-2D	SM 2540C	503795		
0258160003	S-UMW-3D	SM 2540C	503799		
0258160004	S-UMW-4D	SM 2540C	503799		
0258160005	S-UMW-5D	SM 2540C	503799		
0258160006	S-UMW-6D	SM 2540C	503799		
0258160007	S-BMW-1D	SM 2540C	503799		
0258160008	S-BMW-3D	SM 2540C	503799		
0258160009	S-UMW-DUP-1	SM 2540C	503799		
0258160010	S-UMW-FB-1	SM 2540C	503799		
0258160001	S-UMW-1D	EPA 300.0	505276		
0258160001	S-UMW-1D	EPA 300.0	505661		
0258160001	S-UMW-1D	EPA 300.0	505709		
0258160002	S-UMW-2D	EPA 300.0	505276		
0258160002	S-UMW-2D	EPA 300.0	505661		
0258160002	S-UMW-2D	EPA 300.0	505709		
0258160003	S-UMW-3D	EPA 300.0	505276		
0258160003	S-UMW-3D	EPA 300.0	505661		
0258160003	S-UMW-3D	EPA 300.0	505709		
0258160004	S-UMW-4D	EPA 300.0	505276		



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR- BOTT

Pace Project No.: 60258160

Date: 12/04/2017 11:25 AM

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60258160004	S-UMW-4D	EPA 300.0	505661		•
60258160004	S-UMW-4D	EPA 300.0	505709		
60258160005	S-UMW-5D	EPA 300.0	505276		
60258160005	S-UMW-5D	EPA 300.0	505661		
60258160006	S-UMW-6D	EPA 300.0	505276		
60258160006	S-UMW-6D	EPA 300.0	505709		
60258160007	S-BMW-1D	EPA 300.0	505276		
60258160007	S-BMW-1D	EPA 300.0	505709		
60258160008	S-BMW-3D	EPA 300.0	505276		
60258160008	S-BMW-3D	EPA 300.0	505709		
60258160009	S-UMW-DUP-1	EPA 300.0	505276		
60258160009	S-UMW-DUP-1	EPA 300.0	505661		
60258160009	S-UMW-DUP-1	EPA 300.0	505709		
60258160010	S-UMW-FB-1	EPA 300.0	505276		



Sample Condition Upon Receipt



\wedge	(
Client Name: (50) W	
Courier: FedEx UPS VIA Clay PI	EX □ ECI □ Pace □ Xroads 🛍 Client □ Other □
Tracking #: Pace	e Shipping Label Used? Yes □ No □
Custody Seal on Cooler/Box Present: Yes Ø No □	Seals intact: Yes K No □
Packing Material: Bubble Wrap □ Bubble Bags □	Foam □ None 🔼 Other □
	Ice Wet Blue None
Cooler Temperature (°C): As-read 41 24 Corr. Facto	Date and initials of person examining contents:
Temperature should be above freezing to 6°C	
Chain of Custody present:	ØYes □No □N/A
Chain of Custody relinquished:	MEYes □No □N/A
Samples arrived within holding time:	IXIYes □No □N/A
Short Hold Time analyses (<72hr):	□Yes Ø No □N/A
Rush Turn Around Time requested:	□Yes ∯No □N/A
Sufficient volume:	KÉYes □No □N/A
Correct containers used:	∰Yes □No □N/A
Pace containers used:	ÚYes □No □N/A
Containers intact:	©Yes □No □N/A
	□Yes □No 12/N/A
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	
Filtered volume received for dissolved tests?	□Yes □No ⑤N/A
Sample labels match COC: Date / time / ID / analyses	(ŽÍYes □No □N/A
Samples contain multiple phases? Matrix: WT	□Yes Ø No □N/A
Containers requiring pH preservation in compliance?	ØYes □No □N/A
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	
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 KÓN/A
Headspace in VOA vials (>6mm):	□Yes □No KŽN/A
Samples from USDA Regulated Area: State:	□Yes □No di t (N/A
Additional labels attached to 5035A / TX1005 vials in the field?	Yes □No Man/A
Client Notification/ Resolution: Copy COC to	Client? Y / N Field Data Required? Y / N
Person Contacted: Date/Ti	ime:
Comments/ Resolution:	
	44/40/47
Jam Chel	11/16/17
Project Manager Review:	Date:

CHAIN-OF-CUSTODY / Analytical Request Document

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

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Page:

Section C Invoice Information: Section B Required Project Information: Pace Analytical Section A Required Clier

STATE Control of State Con	Required Client Information:	2	Required Project Information:	formation.			lnvo	Invoice Information	ation:							_				
St. Date Dat		ssociates	Report To: Mark F	Haddock	< (mhaddoc	k@goider.com)	Atte	tion:												
Section Control Cont		1 Main Street, Suite 100		ingram	_		Cool	party Nan	le:				IL.	REGULA	TORY AGE	NCY				
Substitution Control	St Charle	s, MO 63301					Addi	ess.					3	GdN		ROUND \	WATER	DRINKIN	G WATER	
Section Part		@golder.com	Purchase Order No.	7.5			Pace	Quole:						LSO		CRA	l	OTHER		
Part	636-	Fax: 636-724-9323		meren	Sioux Energ	yy Center - Bottom A		Project	Jamie C	hurch				Site Loca	ation	CM				
Schuldung Strong Analysis Filtered Minj Schuldung Strong Analysis Filtered Minj Schuldung Strong Analysis Schuldung Schuldung Strong Analysis Schuldung Schu	Requested Due Date/TAT:			53-1406	3,0003E		Page.	Profile #:	9285					STA	ATE:					
Summary Discussions of the Process o							1				8	Reque	sted A	nalysis i	iltered (Y/	(N)				
CONTRICTOR CON	Section D Required Cient Info		(H)	(AIM)		LECTED			Preserva	ntives		z	z	2						
Summers Sum		ID (장 를 볼 때 꼭 의 를 끊 한 장 ATRIX CODE (see veild codes to	Ë	Lisos	COMPOSITE END/GRAS		Unpreserved	HCI HNO ²	Na ₂ S ₂ O ₃ Nethanol	↓Analysis Test	CI/F/SO4/Alkalinity	901	art manner				258/16) No./Lab I.	á
S-UMW-2D LINEARY SD LUMM-SD UMW-FB-1 UMW-F	J	S-UMW-1D	-	-	+	1-4/14/11	\vdash	1 -			1.51	W	W				(3)8	S	2 3	<u> </u>
S-UMW-3D S-UMW-5D S-UMM-5D S-UMM-5D S-UMM-5D S-UMW-5D S-UMM-5D S-U		S-UMW-2D	_			1142117/4/18		-	_		I AV	1				1	0			709
S-UMW-5D S-U	8	S-UMW-3D				11/13/12/13/05	1	-				+				1	+			3 2
S-BMW-5D S-BMW-1D S-BMW-1D UMW-DUP-1 UMW-FB-1 UM	4	S-UMW-4D				DOI THEILI		+											_	2 /2
S-BMW-1D S-BMW-1D S-BMW-1D S-BMW-1D S-BMW-3D UMW-DUP-1 -UMW-FB-1 -	2	S-UMW-5D		-		G/h/														Out,
S-BMW-1D LIMW-1D-1 UMW-PB-1 -UMW-FB-1 -UMW-FB-1 LIME RELINQUISHED BY AFFILLATION DATE TIME ACCEPTED BY AFFILLATION DATE TIME SAMPLE CONDITIONS SAMPLE ROUGH (YOUT) ACCEPTED BY AFFILLATION DATE TIME ACCEPTED BY AFFILLATION DATE TIME ACCEPTED BY AFFILLATION ACCEPTED BY AFFILLATION DATE TIME ACCEPTED BY AFFILLATION ACCEPTED BY ACCEPTED BY AFFILLATION ACCEPTED BY AFFILLATION ACCEPTED BY AFFILLATION ACCEPTED BY AFFILLATION ACCEPTED BY ACCEPTED BY AFFILLATION ACCEPTED BY ACCEPTED	9	S-UMW-6D		-	1/-	1		#												2
UMW-DUP-1 -UMW-FB-1	7	S-BMW-1D				#		+						-		+	-		_	V.
UMW-BB-1 -UMW-FB-1 -	83	S-BMW-3D				出		=									-	_		2 2
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RELINQUISHED BY AFFILIATION DATE TIME ACCEPTED BY AFFILIATION DATE TIME SAMPLE CONDITIONS Manual Color	11			-								+				-				
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SAMPLER NAME AND SIGNATURE SIGNATURE of SAMPLER: SIGNATURE SIGNATURE SIGNATURE of SAMPLER: SIGNATURE OF SAMPLE	ADDI	TIONAL COMMENTS	RELIN	IQUISHE	D BY / AFFIL		1	TIME	-	ACCEP	EDBI	ALLIE Y	5					-		
SAMPLER NAME AND SIGNATURE SAMPLER: M. WONTH FRINT Name of SAMPLER: M. WONTH SIGNATURE of SAMPLER: M. WANDDRYN: (////////////////////////////////////	*EPA 2007; B,Ca,Mg,K,N	la,Fe,M⊓	Day 1	1	1606	77	1	020	She	The state of the s	3/	W.		1)1)	\$	0.	N. V.	7	2	
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: M. Works Custody Sealed Custody Sealed Received on Received on Custody Samples: M. Warmspryn: (I/4/17			June	3	2	7		3						2			7 4.2	8	8	
SAMPLER NAME AND SIGNATURE PRINT Name of SAMPLER: Bright Cooler (Y/Y) SIGNATURE of SAMPLER: W. C. Cooler (Cooler (Y/Y) MAMDDIYY: 1/14/17 Temp is 0.0 Cualody Seale Signed /////// MAMDDIYY: 1/14/17	Pa									7				_		1	+	þ	3:	
PRINT Name of SAMPLER: M. WOLKS SIGNATURE of SAMPLER: M. C. Cooler Received MMMDDAYD: 11/4/17 Temp Cooler Cooler Signature of SAMPLER: M. C.	ige 3	Ā			SAM	PLER NAME AND SIGN	IATURE						The state of the s				uo pə	Seale	s lutsc	(N
SIGNATURE OF SAMPLER: We DATE SIGNED [[] 4/1 + F R C CO	0 oi					PRINT Name of SAM	~	300	Sock	2					1		viece	γροί,	mple	/1)
	f 30					SIGNATURE of SAM	PLER:	19	2	(,	DATE:	NYW.	114	41		 971	SIJ	IB&	

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

Important Note. By signing this farm you are eccepting Pace's NET 30 day payment terms and agreeing to lake charges of 1,5% per month for any invoices not paid within 30 days.



MEMORANDUM

Date: anuary 16, 201 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - E.1

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Calcium was outside the recovery criteria range for MS. Data was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a duplicate (i.e. field, sample) RPD was not met, associated samples were qualified as estimates (J). If the results were less than the method detection limit or detected in a blank the results were qualified as non-detects and estimates (UJ).



Proje	pany Name: Golder Associates ct Name: Ameren-Sioux Bottom - El ewer: T Goodwin		Pro	ject Numb	ger: J Ingram per: 1531406.0003A
Labor Analy Matrix	ratory: Pace Analytical rtical Method (type and no.): Metals 200.7&200.8, x: Air Soil/Sed. Water Waste		SD(), TDS 2	G #: <u> 60 7</u> 540C, pH	H 4500H+, Anions 300.0, Rads 903.1&904.0
S-UI	ole Names <u>S-UMW1D, S-UMW-2D, S-UMW-3D, S-UMW-DUP-1, S-UMW-FB-1, S-UMW-ID MS, S-UMW-</u>	<u>JIVIVV-4D,</u> L D MSD			
		-			·
NOTE	E: Please provide calculation in Comment areas of	•	(if	on the ba	nck please indicate in comment areas).
Field	Information	YES	NO	NA	COMMENTS
а) Sampling dates noted?	X			
b) Sampling team indicated?	X			
С) Sample location noted?	\Box			
d) Sample depth indicated (Soils)?			X	
е) Sample type indicated (grab/composite)?	X			Grab
f)	Field QC noted?	x			
g) Field parameters collected (note types)?	\mathbf{x}			pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
h) Field Calibration within control limits?	X			
i)	Notations of unacceptable field conditions/perform	nances fro	om field l		
			X		
j)	Does the laboratory narrative indicate deficiencies Note Deficiencies:			X	
Chain	-of-Custody (COC)	YES	NO	NA	COMMENTS
a)	Was the COC properly completed?	x			
b)		IA.		Ц	
	and laboratory personnel?	X			
c)	Were samples received in good condition?	Q			
Gener	al (reference QAPP or Method)	YES	NO	NA	COMMENTS
a)	Were hold times met for sample pretreatment?			X	
b)			X		pH
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?	V			Chloride, Sulfate
g)	Were any matrix problems noted?	Ø			Chein

Bla	anks a) b) c) d)	Were analytes detected in the method blank(s)? Were analytes detected in the field blank(s)? Were analytes detected in the equipment blank(s)? Were analytes detected in the trip blank(s)?	YES	NO	NA	COMMENTS, Ca (14.2) B,Ca, Mo, TDS,
Lal	bora a)	atory Control Sample (LCS) Was a LCS analyzed once per SDG?	YES	NO	NA	COMMENTS
	b) c)	Were the proper analytes included in the LCS? Was the LCS accuracy criteria met?	র্			
Du	plic	ates	YES	NO	NA	COMMENTS
	a)	Were field duplicates collected (note original and du	ıplicate :	sample na	ames)?	Dup-1@ VMW-3D
						FB-1@ UMW-YD
	b)	Were field dup. precision criteria met (note RPD)?		Image: Control of the con		Pholonly detect in sample), Sb (36.5)
	c)	Were lab duplicates analyzed (note original and dup	olicate s	amples)?		
			o			TDS, PH
	d)	Were lab dup. precision criteria met (note RPD)?		Ø		Tp 5 (26)
Blii	nd S	Standards	YES	NO	NA	COMMENTS
	a)	Was a blind standard used (indicate name,			\mathbf{x}	
		analytes included and concentrations)?				
	b)	Was the %D within control limits?			X	
Mat	trix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
	a)	Was MS accuracy criteria met?		<u>ਤ</u>		C (57)
	,	Recovery could not be calculated since sample contained high concentration of analyte?			u I	<u> </u>
	b)	Was MSD accuracy criteria met?	_ বি			
		Recovery could not be calculated since sample contained high concentration of analyte?				
	c)	Were MS/MSD precision criteria met?	J			
Cor	nme	ents/Notes:				
_						

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-UMW-ID	Sulfate	80.5	D	Result had a dilution factor (DF) of 20
S-UMW-2D	Chloride	19.5	D	1 2
NC .	Sulfate	524	D	50
S-UMW-3D	Sulfate Sulfate	833	D	loo
S-UMW-4D	Chloride	25.5	D	7
и	Sulfate	511	D	50
S-UMW-SD	Chloride	24.7	D	7
Ц	Sulfate	41.5	D	5
S-UMW-6D	Sulfate	60.0	D	5
S-BMW-ID	Sulfate	36.5	D	_5
S-UMW- DUP-1	Sul fate	823	D	100
1	Lead (Pb)	2.5	υJ	RPD was not met, Result < MDL
			ac.	

Signature: 6mm	Joseph.	Date:	_1/16/2018
	// /	_	



MEMORANDUM

Date: anuary 16, 201 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - E.2

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the MDL value and qualified as non-detects (U).
- Analyte of Mercury in the laboratory control sample exceeded QC limits bias high. When the results were less than the MDL the results were qualified as non-detects and estimates (UJ).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J). If the results were less than the method detection limit or detected in a blank the results were qualified as non-detects and estimates (UJ).



1

Project Review Labora Analytic Matrix: Sample S-UM	ny Name: Golder Associates Name: Ames - Sionx - Bottom - E2 ver: T Goodwin tory: Pace Analytical cal Method (type and no.): EPA 200.7, 200.8, 74 Air Soil/Sed. Water Waste Names S-UMW1D, S-UMW-2D, S-UMW-3D, S-UMW-1D N-DUP-1, S-UMW-FB-1, S-UMW-1D MS, S-UMW-1D Please provide calculation in Comment areas or	70, 903 MW-4D.	Proje Valid SDG 3.1, 90 4.0 S-UMW-	ect Number: dation Date:_ s#:6021 0, 300.0 { s 5D, S-UMW-	1054 M 2540C, 4500-H+8 6D, S-BMW-1D,
	nformation	YES	NO NO	NA	COMMENTS
a)	Sampling dates noted?	IΔ (Δ			COMMEN 12
b)	Sampling team indicated?	☐ ☑			
c)	Sample location noted?	N			
d)	Sample depth indicated (Soils)?			Image: Control of the	
e)	Sample type indicated (grab/composite)?	_ 덕	П		
f)	Field QC noted?	ব	П	П	
g)	Field parameters collected (note types)?	_			12
h)	Field Calibration within control limits?	_ _			
i)	Notations of unacceptable field conditions/performa	nces fro	m field lo	gs or field no	otes?
			Q		
j)	Does the laboratory narrative indicate deficiencies? Note Deficiencies:			<u> </u>	
Chain-c	of-Custody (COC)	YES	NO	NA	COMMENTS
a)	Was the COC properly completed?	V			
b)	Was the COC signed by both field and laboratory personnel?	ď.			
c)	Were samples received in good condition?	Q			
Genera	I (reference QAPP or Method)	YES	NO	NA	COMMENTS
a)	Were hold times met for sample pretreatment?		П	d	
b)	Were hold times met for sample analysis?		<u> </u>		Н
c)	Were the correct preservatives used?	<u> </u>			
d)	Was the correct method used?	_ I			
e)	Were appropriate reporting limits achieved?	<u> </u>			
f)	Were any sample dilutions noted?	Image: Control of the con	A CO		Chloride, Sulfate
g)	Were any matrix problems noted?		Ø		,

Blank	s ,	YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	Ø			[G] UMW-FB-1
b)	Were analytes detected in the field blank(s)?	Ø			[CA] UMW-FB-1 (B) 51.1 UMW-
c)	Were analytes detected in the equipment blank(s)?				54.9 (6) 0.56
d)	Were analytes detected in the trip blank(s)?			团	[Sulfate] 0.39
	atory Control Sample (LCS)	YES	NO	NA —	COMMENTS
a)	,	Image: section of the sec			DUP 1 COMO TG
b)	Were the proper analytes included in the LCS?	I			E. 4
c)	Was the LCS accuracy criteria met?		I		[Hz] - comments
Duplic	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate s	sample r	names)?	DUP-1@UMW-4D
		V			
b)	Were field dup. precision criteria met (note RPD)?	10	1		Se(200)
c)	Were lab duplicates analyzed (note original and dup	plicate sa	amples)	?	[TDS]
		V			
d)	Were lab dup. precision criteria met (note RPD)?	$\overline{\mathcal{A}}$			
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			ď	
	analytes included and concentrations)?				
b)	Was the %D within control limits?			I	
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?	<u> </u>	П		
	Recovery could not be calculated since sample contained high concentration of analyte?			⊴	
c)	Were MS/MSD precision criteria met?	Ø			
H ₂	ents/Notes: % Rec in LCS execeded % Rec	Limits	hig	<u>L.</u>	
				-	

Sc PA

Data Qualification: EZ

Sample Name	Constituent(s)	Result	Qualifier	Reason
All Samples	Mercury (Hg)	0.039	UJ	LCS returned % Rec High, Result < MDL
5-UMW-DUP-1	Selevium (Se)	0.18	UJ	RPD exceed limit; Result < MDL
S-UMW-FB-1	Calcina (Ca)	100	U	Detected in blank; PQL>Result>MDL
5-UMW-6D	Chromian (Cr)	1.0	U	上上
S-UMW-ID	Sulfate	61.1	D	Result had a dilution factor of 5
5-UMW-ZD	Chloride	21.7		2
上	Sulfate	641		50
S-UMW-3D	Chloride	23.5		2
- 1	Sulfate	663		100
S-UMW-YD	Chloride	25.5		2
1	Sulfate	397		50
5-UMU-5D	Chloride	7.3		2_
1	Sulfate	26.1		2
5-UMW-6D	Chloride	18.6		5
上	Sulfate	66.2		5
S-BHW-ID	Sulfate	31.9		5
S-UMW-DUP-1	Chloride	26.3		2_
1	Sulfate	484	7	50
			12	

Signature: John Joseph	Date: 1/16/2018	



MEMORANDUM

Date: January 16, 2018 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - E.3

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the MDL value and qualified as non-detects (U).
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).



1

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas). Field Information A	Company Name: Golder Associates Project Manager: J lagram Project Name: Amelen - Sionx BoHom E3 Project Number: 1531406.0003A Reviewer: T Goodmin Validation Date: 1/16/18 Laboratory: Pace Analytical SDG #: 60223196 Analytical Method (type and no.): Metals 200.7+200.8, Hg 7470, TDs 2540C, pH 4500H+, Aniens 300.0, Rad 703.14-904.6 Matrix: Air Soil/Sed. Mater Waste Sample Names S-UMW1D, S-UMW-2D, S-UMW-3D, S-UMW-4D, S-UMW-5D, S-UMW-6D, S-BMW-1D, S-UMW-DUP-1, S-UMW-FB-1, S-UMW-1D MS, S-UMW-1D MSD								
a) Sampling dates noted? b) Sampling team indicated? c) Sample location noted? d) Sample depth indicated (Soils)? e) Sample type indicated (\$\omega_{\omega}\text{composite})? d) Field Calibration within control limits? d) Field Calibration within control limits? d) Notations of unacceptable field conditions/performances from field logs or field notes? d) Notations of unacceptable field conditions/performances from field logs or field notes? d) Notations of unacceptable field conditions/performances from field logs or field notes? d) Notations of unacceptable field conditions/performances from field logs or field notes? d) Notations of unacceptable field conditions/performances from field logs or field notes? d) Notations of unacceptable field conditions/performances from field logs or field notes? d) Notations of unacceptable field conditions/performances from field logs or field notes? d) Was the COC properly completed? d)		NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).							
b) Sampling team indicated? c) Sample location noted? d) Sample depth indicated (Soils)? e) Sample type indicated (Soils)? f) Field QC noted? g) Field parameters collected (note types)? f) Field QC noted? g) Field parameters collected (note types)? f) Field Calibration within control limits? g) Field Calibration within control limits? g) Fold Calibration within control limits? g) Notations of unacceptable field conditions/performance from field logs or field notes? h) Note Deficiencies: g) Does the laboratory narrative indicate deficiencies? h) Was the COC properly completed? g) Was the COC signed by both field and laboratory personnel? g) Was the COC signed by both field and laboratory personnel? g) Were samples received in good condition? g) General (reference QAPP or Method) g) Were hold times met for sample pretreatment? g) Were hold times met for sample analysis? g) Were the correct preservatives used? g) Was the correct method used? g) Was the correct method used? g) Were any sample dilutions noted?	Field In	formation	YES	NO	NA	COMMENTS			
c) Sample location noted? d) Sample depth indicated (Soils)? e) Sample type indicated (Soils)? f) Field QC noted? g) Field Parameters collected (note types)? h) Field Calibration within control limits? i) Notations of unacceptable field conditions/performance from field logs or field notes? j) Does the laboratory narrative indicate deficiencies? Note Deficiencies: Chain-of-Custody (COC) YES NO NA COMMENTS a) Was the COC groperly completed? b) Was the COC signed by both field and laboratory personnel? c) Were samples received in good condition? General (reference QAPP or Method) YES NO NA COMMENTS a) Were hold times met for sample pretreatment? b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?	a)	Sampling dates noted?	A						
d) Sample depth indicated (Soils)? e) Sample type indicated (@@/composite)? f) Field QC noted? g) Field parameters collected (note types)? f) Field Calibration within control limits? g) Notations of unacceptable field conditions/performances from field logs or field notes? g) Does the laboratory narrative indicate deficiencies? g) Note Deficiencies: g) Note Deficiencies: g) Was the COC properly completed? g) Was the COC signed by both field and laboratory personnel? g) Were samples received in good condition? g) Were hold times met for sample pretreatment? g) Were hold times met for sample pretreatment? g) Were hold times met for sample analysis? g) Were the correct preservatives used? g) Was the correct method used? g) Were appropriate reporting limits achieved? g) Were any sample dilutions noted?	b)	Sampling team indicated?	V						
e) Sample type indicated (Cab/composite)?	c)	Sample location noted?	Image: section of the content of the con						
f) Field QC noted? g) Field parameters collected (note types)? h) Field Calibration within control limits? i) Notations of unacceptable field conditions/performances from field logs or field notes?	d)	Sample depth indicated (Soils)?			V				
g) Field parameters collected (note types)? h) Field Calibration within control limits? i) Notations of unacceptable field conditions/performances from field logs or field notes? j) Does the laboratory narrative indicate deficiencies? Note Deficiencies: Chain-of-Custody (COC) YES NO NA COMMENTS a) Was the COC properly completed? b) Was the COC signed by both field and laboratory personnel? c) Were samples received in good condition? General (reference QAPP or Method) YES NO NA COMMENTS a) Were hold times met for sample pretreatment? b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?	e)	Sample type indicated (grab/composite)?	Q						
h) Field Calibration within control limits? i) Notations of unacceptable field conditions/performances from field logs or field notes?	f)	Field QC noted?	I						
i) Notations of unacceptable field conditions/performances from field logs or field notes?	g)	Field parameters collected (note types)?	I						
Does the laboratory narrative indicate deficiencies? Does the Deficiencies:	h)	Field Calibration within control limits?	Q						
Does the laboratory narrative indicate deficiencies?	i)	Notations of unacceptable field conditions/performa	ncee f	rom field l	ogs or fiel	d notes?			
Note Deficiencies: Chain-of-Custody (COC) YES NO NA COMMENTS a) Was the COC properly completed? b) Was the COC signed by both field and laboratory personnel? c) Were samples received in good condition? General (reference QAPP or Method) YES NO NA COMMENTS a) Were hold times met for sample pretreatment? b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?				d					
a) Was the COC properly completed? b) Was the COC signed by both field and laboratory personnel? c) Were samples received in good condition? General (reference QAPP or Method) YES NO NA COMMENTS a) Were hold times met for sample pretreatment? b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?	j)			_	_				
b) Was the COC signed by both field and laboratory personnel? c) Were samples received in good condition? General (reference QAPP or Method) The sample pretreatment? b) Were hold times met for sample pretreatment? b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted? Comments Com	Chain-c	of-Custody (COC)	YES	NO	NA	COMMENTS			
and laboratory personnel? c) Were samples received in good condition? General (reference QAPP or Method) Were hold times met for sample pretreatment? b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?	a)	Was the COC properly completed?	T						
General (reference QAPP or Method) a) Were hold times met for sample pretreatment? b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?	,		I						
a) Were hold times met for sample pretreatment? b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?	c)	Were samples received in good condition?	V						
b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?	General (reference QAPP or Method)		YES	NO	NA	COMMENTS			
b) Were hold times met for sample analysis? c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted?	a)	Were hold times met for sample pretreatment?			N				
c) Were the correct preservatives used? d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted? Cd: UMW-4D, Chloride, Sulfate			_	_ [e H			
d) Was the correct method used? e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted? Cd: UMW-4D, Chloride, Sulfake		•				T			
e) Were appropriate reporting limits achieved? f) Were any sample dilutions noted? Cd: Unw-4D, Chloride, Sulfake		·				-			
f) Were any sample dilutions noted?				_					
,	,			_		Cd: UMW-4D COLOR GILL			
	,		_/			•			

Blanks	5	YES	NO	NA	(22.0) COMMENTS
a)	Were analytes detected in the method blank(s)?				Ca, Mol
b)	Were analytes detected in the field blank(s)?	Ø			D.Ca, Mo (0.85) TDS(6.0)
c)	Were analytes detected in the equipment blank(s)?			d ((50.1)
d)	Were analytes detected in the trip blank(s)?			র্ত্র	
Labora	atory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	1			S-VAW-DUP-1 @ 5 UMW-2D TA
b)	Were the proper analytes included in the LCS?	I			
c)	Was the LCS accuracy criteria met?	ত			
Duplic		YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du		ample na	mes)?	S-UMW-DUP-1@S-UMW-ZD
		Image: Control of the			
b)	Were field dup. precision criteria met (note RPD)?	V			
c)	Were lab duplicates analyzed (note original and dup	/	mples)?		
		团			TDS
d)	Were lab dup. precision criteria met (note RPD)?	I			
Blind Standards					
		YES	NO	NA —	COMMENTS
a)	Was a blind standard used (indicate name,			Image: Control of the	
	analytes included and concentrations)?	_	_		
b)	Was the %D within control limits?			Image: section of the content of the	
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?	<u>⊡</u>			COMMENTS
ω,	Recovery could not be calculated since sample	ت		L.I	
	contained high concentration of analyte?				
b)	Was MSD accuracy criteria met?				Ca % Rec High
	Recovery could not be calculated since sample contained high concentration of analyte?		I		
c)	Were MS/MSD precision criteria met?	I			
Comm	ents/Notes:				
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QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

SCFA
Data Qualification: £3

Sample Name	Constituent(s)	Result	Qualifier	Reason
5-BMW-1D	Molybdenum (Mo)	1.1	U	Detected in blank; PQL > Result
5-UMW-FB-1		0.85		1
1	Calcium (Ga)	50.1	工	<u> </u>
S-UMW-ID	Chloride	21.2	D	Result has a dilution factor of 2
<u></u>	Sulfate	65.1		5
5-UMW-2D	Chloride	17.9		2
	Suifate	594		50
5-UNW-3D	Chloride	24.6		2.
	Sulfate	565	<u> </u>	50
S-UMW-4D	Cadmium (Cd)	0.058	UD	Z; Result < MD
	Chloride	25.5	D	2
	Sulfate	522		50
S-UMW-5D	Chloride	24.7		2
	Sulfate	40.4		5
5-UMW-6D	Chloride	21.7		2
	Sulfate	77.8		5
S-UMW-DUP-1	Chloride	19.7		2
	Sulfate	595		50
5-BMW-1D	Sulfate	41.5	<u> </u>	1. 5
				F
		19		
				72)

Signature: 6mm / Handuh	 16/2018



MEMORANDUM

Date: April 10, 2017 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - E.4

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the MDL value and qualified as non-detects (U).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J). If the results were less than the method detection limit or detected in a blank the results were qualified as non-detects and estimates (UJ).



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Company Name: Goldes Associates Project Manager: Jagram Project Name: America Sionx Project Number: 1531406.0003A Reviewer: T Goodwin Botton EY Validation Date: 4/10/2017 Laboratory: Pace Anlytical Analytical Method (type and no.): Matrix: Air Soil/Sed. Water Waste Sample Names Metals 200.7 + 200.8, Ha. 7470, TDS 2540C, pt 4500H+, Anions 300.0, Ruls 903.1 + 904.0 S-UMW-ID, S-UMW-2D, S-UMW-3D, S-UMW-5D, S-UMW-6D, S-BMW-1D S-UMW-DUP-1, S-UMW-FB-1, S-UMW-5D MS, S-UMW-5D MSD								
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?								
b) Sampling team indicated?								
c) Sample location noted?								
d) Sample depth indicated (Soils)?								
e) Sample type indicated (gran/composite)?								
f) Field QC noted?								
g) Field parameters collected (note types)?								
h) Field Calibration within control limits?								
i) Notations of unacceptable field conditions/performances from field logs or field notes?								
j) Does the laboratory narrative indicate deficiencies? Note Deficiencies:								
Chain-of-Custody (COC) YES NO NA COMMENTS								
a) Was the COC properly completed?								
b) Was the COC signed by both field and laboratory personnel?								
c) Were samples received in good condition?								
General (reference QAPP or Method) YES NO NA COMMENTS								
a) Were hold times met for sample pretreatment?								
b) Were hold times met for sample analysis?								
c) Were the correct preservatives used?								
d) Was the correct method used?								
e) Were appropriate reporting limits achieved?								
f) Were any sample dilutions noted?								
g) Were any matrix problems noted?								

Revised May 2004

Blanks		YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	<u> </u>			Mo (1.0)
b)	Were analytes detected in the field blank(s)?				G. No. @ UMW-YD
c)	Were analytes detected in the equipment blank(s)?			A	(34.0) (1.2)
d)	Were analytes detected in the trip blank(s)?			Image: Control of the	
Lahora	atory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	☑	_		COMMENTS
b)	Were the proper analytes included in the LCS?	o O			
•	•	A			
c)	Was the LCS accuracy criteria met?	M			
Duplica	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate s	ample na	mes)?	DUP-1@ UMW-2D
		\square			
b)	Were field dup. precision criteria met (note RPD)?		\square		Cd, Cr
c)	Were lab duplicates analyzed (note original and dup	olicate sa	amples)?		
d)	Were lab dup. precision criteria met (note RPD)?	d			
	Standards	YES	NO	NA —	COMMENTS
a)	Was a blind standard used (indicate name,			a	
	analytes included and concentrations)?			,	
b)	Was the %D within control limits?			J	·
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?		<u>র</u>		Ca: MS % Rec LOW
•	Recovery could not be calculated since sample		L		
	contained high concentration of analyte?		Image: section of the content of the		
b)	Was MSD accuracy criteria met?	G'			
	Recovery could not be calculated since sample contained high concentration of analyte?		Ø		
c)	Were MS/MSD precision criteria met?	v			
Comme	ents/Notes:				
	internation				
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Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-UMW-ZD	U	<0.029	رى	Field Dup RPD not met, Result below MDL
μ	Cr	<0.34	UJ	11
S-BMW-ID	Mo	6.4	U	Detected in blank, Result below PQL
S-UMW-FB-1	11	1.2	U	11
S-UMW-DUP-1	Cd	0.061	1	Field Dup RPD not met, Resultabove MDL
W.	Cr	0.77	J	I.
S-UMW-ID	Chloride	23.7	D	Result had a Dilution Factor (DF) of Z
	Sulfate	213		20
S-UMW-ZD	Chloride	19.7		Z
	Sulfate	528		50
5-UMW-4D	Chloride	24.7		7
	Sulfate	624		50
5-UMW-DUP-1	Chloride	20.1		2
	Sulfale	516		50
5-UMW-3D	Chloride	72.4		7
	Sulfate	684		50
5-UMW-5D	Chlorite	25.5		2
	Sulfate	38.6		5
S-UMW-6D	Chloride	20.8		2
	Sulfate	80.2		5
S-BMW-ID	f t	41.6	1	
		TZ	}	

Signature: Jonny A Horder h	Date: 4/10/2017



Date: April 18, 2017 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - E.5

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Boron, Calcium, Chloride, Mercury, and Sulfate exceeded the recovery criteria for MS and MSD. Data was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the MDL value and qualified as non-detects (U).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J). If the results were less than the method detection limit or detected in a blank the results were qualified as non-detects and estimates (UJ).



Company Name: Golder Associates Project Manager: J lagram Project Name: American Sionx - Botton - ES Project Number: 1531406.0003A Reviewer: T Goodmin Validation Date: 4/18/2017 Laboratory: Pace Analytical SDG #: 60231802 Analytical Method (type and no.): Metals 200.7 + 200.8, Ha 7470, TDS 2540C, pH 4500H+, Anions 300.0, Rods 903.1 + 704.0 Matrix: Air Soil/Sed. Water Waste Sample Names S-UMW-ID, S-UMW-3D, S-UMW-4D, S-UMW-5D, S-UMW-6D, S-BMW-1D, S-BMW-3D S-UMW-DUP-1, S-UMW-FB-1, S-UMW-4D MS, S-UMW-4DMSD							
	Please provide calculation in Comment areas or				•		
	nformation	YES	NO	NA —	COMMENTS		
a)	Sampling dates noted?	ď			10/101		
b)	Sampling team indicated?	ব্ ব্			72/121		
c)	Sample location noted?						
d)	Sample depth indicated (Soils)?			Image: Control of the			
e)	Sample type indicated (grad/composite)? Field QC noted?	ৰ ব			ER DUD. MS / AND		
f)	Field QC noted? Field parameters collected (note types)?	ব			FB, DVP, MS/MSD		
g) h)	Field Calibration within control limits?				pt, s.Gr., Turb, Temp, DO, ORP, Flow, DTW		
i)	Notations of unacceptable field conditions/performa	. Tage fr	∐ om field lea	_			
''	Notations of unacceptable field conditions/perioring	ances in		_	a notes?		
j)	Does the laboratory narrative indicate deficiencies?	· □		Id			
1)	Note Deficiencies:						
Chain-e	of-Custody (COC)	YES	NO	NA	COMMENTS		
a)	Was the COC properly completed?	V					
b)	Was the COC signed by both field	_	_ _	<u> </u>			
	and laboratory personnel?	d					
c)	Were samples received in good condition?	Ø					
Genera	II (reference QAPP or Method)	YES	NO	NA	COMMENTS		
a)	Were hold times met for sample pretreatment?		П	Image: section of the			
b)	Were hold times met for sample analysis?		A		Н		
c)	Were the correct preservatives used?	<u> </u>			1		
d)	Was the correct method used?	d					
e)	Were appropriate reporting limits achieved?						
f)	Were any sample dilutions noted?	Ī	AR)		Chloride, Sulfate		
g)	Were any matrix problems noted?	<u>_</u>			Ms exceeded QC limits		

Revised May 2004

Blanks	•	YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	Ø			Hy, Ca, Mo, Sb, Cd,
b)	Were analytes detected in the field blank(s)?	V			Bo, Ca, Mo
c)	Were analytes detected in the equipment blank(s)?			Ø,	
d)	Were analytes detected in the trip blank(s)?			I	
Labana	4	\/= a			
	atory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	<u>a</u>			
b)	Were the proper analytes included in the LCS?	Q			
c)	Was the LCS accuracy criteria met?	V			
Duplic	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate	sample n	ames)?	F8-1@ P6-2" UMW-6D
		Ø			DUP-1 @ UMW-3D
b)	Were field dup. precision criteria met (note RPD)?		Image: Control of the		DUP-1: Li, Cd ; FB-1: Bo, C, Mo
c)	Were lab duplicates analyzed (note original and dup	plicate s	amples)?		
		o			TDS only
d)	Were lab dup. precision criteria met (note RPD)?	d			
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,				
	analytes included and concentrations)?				
b)	Was the %D within control limits?			d	
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?		\square		Ha, Bo, Ca, Chluride, Sulfate
	Recovery could not be calculated since sample contained high concentration of analyte?			囝	•
b)	Was MSD accuracy criteria met?		<u> </u>		Ha, Bo, (a, Chbride, Sulfate
	Recovery could not be calculated since sample contained high concentration of analyte?			d	
c)	Were MS/MSD precision criteria met?	d			
Commo	ents/Notes:				
×			-	-	

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
5-BNW-1D	Mo	1.2	U	Detected in blank, result is < POL
S-BMW-3D	Mo	1.8		
	sb	0.27		
	Cd	0.046		
	Ha	0.046	<u> </u>	
S-UMW-FB-1	4	87.4	U A	RPD was not met, atto detected in back below #
	Mo	4.5	UA/	V 18
	8.	70	- "	RPD was not met, result CPQL > MDL
S-UMW-3D	Li	16.2	J	
S-UMW-DUP-1	<i>L</i> :	20.3	J	
11	Cd	0.079	UJ	RPD was not met, result < MDL
S-UMW-ID	Chloride	27.9	D	Result had a Dilution Factor (DP) of Z
.	Sulfate	194		20
S-UMW-ZD		444		50
S-UMW-3D	1	810		50
	Chloride	21.0		Z
S-UMW-4D	Chloride	24.1		2
	Sulfate	600		50
5-UMW-5D	Chloride	24.1		2
16	Sulfate	48.7		5
S-UMW-6D	Chloride	19.9		Z
	Sulfate	79.2		5
5-Bnw-11)	1	37,7		2
5-BMV-3D		26.9		2
5-UMW-DUP-1		774		50
~ (Chloride	21.2	1	2

Signature:	Tomy 1 South	h	Date:	4/18/17
				,



Date:July 24, 2017Project No.:1531406To:Project FileProject:Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - BMW-3D MAKEUP 1

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).



1

Company Name: Golder Associates Project Name: Ameren-Sioux - UMW - Boffor MUE			Project Manager: <u>J Ingram</u> Project Number: <u>1531406.0003</u> /4					
Reviewer: T Goodwin				Validation Date: 7/24/2017				
Laboratory: Pace Analytical SDG #: 60233958 Analytical Method (type and no.): Metals 200.7&200.8, Hg 7470, TDS 2540C, pH 4500H+, Anions 300.0, Rads 903.1&904.0 Matrix: Air Soil/Sed. Water Waste Sample Names S-BMW-3D								
NOTE:	Please provide calculation in Comment areas or	on the I	back (if	on the back	please indicate in comment areas).			
Field Ir	nformation	YES	NO	NA	COMMENTS			
a)	Sampling dates noted?	X						
b)	Sampling team indicated?	X						
c)	Sample location noted?	X						
d)	Sample depth indicated (Soils)?			X				
e)	Sample type indicated (grab/composite)?	\mathbf{x}			Grab			
f)	Field QC noted?	x						
g)	Field parameters collected (note types)?	x			pH, Cond, Turb, Temp, DO, ORP, Flow, DTW			
h)	Field Calibration within control limits?	X						
i)	Notations of unacceptable field conditions/performs	ances fro	m field l	ogs or field r	notes?			
			x					
j)	Does the laboratory narrative indicate deficiencies Note Deficiencies:			X				
		- H	120					
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	П	П				
c)	Were samples received in good condition?	A						
Genera	al (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		рН			
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?	d			Sulfate			
g)	Were any matrix problems noted?	V			4			

Blanks a) b) c) d) Labora a) b) c)	Were analytes detected in the method blank(s)? Were analytes detected in the field blank(s)? Were analytes detected in the equipment blank(s)? Were analytes detected in the trip blank(s)? tory Control Sample (LCS) Was a LCS analyzed once per SDG? Were the proper analytes included in the LCS? Was the LCS accuracy criteria met?	YES DOD YES DOD	NO	NA S NA NA	Ba(18),	COMMENTS
Duplica	·	YES	NO	NA		COMMENTS
a) b) c)	Were field duplicates collected (note original and duplicates field dup. precision criteria met (note RPD)? Were lab duplicates analyzed (note original and duplicates analyzed (note original and duplicates analyzed (note RPD)?					
	Standards Week a blind standard used (indicate name	YES	NO	NA 🗓		COMMENTS
a) b)	Was a blind standard used (indicate name, analytes included and concentrations)? Was the %D within control limits?			X		
Matrix a) b)	Spike/Matrix Spike Duplicate (MS/MSD) Was MS accuracy criteria met? Recovery could not be calculated since sample contained high concentration of analyte? Was MSD accuracy criteria met?	YES	NO	NA	COMMENTS (Low)	
c)	Recovery could not be calculated since sample contained high concentration of analyte? Were MS/MSD precision criteria met?			<u>a</u>		
Comm	ents/Notes:					
			7			

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
5-BMW-3D	Sulfate	36.8	P	Dilution factor of Z
		(17)		

Signature: 1/24/2017



Date: April 24, 2017 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - E.6

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Calcium exceeded the recovery criteria for MS and MSD. Data was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).



1

Company Name: Golder Associates Project Name: America Sionx EE UMW Reviewer: T Goodwin Laboratory: Pace Analytical Analytical Method (type and no.): Metals (200.7 + 200.8) Ha 7470 Matrix: Air Soil/Sed. Water Waste Sample Names S-BMW-ID, S-BMW-3D							
5-UM	1W-1D, 5-UMW-2D, 5-UMW-3D, 5-UMW-4 W-DUP-1, 5-UMW-FB-1, 5-UMW-1DMS,	1 <u>D, 5-UM</u> S-UML	W-50, S V- IDMS	- UMW-60			
	Please provide calculation in Comment areas				please indicate in comment areas).		
Field Ir	nformation	YES	NO	NA	COMMENTS		
a)	Sampling dates noted?	Ø					
b)	Sampling team indicated?	d			T6+15		
c)	Sample location noted?	V					
d)	Sample depth indicated (Soils)?			I			
e)	Sample type indicated (grad/composite)?	I					
f)	Field QC noted?	V					
g)	Field parameters collected (note types)?	Ø			pH, Cond, Turb, Temp, DO, ORP, Flow, DT		
h)	Field Calibration within control limits?	V					
i)	Notations of unacceptable field conditions/perform	nances fro	om field lo	gs or field n	notes?		
			\square				
j)	Does the laboratory narrative indicate deficiencies Note Deficiencies:	s? 🗌					
Chain-c	of-Custody (COC)	YES	NO	NA	COMMENTS		
a)	Was the COC properly completed?	7					
b)	Was the COC signed by both field						
,	and laboratory personnel?	团					
c)	Were samples received in good condition?	卤			Resolved Label Issue		
Genera	I (reference QAPP or Method)	YES	NO	NA	COMMENTS		
a)	Were hold times met for sample pretreatment?			団			
b)	Were hold times met for sample analysis?		V		PH		
c)	Were the correct preservatives used?						
d)	Was the correct method used?	Ø					
e)	Were appropriate reporting limits achieved?	Ø			14 A A A A A A A A A A A A A A A A A A A		
f)	Were any sample dilutions noted?	V	P 19		Chloride Salfate		
a)	Were any matrix problems noted?	A		П	Augstel . LCS		

Blanks	•	YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	Ø		П	Hg, Ca, Pb, Cr, Sb
b)	Were analytes detected in the field blank(s)?	III			Ca, Mo, Cr
c)	Were analytes detected in the equipment blank(s)?	П	П	<u> </u>	
d)	Were analytes detected in the trip blank(s)?			<u> </u>	
·	, , ,		_	_	
Labora	atory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	V			
b)	Were the proper analytes included in the LCS?				
c)	Was the LCS accuracy criteria met?	Ø			
Duplic		YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	• ,	sample na	ames)?	PUP-1 @ UMW-ZD
		A			FB-1@ UMW-SD
b)	Were field dup. precision criteria met (note RPD)?	Ø			
c)	Were lab duplicates analyzed (note original and dup	',			
		凶			TDS only
d)	Were lab dup. precision criteria met (note RPD)?	Ø			
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			<u>I</u>	O MINIER TO
,	analytes included and concentrations)?				
b)	Was the %D within control limits?			d	
-,	The first of the f	ш	Ц	Ш	
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?		d	П	Ca(142)
·	Recovery could not be calculated since sample	_	_		
	contained high concentration of analyte?			₫ _	
b)	Was MSD accuracy criteria met?				(a(147)
	Recovery could not be calculated since sample contained high concentration of analyte?			Ø	
c)	Were MS/MSD precision criteria met?	Ø			
Comme	ents/Notes:				
		ш.			
- 140					
				(4)	

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier		Reason
S-UMW-ZD	Hq	0.20	U	Detected in bh.	ik, Result < PQL
S-UMW-SD	Cr	1.0	U		eld Blank, Result < PQL
5-BMW-1D	Sulfate	38.8	D	Result had Di	lution Factor of 5
S-BMW-3D		28.8			2
S-UMW-ID	上	85.6			16
· · ·	Chloride	23.2			2
S-UMW-ZD	Chloride	20.0			Z
~ (Sulfate	477			50
S-UNW-3D	Chloride	23.2			2
11	Sulfate	531			50
SUMW-4D	Chloride	25.9			2
l c	Sulfate	550			50
5-UMW-50	Chloride	24.4			2
5- UMW-6D	Chloride	20.1			2
V	Sulfate	80. 2			5
S-UMW-DUP-1	Chloride	11.8			2
W	Sulfate	482	1	<u> </u>	50
				1	
				(Z)	

Signature: John Aford 1	Date: 4/25/2017



Date: July 24, 2017 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - BMW-3D MAKEUP 2

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).



1

Company Name: Golder Associates Project Name: Ameren-Sioux - を光っしい M.U. E2 Reviewer: T Goodwin					J Ingram	
Analytic Matrix:	tory: <u>Pace Analytical</u> cal Method (type and no.): <u>Metals 200.7&200.8, F</u>		, TDS 25	_		
NOTE:	Please provide calculation in Comment areas or	on the	back (if	on the back	please indicate in comment areas).	
Field Ir	nformation	YES	NO	NA	COMMENTS	
a)	Sampling dates noted?	X				
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				
g)	Field parameters collected (note types)?	\mathbf{x}			pH, Cond, Turb, Temp, DO, ORP, Flow, DTW	
h)	Field Calibration within control limits?	X				
i)	Notations of unacceptable field conditions/performa	ances fro	om field lo	ogs or field n	otes?	
			X			
j)	Does the laboratory narrative indicate deficiencies? 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?	Ø				
Genera	Il (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		рН	
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?	Image: Control of the			Sulfate	
g)	Were any matrix problems noted?		g			

Blanks a) b) c) d)	Were analytes detected in the method blank(s)? Were analytes detected in the field blank(s)? Were analytes detected in the equipment blank(s)? Were analytes detected in the trip blank(s)?	YES	NO	NA	COMMENTS Ha/0.10), SL/0.18)
Labora	tory 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?	口			
Duplica	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate s	ample na	mes)?	
b)	Were field dup. precision criteria met (note RPD)?			<u> </u>	
c)	Were lab duplicates analyzed (note original and dup	olicate sa	imples)?		
		Image: section of the			
d)	Were lab dup. precision criteria met (note RPD)?	IJ∕			TDS (5)
Blind S	standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			x	
	analytes included and concentrations)?				
b)	Was the %D within control limits?			X	
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?				
	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?			Ø	
c)	Were MS/MSD precision criteria met?				
Commo	ents/Notes:	go www.			
·					
Warran and a second					
8					

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
5-BMW-35	Sulfate	20.0	D	Dilution Factor of 2 Detectalin Blank; PRL > Result
	Sulfate Antinony (Sb) Mercury (Hg)	1.0	U	Detectalin Blank; PRL > Result
	Mercury (Hg)	0.20	U	10
	0 0			
			:	
		\	(A)	
			(72)	
			1	
	-			

Signature: _	Jonny A Soody 11	Date: 7/24/2617	
7			



Date: April 25, 2017 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - E.7

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Sulfate exceeded the recovery criteria for MSD. Data was not qualified on MS/MSD data alone.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U). If the sample results were greater than the PQL, but less than 5 times the blank detection result, the detections were recorded at the results value and qualified as non-detects (U).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J). If the results were less than the method detection limit or detected in a blank the results were qualified as non-detects and estimates (UJ).



1

Project Review Laborat Analytic Matrix: Sample 5-BM	ny Name: Golder Associates Name: Ameren Sionx E7 UMW er: T Goodiin tory: Pace Analytical cal Method (type and no.): Metals (200.7 + 200.8) Air Soil/Sed. Water Waste Names S-UMW-ID, S-UMW-2D, S-UMW-3D, W-ID, S-8MW-3D N-DUP-1, S-UMW-BDP-2 ^{T4} S-UMW-F8-1, S- Please provide calculation in Comment areas or	5-UMW-	Proje Valid SDG 170, TV. 1-40, 5-	ect Numbe lation Date #:602 \$ 2540C, UMW-SD,	pH 4500H+, Anions 300.0, Rads/903.1+90. 5-UMW-6D DMSD
	formation	YES	NO	NA	COMMENTS
a) b) c) d) e) f) h) i)	Sampling dates noted? Sampling team indicated? Sample location noted? Sample depth indicated (Soils)? Sample type indicated (grab/composite)? Field QC noted? Field parameters collected (note types)? Field Calibration within control limits? Notations of unacceptable field conditions/performations the laboratory narrative indicate deficiencies? Note Deficiencies:	S S S S S S S S S S S S S S S S S S S	om field lo	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	pH, God, Turb, Temp, DO, ORP, Flow, DTW
Chain-c	of-Custody (COC)	YES	NO	NA	COMMENTS
a)	Was the COC properly completed?	$ \sqrt{} $			
b) c)	Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	<u> </u>			
Genera	I (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) b) c) d) e) f)	Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used? Were appropriate reporting limits achieved? Were any sample dilutions noted? Were any matrix problems noted?	০০১১১১১			Chloride + Sulfate Accepted based on LCS

Blanks		YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	☐ (As, Cr
b)	Were analytes detected in the field blank(s)?	Image: Control of the con			B, Ca, Cr
c)	Were analytes detected in the equipment blank(s)?			Q	
d)	Were analytes detected in the trip blank(s)?			Image: Control of the	
Labora	tory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	Ø			
b)	Were the proper analytes included in the LCS?	\square			
c)	Was the LCS accuracy criteria met?	Q			
Duplic	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate	sample r	ames)?	DUP-1@ UMW -ZD
		Q			FB-1 @ UMW-6D
b)	Were field dup. precision criteria met (note RPD)?				56 (25.9), Cr(114.8), Se (33), TI(150)
c)	Were lab duplicates analyzed (note original and dup	olicate s	samples)?	?	
		V			TDS, eH
d)	Were lab dup. precision criteria met (note RPD)?		I		TDS (12)
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			Ø	F
	analytes included and concentrations)?			,	
b)	Was the %D within control limits?			J	
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?	g	П	П	
·	Recovery could not be calculated since sample contained high concentration of analyte?		_	_ _	
b)	Was MSD accuracy criteria met?		ব		Sulfate (130)
,	Recovery could not be calculated since sample contained high concentration of analyte?			<u> </u>	
c)	Were MS/MSD precision criteria met?	Q			
Comm	ents/Notes:				
-					

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-UMW-ID	Chloride	18.8	D	Sampled at a DF of 2
()	Sulfate	51.0	D	5
	Chromium	1.5	U T4	
S-UMW-ZD	Sulfate	738	D	100
VI.	Chrominne	1.7	7	RPD not met, result > 5x Black Detection
S-UMW-3D	As	1.0	U	Detected in blank, result >MPL
1)1	Cr	1.0	U	tr tr
	Chloride	21.6	D	Sampled at a DF of Z
	Sulfate	603	D	1(50
S-UMW-4D	As	0.07 TG	V	Detected in blank, result >MDL
1	Chronium	1-0	U	re u
	Chloride	24.1	D	Sampled at a DF of Z
	Sulfate	484	D	" 50
5-UMW-5D	As	1.0	U	Detected in blank, result > MDL
1	Cr	1.0	U	u u
	Chloride	26.0	D	Sampled at a DF of 2
S-UMW-6D	As	1.0	U	Detected in blank, result > MDL
	Ce	1.0	V	ti ti
	Chloride	19.5	D	Sampled at a DF of 2
	Sulfate	74.9	D	· 5
5-BMW-1D	As	1.0	U	Detected in blank, result > MDL
1	Cr	1.2	υ	, result < 5x Black Detect
	Sulfate	34.4	D	Sampled at a DF of 5
5-UMW-DUP-1	Cr	1.0	V	Detected in blank, cosult > MDL
	Se	0.086	UΣ	RPD not met, cosult < MDL
	TI	0.036	UJ	IV (I
-UMW-F8-1	Sulfate	754	D	Sampled at a DF of 100 Defected in blank, result > MDL

Revised May 2004



Date: July 24, 2017 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - BMW-3D MAKEUP 3

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).



1

Company Name: Golder Associates				Project Manager: <u>J Ingram</u> Project Number: <u>1531406.0003</u> A				
_	Name: Ameren-Sioux Bitten - UMW M ver: T Goodwin	<u>.U.</u> E3	Validation Date: 7/24/2617					
Laborat Analytic Matrix: Sample	tory: _Pace Analytical cal Method (type and no.): _Metals 200.7&200.8, I		, TDS 25	540C, pH				
	nformation	YES	NO.	NA	COMMENTS			
a)	Sampling dates noted?	X						
b)	Sampling team indicated?	X						
c)	Sample location noted?	\Box x						
d)	Sample depth indicated (Soils)?			X				
e)	Sample type indicated (grab/composite)?	x			Grab			
f)	Field QC noted?	x						
g)	Field parameters collected (note types)?	x			pH, Cond, Turb, Temp, DO, ORP, Flow, DT			
h)	Field Calibration within control limits?	X						
i)	Notations of unacceptable field conditions/perform	ances fro	om field le	ogs or field	d notes?			
			x					
j)	Does the laboratory narrative indicate deficiencies Note Deficiencies:			X				
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?	Ø						
Genera	al (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		pH			
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?				Sulfate			
g)	Were any matrix problems noted?							

a) Were analytes detected in the method blank(s)?
c) Were analytes detected in the equipment blank(s)?
d) Were analytes detected in the trip blank(s)?
Laboratory Control Sample (LCS) 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)? 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)? d) Were lab dup. precision criteria met (note RPD)? d) Were lab dup. precision criteria met (note RPD)? d) Was a 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) A COMMENTS A COMMENTS A COMMENTS
a) Was a LCS analyzed once per SDG?
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)? 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)? DESCRITE ADDESCRITE POSCRITE Matrix Spike/Matrix Spike Duplicate (MS/MSD) Was MS accuracy criteria met? YES NO NA COMMENTS ADDESCRITE MACCOMMENTS MACCOMMENTS MACCOMMENTS ADDESCRITE MACCOMMENTS MACCOMMENTS MACCOMMENTS ADDESCRITE MACCOMMENTS MACCOMMENTS MACCOMMENTS MACCOMMENTS MACCOMMENTS MACCOMMENTS MACCOMMENTS MACCOMMENTS MACCOMMENTS
Duplicates a) Were field duplicates collected (note original and duplicate sample names)? 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)? d) Were lab dup. precision criteria met (note RPD)? DESCHIE AUTOS (H) 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) Was MS accuracy criteria met?
a) Were field duplicates collected (note original and duplicate sample names)?
a) Were field duplicates collected (note original and duplicate sample names)?
b) Were field dup. precision criteria met (note RPD)?
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)?
d) Were lab dup. precision criteria met (note RPD)? DS (II)
d) Were lab dup. precision criteria met (note RPD)? Descrit Descrit
Blind Standards 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) a) Was MS accuracy criteria met? 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) a) Was MS accuracy criteria met? A 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) a) Was MS accuracy criteria met? A COMMENTS
analytes included and concentrations)? b) Was the %D within control limits? Matrix Spike/Matrix Spike Duplicate (MS/MSD) a) Was MS accuracy criteria met? YES NO NA COMMENTS
b) Was the %D within control limits? Matrix Spike/Matrix Spike Duplicate (MS/MSD) a) Was MS accuracy criteria met? TE COMMENTS U U
Matrix Spike/Matrix Spike Duplicate (MS/MSD) a) Was MS accuracy criteria met? YES NO NA COMMENTS □ □ □ □
a) Was MS accuracy criteria met?
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:

Revised May 2004

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
Sattan 5-BHW-3D	Sulfate	24.6	D	Dilution of 2
			(C)	

Signature: Tommy A Soule h	Date: 1/24/2017



Date: July 5, 2017 **Project No.**: 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER. UMW – E.8

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).
- When a field duplicate RPD was not met, associated samples were qualified as estimates (J). If the results were less than the method detection limit or detected in a blank the results were qualified as non-detects and estimates (UJ).



1

	ny Name: Golder Associates Name: Ameren-Sioux Bottom - E8		Project Manager: <u>J Ingram</u> Project Number: <u>1531406.0003A</u>						
-	er: T Goodwin		Validation Date: 7/5/2017						
Laborat Analytic Matrix: Sample S-UM\	tory: _Pace Analytical cal Method (type and no.): _Metals 200.7&200.8,	IMW-4D,	SDO TDS 25 S-UMW-	6#:_602 540C, pH 5D, S-UM	4500H+, Anions 300.0, Rads 903.1&904.0 W-6D, S-BMW-1D, S-BMW-2D				
	ıformation	YES	NO	NA	COMMENTS				
a)	Sampling dates noted?	X							
b)	Sampling team indicated?	×							
c)	Sample location noted?	\Box							
d)	Sample depth indicated (Soils)?			X					
e)	Sample type indicated (grab/composite)?	\mathbf{x}			Grab				
f)	Field QC noted?	\mathbf{x}			<i>i</i> "				
g)	Field parameters collected (note types)?	x			pH, Cond, Turb, Temp, DO, ORP, Flow, DT				
h)	Field Calibration within control limits?	X							
i)	Notations of unacceptable field conditions/perform	ances fro	om field le	ogs or field	d notes?				
			x						
j)	Does the laboratory narrative indicate deficiencies Note Deficiencies:			<u>x</u>					
Chain-c	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?	Ø			[-				
Genera	l (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		рН				
c)	Were the correct preservatives used?	X			1				
d)	Was the correct method used?	x							
e)	Were appropriate reporting limits achieved?	x							
f)	Were any sample dilutions noted?	I			Chloride, Sulfate				
g)	Were any matrix problems noted?		Image: Control of the						

Blanks a) b) c) d)	Were analytes detected in the method blank(s)? Were analytes detected in the field blank(s)? Were analytes detected in the equipment blank(s)? Were analytes detected in the trip blank(s)?	YES	NO	NA	COMMENTS 1003, 3001 Be(0.49), (a(36.1), L:(3.3); Be(0.38), Te(0.043); Be(0.11), B Be(0.18), B(44.4), Ce(0.11),
Labora	atory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	Ø			
b)	Were the proper analytes included in the LCS?	豆			
c)	Was the LCS accuracy criteria met?	Image: Control of the			
Duplic	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate	sample n	ames)?	Dup-1@ ∪MW-ID
		I			FB-1@ UMW-SD
b)	Were field dup. precision criteria met (note RPD)?		Ø		Be(200), B(24.9), L:(39.1), Sb(200), Cr(104.5)
c)	Were lab duplicates analyzed (note original and du	plicate s	samples)?	•	
		区			
d)	Were lab dup. precision criteria met (note RPD)?	I			TDS(7)
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			\mathbf{x}	
	analytes included and concentrations)?				
b)	Was the %D within control limits?			X	
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?	g			
	Recovery could not be calculated since sample contained high concentration of analyte?			g	
b)	Was MSD accuracy criteria met?	I			
	Recovery could not be calculated since sample contained high concentration of analyte?			Ø	
c)	Were MS/MSD precision criteria met?	1			
Comm	ents/Notes:				

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-UMW-ID	Boron (B)	278	1	RPD exceeded linit; Result 7 MDL
1	Lithium (Li)	10.7	1	и
	Antinony (Sb)	0.026	U1	I Result < MDL
	Beryllinn (Be)	1.0	U	Detect in Method Black (MB); Result < POL
	Snlfate	36.6	D	Result had Dilution Factor (DF) of 2
S-UMW-ZD	(hloride	19.1	D	2
	Sulfate	784	D	100
5-UMW-3D	Chloride	21.5	D	7
,,,	Sulfate	664	D	50
S-UMW-4D	Chloride	26.6	D	7
	Sulfate	439	D	
	Be	1.0	U	Detect in MB; Result < PQL
S-UMW-5D	Chloride	27.6	D	DF of Z
1	Sulfate	40.0	D	1' 5
Se T	Chromina (Cr)	1.0	υ	Detect in Field Blank ; Result < PQL
S-UMW-6D	Be	1.0	υ) MB
	Th	1.0	U	10
	Chloride	19.5	D	DF .f z
	Sulfate	31.8	D	" 5
S-BMW-ID	Sulfate	36.1	D	5
)	8~	1.0	U	Detect in MB; Result < Pal
	L :	13.0	U	Result < 100 10x Black Detection
5-BMW-3D	2:	22.0	υ	\\
1	Be	1-0	U	I Result < PQL
	Sulfate	26.1	D	DF of Z
S-UHW-FB-1	Be	1-0	U	Detect in MB; Result < Pal RPD exceeded limit; Result > MDL
S-UMW-DUP-1	B Sulfate	357 , 37.1	7	RPD exceeded limit; Result > MDL DF of Z
Signature:	Jonny Astor	h fr		Date:



Date: July 24, 2017 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - BMW-3D MAKEUP 4

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

- Analysis of pH for all samples was initiated outside of the 15 minute EPA required holding time. Field measurements of pH were taken at the time of sample collection.
- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- When a compound was detected in a blank (i.e. method, field, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U).



Company Name: Golder Associates Project Name: Ameren-Sioux - B. How - UMU M.U. E4 Reviewer: T Goodwin					J. Ingram 1531406.0003 A 7/24/2417
Analytic Matrix:	ory: <u>Pace Analytical</u> cal Method (type and no.): <u>Metals 200.7&200.8, ?</u> Air Soil/Sed. X Water Waste Names <u>S-BMW-3D</u>		, TDS 25	-	
NOTE:	Please provide calculation in Comment areas o	r on the	back (if	on the back	please indicate in comment areas).
Field In	formation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	X			
b)	Sampling team indicated?	X			
c)	Sample location noted?	\Box x			
d)	Sample depth indicated (Soils)?			X	
e)	Sample type indicated (grab/composite)?	X			Grab
f)	Field QC noted?	X			
g)	Field parameters collected (note types)?	x			pH, Cond, Turb, Temp, DO, ORP, Flow, DT
h)	Field Calibration within control limits?	X			
i)	Notations of unacceptable field conditions/perform	nances fro	om field l	ogs or field n	otes?
	*		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?	Ø		Ш	
Genera	al (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		рН
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?	J			Sulfate
g)	Were any matrix problems noted?				

Revised May 2004

Blanks		YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	Ø			Be(0.31), (5(0.087)
b)	Were analytes detected in the field blank(s)?				
c)	Were analytes detected in the equipment blank(s)?			x	
d)	Were analytes detected in the trip blank(s)?			\mathbf{x}	
Labora	tory 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?				
Duplic	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du				
-,	((2	
b)	Were field dup. precision criteria met (note RPD)?	П			
c)	Were lab duplicates analyzed (note original and du	_	samples)		
٠,			лр.гоз,	П	
d)	Were lab dup. precision criteria met (note RPD)?				TDS(4)
-,	,	-	_	_	
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			\mathbf{x}	
	analytes included and concentrations)?				
b)	Was the %D within control limits?			X	
Matrix	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?	\mathbb{Z}			
	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?				
Comm	ents/Notes:				
				15	
		-			
·					

Revised May 2004

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
5-BMW-3D	Sulfate	26.4	D	Dilution of 2
11		1.0	U	Dilution of 2 Detected in Method Blank; Pal > Result
			2	

Signature: Jones Adorrol J.	Date: 1/24/2017



Date: December 22, 2017 **Project No.:** 1531406

To: Project File Project: Ameren

From: Tommy Goodwin

cc: Amanda Derhake, Jeff Ingram Email:

RE: DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER - SCPA - D.M. NOV. 2017

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

- Reported results with high levels of non-target analytes or other matrix interference were analyzed at dilution and qualified as dilution (D).
- 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, rinsate), and the sample results were greater than the MDL and less than the PQL the results were recorded at the PQL value and qualified as non-detects (U). If the sample results were greater than the PQL, but less than 10 times the blank detection result, the detections were recorded at the result value and qualified as non-detects (U).



1

Compa	ny Name: <u>Golder Associates</u>		Project Manager: <u>J Ingram</u>						
Project Name: Ameren-Sioux-UMW-D.M. Nov 2017				Project Number: <u>1531406.0003A</u> .					
Review	er: T Goodwin		Valid	dation Dat	ate: 12/22/17				
	D			- <i></i>	1.00				
Apolytic	tory: Pace Analytical Notals 200 78-200 8	7470	SDG	5#:(602 58160 H #5001+, Anions 300.0, Rads 903-1&904.0 sm 2 320 &				
	☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste	11 € / 1/ 0	5 I D 3 Z 3	540C, pr.	11 430011+, Allions 300.0, Rads 303-10/904.0 , SM 2 320 E				
	Names S-UMW1D, S-UMW-2D, S-UMW-3D, S-U		S-UMW-	5D. S-UM	MW-6D, S-BMW-1D, S-BMW-3D				
	W-DUP-1, S-UMW-FB-1	·	=						
NOTE:	Please provide calculation in Comment areas of	or on the	back (if	on the ba	ack please indicate in comment areas).				
Field Ir	nformation	YES	NO	NA	COMMENTS				
a)	Sampling dates noted?	X			<u> </u>				
b)	Sampling team indicated?	X							
c)	Sample location noted?	[x							
d)	Sample depth indicated (Soils)?			 					
e)	Sample type indicated (grab/composite)?	$\overline{\mathbf{x}}$			Grab				
f)	Field QC noted?	x		П					
g)	Field parameters collected (note types)?	\mathbf{x}			pH, Cond, Turb, Temp, DO, ORP, Flow, DTW				
h)	Field Calibration within control limits?	X			pri, cond, raro, remp, 20, okt, rion, 21				
,									
I)	Notations of unacceptable field conditions/perform			_	erd notes?				
.,	5								
J)	Does the laboratory narrative indicate deficiencies			X					
	Note Deficiencies:								
		10							
Chain-	of-Custody (COC)	YES	NO	NA	COMMENTS				
2)	Was the COC preparty completed?								
a)	Was the COC properly completed?	X	Ц						
b)	Was the COC signed by both field and laboratory personnel?	X		П					
c)	Were samples received in good condition?	- -							
-,	p								
Genera	ıl (reference QAPP or Method)	YES	NO	NA	COMMENTS				
۵۱	Were held fire as most few assurable most assurable and			Tel					
a)	Were hold times met for sample pretreatment?			X					
b)	Were hold times met for sample analysis?	G							
c)	Were the correct preservatives used?	X							
d)	Was the correct method used?	X							
e)	Were appropriate reporting limits achieved?	X			all the call to				
f)	Were any sample dilutions noted?				Chloride, Sulfate				
g)	Were any matrix problems noted?								

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks		YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	⊡			B (93.1), Mg (18.0), Na (81.9)
b)	Were analytes detected in the field blank(s)?	Image: Control of the			B(98.1), Ca(39.4), Na(41.2), Salfate (0.65)
c)	Were analytes detected in the equipment blank(s)?			x	
d)	Were analytes detected in the trip blank(s)?			x	
Labora	tory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	I			
b)	Were the proper analytes included in the LCS?	I			
c)	Was the LCS accuracy criteria met?	3			
Duplicates		YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and de	uplicate s	ample na	mes)?	Dup-1@ S-UMW-ZD
·		9			FB-1@ 5-UMW-6D
b)	Were field dup. precision criteria met (note RPD)?	I			
c)	Were lab duplicates analyzed (note original and du	plicate sa	amples)?		
					Alk, TDS
d)	Were lab dup. precision criteria met (note RPD)?	1			
Blind Standards		YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			x	
	analytes included and concentrations)?				
b)	Was the %D within control limits?			X	
Matrix	Calles/Matrix Calles Dualisets (MC/MCD)	VEC	NO	NIA	COMMENTS
	Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a)	Was MS accuracy criteria met?	LY			
	Recovery could not be calculated since sample contained high concentration of analyte?			\square	-
b)	Was MSD accuracy criteria met?	□			
	Recovery could not be calculated since sample contained high concentration of analyte?	T.			
c)	Were MS/MSD precision criteria met?	V			
Commo	ents/Notes:				
i .					
-					
3		25024-			
S				200	

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-UMW-ID	Boron (B)	266	U	Detreted : Method Bhak (MB); 10xMB> Result:
	Chloride	18.7	D	Result had a dilution factor (DF) of 2
	Sulfate	49.1	1	5
S-UMW-ZD	Chloride	11.3		2
1	Sulfate	722		50
S-UMW-3D	chlorile	20.4		2
上	Sulfate	710		50
S-UMW-4D	Chloride	25.4		Z
1	Sulfate	544		50
S-UMW-5D	Chloride	25.8		2
SUMW-6D	Sulfate	86.4		10
5-BMW-1D	Sulfate	37.6	1	
_	В	241	U	MB; 10×HB > Result > PQL
5-BMW-3D	В	109	U	1 1
1	Sulfate	27.5	D	DF of Z
5-UMW-DUP-1	chloride	19.4	1	1 Z
	Sulfate	720	1	50
S-UMW-FB-1	В	100	U	MB; PQL > Result > MDL
	Sodium (Na)	500	U	+ +
	Calcium (Ca)	37.4	7	PQL > Result > MDL
	Sulfate	0.65	7	上
			Tih	
			136	

Signature: Jonny / Sasal-//	Date:	12/22/2017	

APPENDIX C – POTENTIOMETRIC SURFACE MAPS

Feet

0003A

153-1406

Groundwater Flow Direction

P2

153-1406

0003A

P3

0003A

153-1406

P4

153-1406

0003A

153-1406

0003A

153-1406

0003A

Feet

153-1406

0003A

1

Groundwater Flow Direction

Feet

153-1406

0003A

Groundwater Flow Direction

P9

PROJECT No

153-1406

Feet

B

Groundwater Flow Direction

PHASE 0003A Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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