REPORT

2017 ANNUAL GROUNDWATER MONITORING REPORT

RCPA Surface Impoundment, Rush Island Energy Center

Jefferson County, Missouri, USA

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1.0 INTRODUCTION

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 RCPA Coal Combustion Residuals (CCR) Surface Impoundment at the Rush Island Energy Center (RIEC) is subject to the requirements of the CCR Rule. This is the first Annual Report for the RCPA and describes CCR Rule groundwater monitoring activities through December 31, 2017.

A groundwater monitoring well network was designed and installed for the RCPA to meet the requirements of the CCR Rule. The well network consists of two background monitoring wells and seven downgradient monitoring wells that were installed in October 2015. 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 was completed November 9-10, 2017. Statistical analysis of the Detection Monitoring data will be performed in 2018. The RCPA 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 RCPA 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 RCPA. The groundwater monitoring system consists of nine (9) 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**.

2.1 Background Monitoring Well Locations

Background Monitoring wells for the RCPA consist of MW-B1 and MW-B2. 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 the west (bluffs area) to the east (Mississippi River) under normal river conditions. The alluvial aquifer abruptly terminates at the bluffs and does not extend significantly west of the RCPA Surface Impoundment, therefore, background wells could not be installed west of the RCPA. Due to the limited extent of the alluvial aquifer, background wells were installed north of the RCPA, outside of the influence of the RCPA Surface Impoundment and upstream relative to the flow of the Mississippi River.

As shown in **Figure 1**, background monitoring well MW-B1 is north of the RCPA at a location relatively close to the Mississippi River. This well provides background groundwater quality representative of upstream Mississippi River influences on the alluvial aquifer. The second background monitoring well location (MW-B2) is located nearer to the bluffs, allowing monitoring of groundwater which originates from upgradient to the west and north.

2.2 Downgradient Monitoring Well Locations

Downgradient monitoring wells are located ringing the RCPA to monitor downgradient water quality. **Figure 1** shows that the downgradient well network consists of seven (7) groundwater monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, and MW-7) around the RCPA at 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 sampling events were completed prior to October 17, 2017. Groundwater sampling was completed by Golder and was completed in accordance with the RCPA 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**.

3.2 Detection Monitoring

Detection Monitoring samples were collected from the groundwater monitoring wells on November 9-10, 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 influenced by seasonal changes in water level of the adjacent Mississippi River. Water flows into and out of the alluvial aquifer as a result of fluctuating river water levels that produce “bank recharge” and “bank discharge” conditions. Overall, based on the potentiometric surface maps, a general flow direction from the west (bluffs area) to the east (Mississippi River) under normal river conditions is expected. However, during periods of high river levels, groundwater flow can temporarily reverse and flow westward. During these times of high river stage and temporary flow direction changes, horizontal groundwater gradients generally tend to decrease and little net movement of groundwater occurs.

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, the overall net groundwater flow at the RCPA is from the bluffs towards the river. Horizontal gradients calculated by the program range from 0.0003 to 0.0011 feet/foot with an estimated net annual groundwater velocity of approximately 33 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 was completed on November 9-10, 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.

Table 11 – Summary of Groundwater Sampling Dates

Sampling Event	Groundwater Monitoring Wells									Baseline, Detection or Assessment Monitoring
	MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	
	Date of Sample Collection									
Baseline Event 1	3/10/2016	3/11/2016	3/10/2016	3/10/2016	3/10/2016	3/11/2016	3/11/2016	3/11/2016	3/10/2016	Baseline
Baseline Event 2	5/2/2016	5/2/2016	5/2/2016	5/2/2016	5/2/2016	5/3/2016	5/3/2016	5/2/2016	5/3/2016	Baseline
Baseline Event 3	7/25/2016	7/26/2016	7/25/2016	7/26/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016	Baseline
Baseline Event 4	9/6/2016	9/6/2016	9/7/2016	9/6/2016	9/6/2016	9/6/2016	9/6/2016	9/7/2016	9/7/2016	Baseline
Baseline Event 5	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	Baseline
Baseline Event 6	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	Baseline
Baseline Event 7	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	Baseline
Baseline Event 8	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	Baseline
November 2017 Detection Monitoring Event	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/10/2017	11/10/2017	11/9/2017	11/9/2017	Detection
Total Number of Samples Collected	9	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

Some sampling issues were encountered during the baseline sampling events. Baseline Event 3 was initially completed July 14-15, 2016. However, due to a laboratory shipping error, the samples were not shipped to the laboratory in a timely manner and sample temperatures were no longer in compliance with laboratory method requirements. As a result, laboratory analysis was not performed on the July 14-15, 2016 samples and the monitoring wells were re-sampled July 24-25, 2016 and subsequently tested by the laboratory.

During baseline sampling Event 4, the laboratory did not have sufficient sample water volume to complete all the analysis for MW-B2. As a result, MW-B2 was resampled on October 13, 2016 for chloride, fluoride and sulfate. All other parameters were analyzed from the original September 6, 2016 samples.

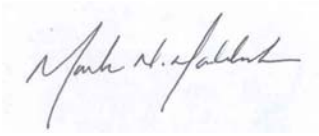
From approximately April 30, 2017 to May 13, 2017, some of the monitoring wells at the RIEC were under water due to the flooding of the Mississippi River. At the RIEC, the following wells were submerged by flood water: MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, and MW-B2. On June 5, 2017 Golder performed a post-flood monitoring well inspection at the RIEC and found that none of the RCPA monitoring wells sustained flood damage. Due to access problems resulting from the flood, the wells were not sampled until June 8, 2017. No other notable sampling issues were encountered.

5.0 ACTIVITIES PLANNED FOR 2018

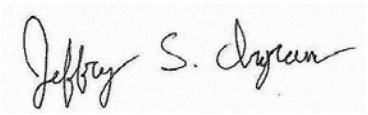
Detection Monitoring sampling is scheduled to be completed semi-annually in the second and fourth quarters of 2018, but may be changed due to site conditions (e.g., flooding, access, etc.). Statistical analysis of the November 2017 Detection Monitoring data will be completed by January 15, 2018. If it 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.

6.0 CLOSING

GOLDER ASSOCIATES INC.



Mark Haddock, P.E., R.G.
Principal, Practice Leader



Jeffrey Ingram, R.G.
Project Geologist

JSI/RJF/MNH

TABLES

Table 1
Monitoring Well Construction Details
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

Well ID	Date Installed	Location[4]		Top of Casing Elevation	Ground Surface Elevation	Top of Screen	Bottom of Screen	Base of Well	Total Depth
		Northing	Easting	(FT MSL)[5]	(FT MSL)[5]	(FT MSL)[5]	(FT MSL)[5]	(FT MSL)[5]	(FT BGS)[5]
MW-1	10/31/2015	835384.2	889832.5	395.52	393.5	320.7	310.9	310.5	83.0
MW-2	11/1/2015	834261.5	890364.1	393.87	391.7	319.5	309.7	309.3	82.4
MW-3	10/31/2015	833178.4	890892.7	391.38	389.2	319.1	309.3	308.9	80.3
MW-4	10/30/2015	831647.5	890830.5	392.78	390.8	310.9	301.1	300.7	90.1
MW-5	10/29/2015	831994.9	889984.5	390.36	388.0	333.0	328.2	327.8	60.2
MW-6	10/28/2015	833111.0	888977.0	402.71	401.1	346.4	341.6	341.2	59.8
MW-7	10/28/2015	834476.8	888483.3	407.95	406.1	318.1	308.3	307.9	98.2
MW-B1	10/28/2015	837602.1	887903.9	411.61	409.6	319.8	310.0	309.6	100.0
MW-B2	10/27/2015	837801.7	885337.2	397.85	395.9	318.3	308.5	308.1	87.9

Notes:
1.) Elevations and coordinates were surveyed on December 1, 2015 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
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	3/10/2016	3/11/2016	3/10/2016	3/10/2016	3/10/2016	3/11/2016	3/11/2016	3/11/2016	3/10/2016
DISSOLVED OXYGEN	mg/L	0.47	1.11	0.44	0.39	0.93	1.30	1.80	2.01	0.35
pH	SU	6.78	6.73	9.66	10.57	6.74	6.95	6.52	6.78	6.97
REDOX POTENTIAL	mV	-116.6	-78.4	81.9	104.3	-30.9	-86.3	-51.4	17.2	-124.6
SPECIFIC CONDUCTIVITY	mS/cm	1.242	0.820	0.859	1.095	1.024	0.750	0.789	0.566	0.669
TURBIDITY	NTU	3.75	4.91	3.10	4.71	6.74	4.87	2.32	4.99	2.86
APPENDIX III										
BORON, TOTAL	µg/L	151	ND	2,110	3,830	15,600	4,200	91.3 J	1,260	2,290
CALCIUM, TOTAL	µg/L	156,000	108,000	81,100	10,000	6,030	76,200	130,000	93,500	73,600
CHLORIDE, TOTAL	mg/L	60.3	32.0	22.7	24.3	31.1	19.9	4.5	7.6	12.5
FLUORIDE, TOTAL	mg/L	0.10 J	0.13 J	0.11 J	0.61	0.78	0.87	0.10 J	0.18 J	0.31
SULFATE, TOTAL	mg/L	45.9	8.4	341	266	167	38.5	11.8	30.2	37.7
TOTAL DISSOLVED SOLIDS	mg/L	677	392	554	795	688	419	410	338	365
APPENDIX IV										
ANTIMONY, TOTAL	µg/L	0.065 J	0.077 J	0.65 J	5.4	0.16 J	ND	ND	ND	0.55 J
ARSENIC, TOTAL	µg/L	27.7	2.6	5.8	257	16.8	10.3	5.2	0.58 J	34.5
BARIUM, TOTAL	µg/L	551	434	33.0	26.2	21.0	314	452	132	308
BERYLLIUM, TOTAL	µg/L	0.42 J	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	ND	ND	ND	0.26 J	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	µg/L	0.44 J	0.82 J	0.42 J	1.1	1.0	0.83 J	0.55 J	ND	0.56 J
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	0.84 J	ND	ND
LEAD, TOTAL	µg/L	3.1 J	ND	ND	14.4	5.9	3.1 J	ND	3.2 J	3.7 J
LITHIUM, TOTAL	µg/L	64.2	9.6 J	ND	ND	ND	45.8	5.5 J	ND	34.7
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	0.97 J	1.2 J	69.8	150	943	96.2	1.0 J	1.6 J	170
RADIUM [226 + 228]	pCi/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	µg/L	ND	ND	8.1	1.1	0.66 J	ND	ND	0.26 J	ND
THALLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
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 - millisiemens per centimeter, 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.
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.

Prepared By: JSI 12/1/2017
Checked By: RJF 12/15/2017
Reviewed By: MNH 1/19/2018

Table 3
Baseline Sampling Event 2 Results
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	5/2/2016	5/2/2016	5/2/2016	5/2/2016	5/2/2016	5/3/2016	5/3/2016	5/2/2016	5/3/2016
DISSOLVED OXYGEN	mg/L	1.09	0.41	0.84	0.40	1.32	1.27	2.39	3.79	0.70
pH	SU	6.81	6.92	9.71	10.44	9.43	6.52	6.08	6.91	7.22
REDOX POTENTIAL	mV	-104.5	-106.1	170.4	-41.0	2.7	-47.6	35.4	36.9	-132.5
SPECIFIC CONDUCTIVITY	mS/cm	1.398	0.833	0.901	1.335	1.293	1.041	1.076	0.592	0.760
TURBIDITY	NTU	3.94	6.43	2.74	9.42	4.95	3.63	3.89	4.70	2.39
APPENDIX III										
BORON, TOTAL	µg/L	121	ND	2,140	4,080	14,900	4,070	106	602	2,280
CALCIUM, TOTAL	µg/L	158,000	108,000	55,700	9,840	6,110	73,500	126,000	87,600	72,400
CHLORIDE, TOTAL	mg/L	58.7	30.1	22.6	23.0	30.9	19.4	4.0	4.4	12.3
FLUORIDE, TOTAL	mg/L	0.20	0.21	0.26	0.91	0.80	0.81	0.19 J	0.22	0.36
SULFATE, TOTAL	mg/L	46.9	6.5	234	242	158	40.6	5.3	36.8	43.1
TOTAL DISSOLVED SOLIDS	mg/L	757	399	424	794	806 J	395	397	317	361
APPENDIX IV										
ANTIMONY, TOTAL	µg/L	ND	ND	0.75 J	5.2	0.098 J	0.12 J	ND	0.071 J	ND
ARSENIC, TOTAL	µg/L	19.4	2.6	9.7	231	36.2	9.0	3.6	0.14 J	76.3
BARIUM, TOTAL	µg/L	488	398	21.3	18.8	18.3	275	395	105	286
BERYLLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	ND	ND	ND	0.25 J	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	µg/L	ND	0.42 J	0.38 J	0.95 J	1.4	0.51 J	0.38 J	ND	0.41 J
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
LITHIUM, TOTAL	µg/L	62.9	10.8	ND	ND	ND	41.4	ND	ND	31.6
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	0.54 J	1.0 J	73.1	173	826	91.4	0.74 J	1.9 J	171
RADIUM [226 + 228]	pCi/L	1.792	ND	ND	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	µg/L	ND	ND	10.2	2.1	0.60 J	ND	ND	0.38 J	ND
THALLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
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 - millisiemens per centimeter, 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.
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.

Prepared By: JSI 12/1/2017
Checked By: RJF 12/15/2017
Reviewed By: MNH 1/19/2018

Table 4
Baseline Sampling Event 3 Results
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	7/25/2016	7/26/2016	7/25/2016	7/26/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016	7/25/2016
DISSOLVED OXYGEN	mg/L	2.74	1.34	2.04	1.75	0.36	0.50	0.93	0.80	0.71
pH	SU	7.02	7.12	10.09	10.65	9.81	7.17	6.88	7.27	7.09
REDOX POTENTIAL	mV	-116.5	-132.7	-31.5	-78.0	-59.2	-119.4	-57.8	-86.1	-162.9
SPECIFIC CONDUCTIVITY	mS/cm	1.224	0.726	0.704	1.191	1.079	0.682	0.729	0.540	0.660
TURBIDITY	NTU	3.99	2.09	3.57	2.24	3.37	4.63	3.59	4.87	2.56
APPENDIX III										
BORON, TOTAL	µg/L	115	ND	2,750	3,860	14,100	3,980	99.8 J	462	2,250
CALCIUM, TOTAL	µg/L	146,000	98,500	37,700	12,000	5,760	65,600	117,000	82,300	68,700
CHLORIDE, TOTAL	mg/L	55.7	29.5	19.5	25.0	28.3	19.2	3.8	3.9	12.0
FLUORIDE, TOTAL	mg/L	0.14 J	0.14 J	0.40	0.85	0.74	0.75	0.12 J	0.15 J	0.29
SULFATE, TOTAL	mg/L	40.1	5.5	228	310	174	40.7	2.8	35.7	42.8
TOTAL DISSOLVED SOLIDS	mg/L	712	410	424	855	705	398	409	324	371
APPENDIX IV										
ANTIMONY, TOTAL	µg/L	ND	ND	1.0	5.0	0.13 J	ND	ND	0.14 J	ND
ARSENIC, TOTAL	µg/L	24.3	2.8	9.3	238	64.0	7.2	4.1	0.62 J	91.8
BARIUM, TOTAL	µg/L	496	382	15.1	17.0	16.0	256	383	119	287
BERYLLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	ND	ND	ND	0.26 J	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	µg/L	1.8	0.60 J	1.4 J	0.96 J	1.5	0.66 J	1.1	1.7	0.70 J
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	0.93 J	ND	ND
LEAD, TOTAL	µg/L	ND	ND	ND	10.2	3.4 J	ND	ND	ND	ND
LITHIUM, TOTAL	µg/L	62.9	9.6 J	ND	ND	ND	43.1	6.5 J	ND	34.4
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	ND	ND	57.7	197	811	95.9	ND	ND	185
RADIUM [226 + 228]	pCi/L	2.278	1.360	ND	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	µg/L	ND	ND	12.7	1.5	0.70 J	ND	ND	0.70 J	ND
THALLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
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 - millisiemens per centimeter, 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.
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.

Prepared By: JSI 12/1/2017
Checked By: RJF 12/15/2017
Reviewed By: MNH 1/19/2018

Table 5
Baseline Sampling Event 4 Results
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	9/6/2016	9/6/2016	9/7/2016	9/6/2016	9/6/2016	9/6/2016	9/6/2016	9/7/2016	9/7/2016
DISSOLVED OXYGEN	mg/L	0.86	3.44	1.25	0.09	0.85	0.55	1.00	1.62	0.37
pH	SU	7.01	6.92	9.70	10.90	9.80	7.35	7.24	7.35	7.18
REDOX POTENTIAL	mV	-109.2	-25.6	140.5	-219.2	-17.4	-113.8	-86.4	15.4	-138.6
SPECIFIC CONDUCTIVITY	mS/cm	1.040	0.616	0.565	1.161	1.003	0.641	0.682	0.614	0.615
TURBIDITY	NTU	4.68	1.50	4.82	3.30	4.28	2.00	1.74	4.47	2.10
APPENDIX III										
BORON, TOTAL	µg/L	116	ND	1,820	4,350	14,500	4,350	90.1 J	353	2,340
CALCIUM, TOTAL	µg/L	153,000	109,000	30,800	11,900	5,940	72,600	125,000	90,400	72,300
CHLORIDE, TOTAL	mg/L	56.1	36.5	23.2	26.5	29.3	19.7	3.6	3.3	12.3
FLUORIDE, TOTAL	mg/L	0.098 J	0.19 J	0.37	0.89	0.63	0.73	0.18 J	0.14 J	0.27
SULFATE, TOTAL	mg/L	46.0	11.2	211	324	195	43.9	2.0	37.3	50.0
TOTAL DISSOLVED SOLIDS	mg/L	733	404	371	856	731	414	401	319	380
APPENDIX IV										
ANTIMONY, TOTAL	µg/L	ND	ND	0.80 J	5.4	0.12 J	ND	ND	0.10 J	ND
ARSENIC, TOTAL	µg/L	22.6	3.1	13.1	250	74.3	7.4	4.1	0.97 J	96.3
BARIUM, TOTAL	µg/L	490	407	12.6	13.7	15.3	268	391	252	285
BERYLLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	µg/L	1.4	1.8	ND	1.2	1.9	0.86 J	1.4 J	1.1	ND
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	µg/L	3.1 J	ND	ND	17.7	4.2 J	ND	ND	ND	ND
LITHIUM, TOTAL	µg/L	61.5	9.8 J	ND	ND	ND	44.8	6.3 J	ND	32.4
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	ND	0.82 J	42.8	183	804	105	0.88 J	1.5 J	188
RADIUM [226 + 228]	pCi/L	1.920	2.258	ND	ND	1.238	1.892	ND	ND	ND
SELENIUM, TOTAL	µg/L	ND	ND	4.5	2.2	0.66 J	0.24 J	ND	0.42 J	ND
THALLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
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 - millisiemens per centimeter, 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.
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. MW-B2 resampled for Chloride, Fluoride, and Sulfate on 10/13/2016 due to insufficient sample volume in the initial sampling.

Prepared By: JSI 12/1/2017
Checked By: RJF 12/15/2017
Reviewed By: MNH 1/19/2018

Table 6
Baseline Sampling Event 5 Results
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016	11/16/2016
DISSOLVED OXYGEN	mg/L	0.36	0.45	0.43	0.50	0.27	0.49	0.40	1.50	0.72
pH	SU	6.86	7.08	9.90	10.71	8.94	7.11	6.91	7.64	7.13
REDOX POTENTIAL	mV	-149.3	-139.1	4.5	-51.1	-37.7	-134.0	-119.7	-44.8	-151.5
SPECIFIC CONDUCTIVITY	mS/cm	1.161	0.776	0.634	1.144	0.980	0.680	0.736	0.570	0.641
TURBIDITY	NTU	3.48	2.45	0.91	2.00	3.86	1.10	2.34	4.77	4.82
APPENDIX III										
BORON, TOTAL	µg/L	112	ND	1,520	5,730	15,600	4,450	89.2 J	1,820	2,360
CALCIUM, TOTAL	µg/L	143,000	110,000	42,100	10,800	5,940	69,700	126,000	90,200	71,700
CHLORIDE, TOTAL	mg/L	60.6	34.7	21.2	23.5	28.3	19.0	3.3	9.6	11.8
FLUORIDE, TOTAL	mg/L	0.14 J	0.18 J	0.22	0.95	0.80	0.80	0.14 J	0.23	0.32
SULFATE, TOTAL	mg/L	36.6	9.7	223	288	156	41.2	3.1	18.8	36.8
TOTAL DISSOLVED SOLIDS	mg/L	658	405	390	783	664	406	420	343	368
APPENDIX IV										
ANTIMONY, TOTAL	µg/L	ND	ND	ND	6.4	ND	ND	ND	ND	ND
ARSENIC, TOTAL	µg/L	30.0	3.6	12.0	257	28.6	6.4	4.3	0.75 J	90.7
BARIUM, TOTAL	µg/L	464	405	15.5	10.4	19.7	256	392	166	284
BERYLLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	µg/L	0.38 J	ND	ND	0.58 J	0.89 J	0.57 J	0.51 J	0.60 J	0.48 J
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	µg/L	ND	ND	ND	4.5 J	6.4	ND	ND	ND	ND
LITHIUM, TOTAL	µg/L	54.7	5.5 J	ND	ND	ND	39.9	ND	ND	29.2
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	ND	ND	32.6	201	869	109	ND	ND	162
RADIUM [226 + 228]	pCi/L	1.548	ND	ND	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	µg/L	ND	ND	3.8	1.6	0.66 J	ND	ND	0.25 J	ND
THALLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
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 - millisiemens per centimeter, 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.
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.

Prepared By: JSI 12/1/2017
Checked By: RJF 12/15/2017
Reviewed By: MNH 1/19/2018

Table 7
Baseline Sampling Event 6 Results
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017	1/19/2017
DISSOLVED OXYGEN	mg/L	0.90	1.32	0.45	0.20	0.24	0.35	0.37	1.73	0.93
pH	SU	6.85	6.78	9.79	10.88	9.84	7.32	7.16	7.10	7.14
REDOX POTENTIAL	mV	-45.8	41.7	110.2	-223.8	-179.4	-122.5	-106.7	-45.0	-77.1
SPECIFIC CONDUCTIVITY	mS/cm	1.319	0.801	0.754	1.458	1.268	0.805	0.856	0.623	0.680
TURBIDITY	NTU	3.07	3.21	1.57	3.10	2.68	2.37	3.86	4.80	4.98
APPENDIX III										
BORON, TOTAL	µg/L	115	ND	1,550	4,850	14,500	4,180	98.8 J	2,130	2,420
CALCIUM, TOTAL	µg/L	161,000	108,000	43,600	12,100	6,120	69,400	130,000	90,500	77,300
CHLORIDE, TOTAL	mg/L	43.0	33.5	19.9	27.7	30.2	18.5	3.7	13.0	12.3
FLUORIDE, TOTAL	mg/L	0.11 J	0.15 J	0.16 J	1.2	0.82	0.82	0.12 J	0.24	0.31
SULFATE, TOTAL	mg/L	40.6	14.3	213	321	205	29.7	4.9	19.0	42.8
TOTAL DISSOLVED SOLIDS	mg/L	704	426	395	874	718	405	413	350	371
APPENDIX IV										
ANTIMONY, TOTAL	µg/L	ND	ND	ND	4.6	ND	ND	ND	ND	ND
ARSENIC, TOTAL	µg/L	24.3	3.7	9.4	224	72.0	6.7	4.3	0.50 J	96.6
BARIUM, TOTAL	µg/L	556	448	18.1	12.2	16.3	280	413	190	328
BERYLLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	ND	ND	ND	0.14 J	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
LEAD, TOTAL	µg/L	ND	ND	ND	9.7	5.3	ND	3.0 J	2.6 J	ND
LITHIUM, TOTAL	µg/L	64.7	9.7 J	ND	ND	ND	44.6	ND	7.0 J	38.7
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	ND	ND	32.8	160	697	96.5	ND	ND	180
RADIUM [226 + 228]	pCi/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	µg/L	ND	ND	3.4	1.1	0.55 J	0.12 J	ND	0.24 J	ND
THALLIUM, TOTAL	µg/L	0.071 J	ND	0.12 J	ND	ND	ND	ND	0.090 J	0.063 J

NOTES
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 - millisiemens per centimeter, 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.
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.

Prepared By: JSI 12/1/2017
Checked By: RJF 12/15/2017
Reviewed By: MNH 1/19/2018

Table 8
Baseline Sampling Event 7 Results
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017	3/6/2017
DISSOLVED OXYGEN	mg/L	0.97	0.53	0.69	0.57	0.47	0.67	0.66	2.34	0.86
pH	SU	6.85	7.00	10.14	11.00	10.06	7.55	7.69	7.14	7.09
REDOX POTENTIAL	mV	-69.1	-43.3	110.3	-204.7	-172.3	-65.8	-92.8	-31.0	-110.3
SPECIFIC CONDUCTIVITY	mS/cm	1.216	0.773	0.646	1.227	1.083	0.699	0.725	0.600	0.653
TURBIDITY	NTU	4.63	1.48	0.25	1.22	1.47	0.79	4.60	1.81	1.40
APPENDIX III										
BORON, TOTAL	µg/L	125	41.9 J	1,870	5,060	15,700	4,500	101	1,390	2,550
CALCIUM, TOTAL	µg/L	150,000	110,000	41,500	11,500	5,920	70,200	122,000	89,300	71,200
CHLORIDE, TOTAL	mg/L	50.1	34.4	20.1	27.6	30.2	19.0	3.5	8.1	11.7
FLUORIDE, TOTAL	mg/L	0.16 J	0.17 J	0.24	1.3	0.81	0.81	0.14 J	0.24	0.35
SULFATE, TOTAL	mg/L	35.9	15.4	208	292	176	25.8	4.0	26.1	39.4
TOTAL DISSOLVED SOLIDS	mg/L	681	434	385	829	707	397	376	362	381
APPENDIX IV										
ANTIMONY, TOTAL	µg/L	0.028 J	ND	0.88 J	4.6	0.13 J	0.029 J	ND	0.050 J	ND
ARSENIC, TOTAL	µg/L	23.4	3.0	12.8	217	80.0	6.8	4.8	ND	92.3
BARIUM, TOTAL	µg/L	514	450	19.2	12.0	15.0	286	384	144	308
BERYLLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	ND	ND	ND	0.20 J	ND	ND	ND	ND	ND
CHROMIUM, TOTAL	µg/L	2.0	ND	2.2	ND	ND	1.6	ND	ND	ND
COBALT, TOTAL	µg/L	ND	ND	0.86 J	ND	ND	0.82 J	ND	ND	ND
LEAD, TOTAL	µg/L	ND	ND	ND	9.6	4.9 J	ND	3.0 J	ND	ND
LITHIUM, TOTAL	µg/L	64.4	11.8	ND	3.5 J	ND	45.7	5.0 J	5.3 J	35.5
MERCURY, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
MOLYBDENUM, TOTAL	µg/L	1.5 J	ND	40.0	168	753	103	ND	2.4 J	196
RADIUM [226 + 228]	pCi/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
SELENIUM, TOTAL	µg/L	ND	ND	3.5	1.6	0.57 J	0.12 J	ND	0.25 J	ND
THALLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
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 - millisiemens per centimeter, 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.
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.

Prepared By: JSI 12/1/2017
Checked By: RJF 12/15/2017
Reviewed By: MNH 1/19/2018

Table 9
Baseline Sampling Event 8 Results
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017	6/8/2017
DISSOLVED OXYGEN	mg/L	0.68	0.96	0.14	0.37	0.31	0.79	0.05	2.10	0.41
pH	SU	6.25	6.52	9.42	10.90	9.90	7.55	7.12	6.08	6.02
REDOX POTENTIAL	mV	-85.6	-48.8	136.7	129.1	93.9	-85.3	-119.9	13.4	-37.9
SPECIFIC CONDUCTIVITY	mS/cm	1.110	0.732	0.632	1.149	1.023	0.672	0.714	0.557	0.615
TURBIDITY	NTU	3.88	3.98	0.64	1.69	2.34	4.75	8.41	0.10	0.71
APPENDIX III										
BORON, TOTAL	µg/L	116	43.4 J	1,710	5,510	14,900	4,510	99.7 J	399	2,310
CALCIUM, TOTAL	µg/L	143,000	106,000	38,600	10,600	5,890	63,700	122,000	95,000	68,200
CHLORIDE, TOTAL	mg/L	47.0	34.4	20.8	26.9	32.8	20.8	3.7	3.8	11.3
FLUORIDE, TOTAL	mg/L	0.11 J	0.15 J	0.11 J	1.1	0.80	0.87	0.11 J	0.16 J	0.28
SULFATE, TOTAL	mg/L	44.4	15.5	191	279	177	44.3	3.5	37.7	28.6
TOTAL DISSOLVED SOLIDS	mg/L	664	417	402	812	719	413	382	353	368
APPENDIX IV										
ANTIMONY, TOTAL	µg/L	ND	ND	0.73 J	5.1	0.15 J	0.034 J	0.048 J	0.16 J	0.086 J
ARSENIC, TOTAL	µg/L	29.5	3.2	8.9	242	85.6	6.0	5.1	0.61 J	105
BARIUM, TOTAL	µg/L	477	435	16.9	11.0	14.5	254	374	101	289
BERYLLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND
CADMIUM, TOTAL	µg/L	ND	ND	ND	0.22 J	0.049 J	0.031 J	ND	ND	0.024 J
CHROMIUM, TOTAL	µg/L	0.060 J	0.15 J	ND	0.42 J	0.47 J	0.14 J	0.47 J	0.19 J	0.14 J
COBALT, TOTAL	µg/L	ND	ND	ND	ND	ND	0.73 J	ND	0.88 J	ND
LEAD, TOTAL	µg/L	ND	2.8 J	ND	7.0	3.8 J	ND	ND	ND	ND
LITHIUM, TOTAL	µg/L	55.6	7.1 J	ND	ND	ND	44.1	ND	ND	28.9
MERCURY, TOTAL	µg/L	0.051 J	0.050 J	0.052 J	0.055 J	0.054 J	0.050 J	0.054 J	ND	ND
MOLYBDENUM, TOTAL	µg/L	1.9 J	ND	36.3	174	676	133	1.4 J	2.5 J	152
RADIUM [226 + 228]	pCi/L	2.243	1.689	ND	ND	ND	1.556	1.623	1.515	ND
SELENIUM, TOTAL	µg/L	ND	ND	1.7	1.2	0.73 J	0.11 J	ND	0.72 J	0.097 J
THALLIUM, TOTAL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES
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 - millisiemens per centimeter, 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.
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.

Prepared By: JSI 12/1/2017
Checked By: RJF 12/15/2017
Reviewed By: MNH 1/19/2018

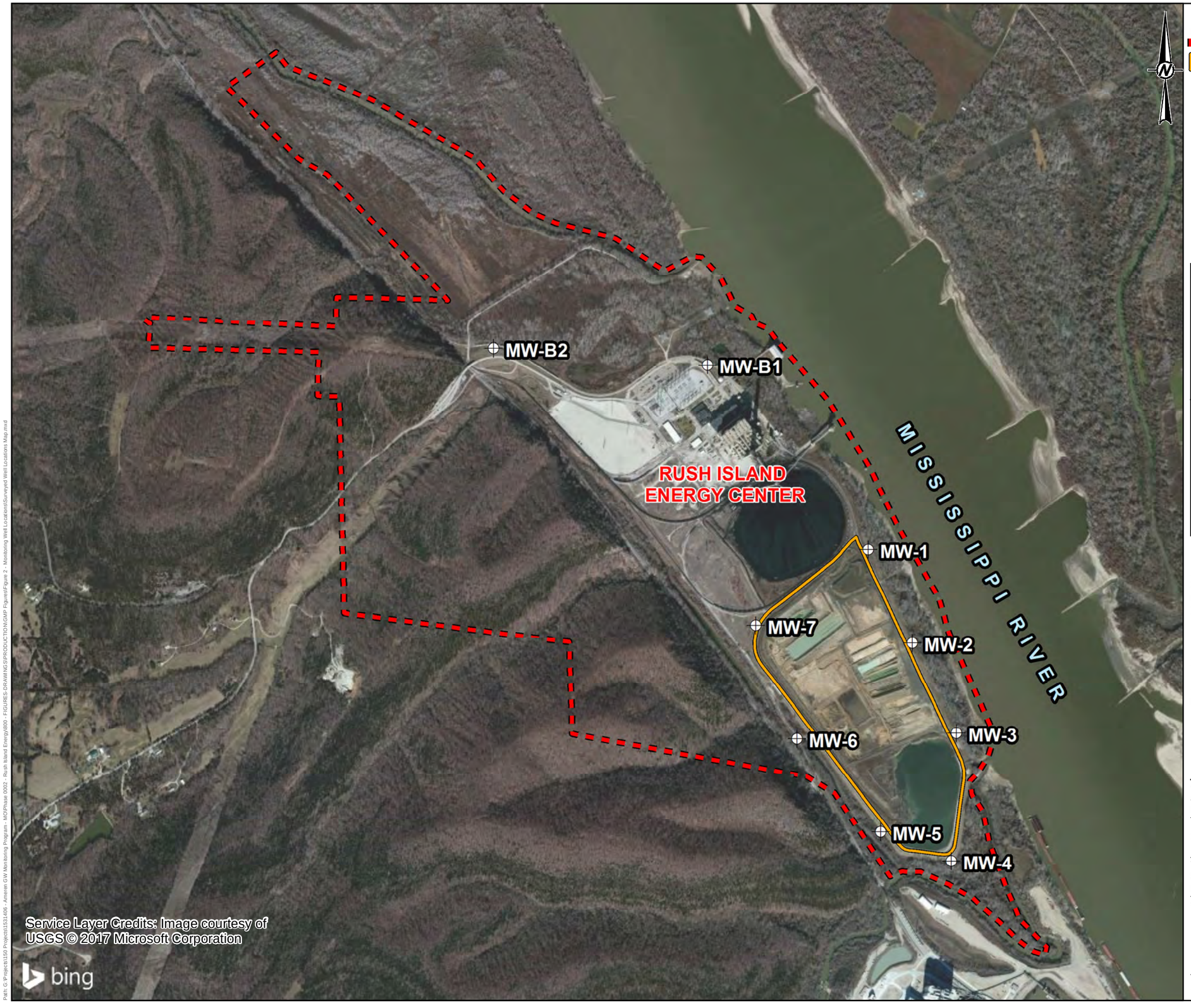
Table 10
November 2017 Detection Monitoring Results
RCPA Surface Impoundment
Rush Island Energy Center, Jefferson County, MO

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS						
		MW-B1	MW-B2	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
FIELD PARAMETERS										
DATE	NA	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/10/2017	11/10/2017	11/9/2017	11/9/2017
DISSOLVED OXYGEN	mg/L	0.76	1.08	0.83	0.26	0.53	0.48	1.29	2.50	0.73
pH	SU	6.56	6.61	9.40	10.66	9.59	7.26	6.64	7.10	6.79
REDOX POTENTIAL	mV	-63.0	61.1	-35.1	-171.0	-154.7	-80.1	101.6	42.9	-43.7
SPECIFIC CONDUCTIVITY	mS/cm	1.169	0.742	0.847	1.079	0.981	0.666	0.702	0.568	0.627
TURBIDITY	NTU	2.84	2.71	0.45	1.98	1.98	3.80	4.54	4.89	3.92
APPENDIX III										
BORON, TOTAL	µg/L	133	57.3 J	1,480	5,650	15,400	4,260	132	747	2,370
CALCIUM, TOTAL	µg/L	155,000	112,000	68,800	9,440	5,790	66,900	124,000	98,200	73,000
CHLORIDE, TOTAL	mg/L	45.4	37.1	18.9	27.6	31.3	19.8	3.8	5.4	12.6
FLUORIDE, TOTAL	mg/L	0.16 J	0.18 J	0.20 J	0.87	0.90	0.88	0.17 J	0.19 J	0.33
SULFATE, TOTAL	mg/L	38.2	12.5	382	294	175	44.6	2.0	33.0	46.8
TOTAL DISSOLVED SOLIDS	mg/L	685	437	585	792	697	417	407	366	388

NOTES
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - 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.

Prepared By: JSI
Checked By: RJF
Reviewed By: MNH

FIGURES



LEGEND

- Rush Island Energy Center Property Boundary
- RCPA Surface Impoundment
- Monitoring Well Location

-DRAFT-

CONFIDENTIAL
Attorney Client Communication
Attorney Work Product
Work in Progress

KEY MAP

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE
2.) INFORMATION ON THE CONSTRUCTION OF THE MONITORING WELLS IS AVAILABLE ON TABLE 1.
3.) WELLS WERE SURVEYED BY ZAHNER AND ASSOCIATES, INC., ON DECEMBER 1ST, 2015.

REFERENCES

1.) AMEREN MISSOURI RUSH ISLAND ENERGY CENTER, RUSH ISLAND PROPERTY CONTROL MAP, JANUARY 2012.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000 3,000 Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SITE LOCATION AERIAL MAP AND MONITORING WELL LOCATIONS

CONSULTANT
Golder Associates

YYYY-MM-DD	2015-07-17
PREPARED	JSI
DESIGN	JSI
REVIEW	JS
APPROVED	MNH

PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0002A	0.0	1

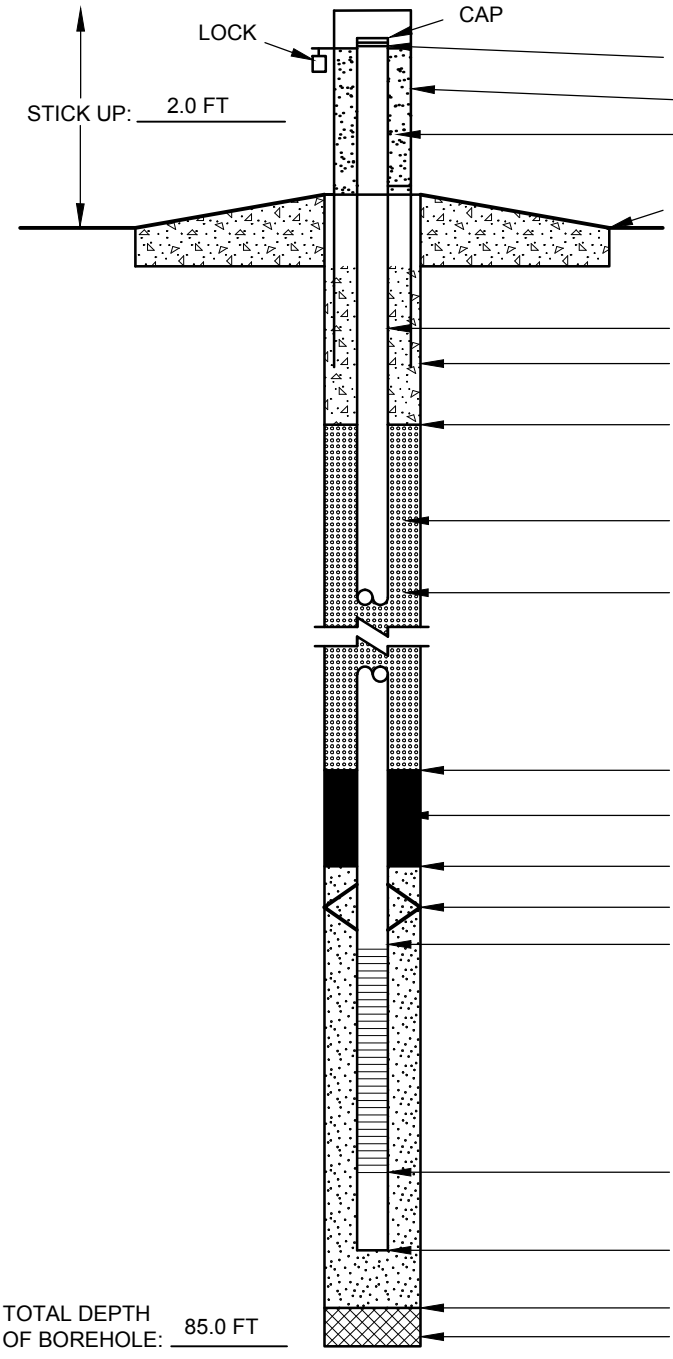
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 1in

Path: G:\Projects\1150 Projects\153-1406 - Ameren GW Monitoring Program - MO\Phase 0002 - Rush Island Energy\800 - FIGURES-DRAWINGS\PRODUCTION\GMP Figures\Figure 2 - Monitoring Well Locations Map.mxd

APPENDIX A – CCR MONITORING WELL CONSTRUCTION DIAGRAMS

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-1

PROJECT NAME: AMEREN CCR GW MONITORING	PROJECT NUMBER: 153-1406.0002A	
SITE NAME: RUSH ISLAND ENERGY CENTER	LOCATION: MW-1	
CLIENT: AMEREN MISSOURI	SURFACE ELEVATION: 393.5 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 835384.2	EASTING: 889832.5
DRILLER: J. DRABEK	STATIC WATER LEVEL: 25.31 FT BTOC	COMPLETION DATE: 10/31/2015
DRILLING COMPANY: CASCADE	DRILLING METHODS: SONIC	



TOP OF CASING ELEVATION: 395.52 FT MSL

PROTECTIVE CASING (yes / no): 4" X 5' ALUMINUM

PEA GRAVEL OR SAND

GROUND SURFACE ELEVATION: 393.5 FT MSL

DIAMETER OF RISER PIPE (in.): 2.0

DIAMETER OF BOREHOLE (in.): 6.0

CONCRETE SEAL DEPTH (ft. bgs): 2.5

TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 2.5 BAGS

TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 4 X 50 POUND BAGS

TOP OF BENTONITE SEAL DEPTH (ft. bgs): 61.0

TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAG

TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 69.0 FINE: 67.0

CENTRALIZER (yes / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)

TOP OF SCREEN DEPTH (ft. bgs): 72.8

TYPE OF SCREEN: 2" X 9.8' SCHEDULE 40 PVC

SCREEN SLOT SIZE (in.): 0.010 IN

SIZE OF SAND PACK: COARSE: #1 FINE: #0

AMOUNT OF SAND: COARSE: 3 BAGS FINE: 1/2 BAG

BOTTOM OF SCREEN DEPTH (ft. bgs): 82.6

BOTTOM OF WELL DEPTH (ft. bgs): 83.0

BOTTOM OF FILTER PACK (ft. bgs): 83.0

TYPE AND AMOUNT OF BACKFILL: 2.0 FT - NATURAL CAVE IN

ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL. 400 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 DECEMBER 1, 2015 FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

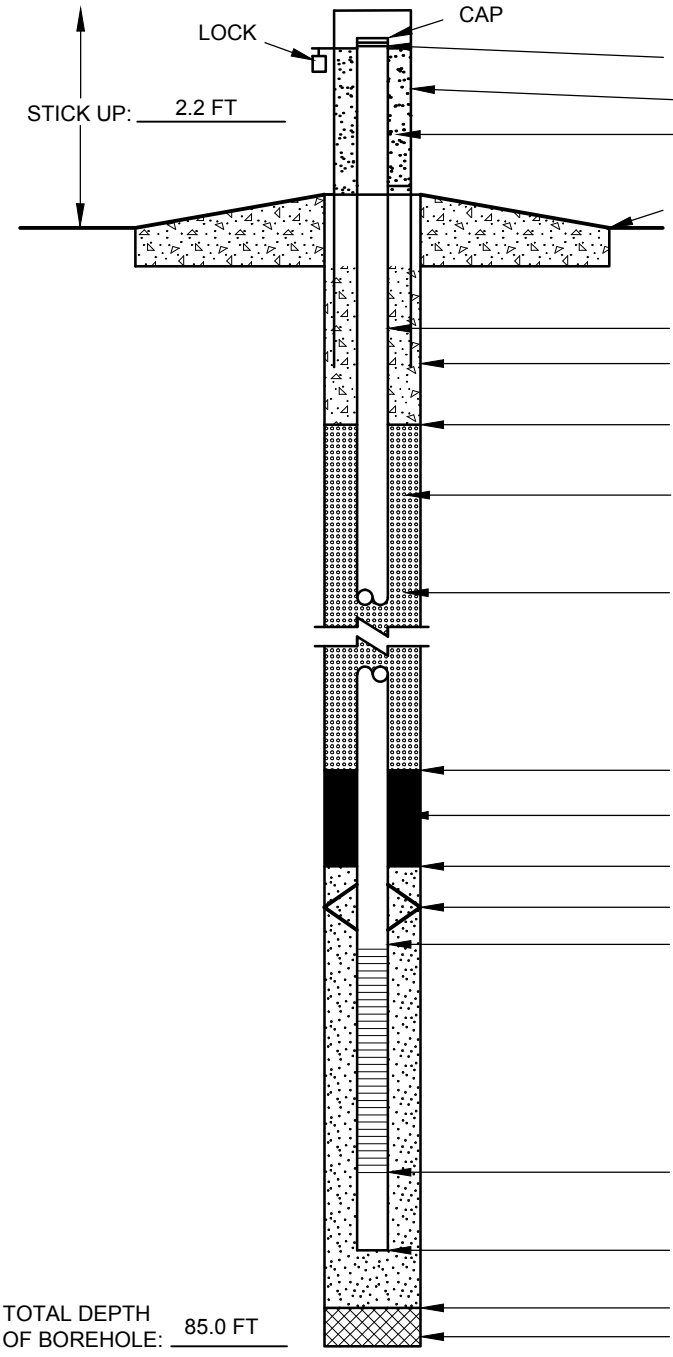
CHECKED BY: J. INGRAM

DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-2

PROJECT NAME: AMEREN CCR GW MONITORING	PROJECT NUMBER: 153-1406.0002A	
SITE NAME: RUSH ISLAND ENERGY CENTER	LOCATION: MW-2	
CLIENT: AMEREN MISSOURI	SURFACE ELEVATION: 391.7 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 834261.5	EASTING: 890364.1
DRILLER: J. DRABEK	STATIC WATER LEVEL: 23.94 FT BTOC	COMPLETION DATE: 10/31/2015
DRILLING COMPANY: CASCADE	DRILLING METHODS: SONIC	



TOP OF CASING ELEVATION: 393.87 FT MSL

PROTECTIVE CASING (yes) / no): 4" X 5' ALUMINUM

PEA GRAVEL OR SAND

GROUND SURFACE ELEVATION: 391.7 FT MSL

DIAMETER OF RISER PIPE (in.): 2.0

DIAMETER OF BOREHOLE (in.): 6.0

CONCRETE SEAL DEPTH (ft. bgs): 2.5

TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 2 BAGS

TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 5 X 50 POUND BAGS

TOP OF BENTONITE SEAL DEPTH (ft. bgs): 63.0

TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAGS

TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 69.5 FINE: 69.0

CENTRALIZER (yes) / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)

TOP OF SCREEN DEPTH (ft. bgs): 72.2

TYPE OF SCREEN: 2" X 9.8' SCHEDULE 40 PVC

SCREEN SLOT SIZE (in.): 0.010 IN

SIZE OF SAND PACK: COARSE: #1 FINE: #0

AMOUNT OF SAND: COARSE: 3 BAGS FINE: 1/2 BAG

BOTTOM OF SCREEN DEPTH (ft. bgs): 82.0

BOTTOM OF WELL DEPTH (ft. bgs): 82.4

BOTTOM OF FILTER PACK (ft. bgs): 82.4

TYPE AND AMOUNT OF BACKFILL: 2.6 FT - NATURAL CAVE IN

ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.
350 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 DECEMBER 1, 2015
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

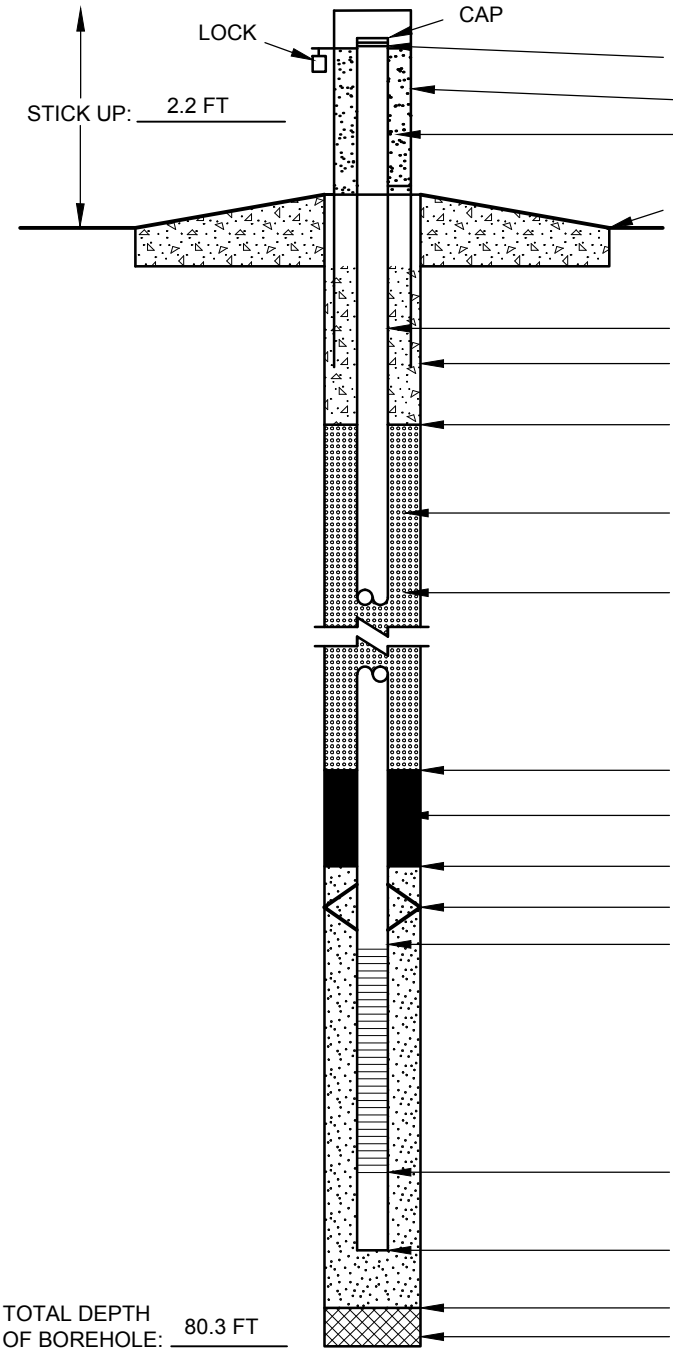
CHECKED BY: J. INGRAM

DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-3

PROJECT NAME: AMEREN CCR GW MONITORING		PROJECT NUMBER: 153-1406.0002A
SITE NAME: RUSH ISLAND ENERGY CENTER		LOCATION: MW-3
CLIENT: AMEREN MISSOURI		SURFACE ELEVATION: 389.2 FT MSL
GEOLOGIST: J. INGRAM	NORTHING: 833178.4	EASTING: 890892.7
DRILLER: J. DRABEK	STATIC WATER LEVEL: 21.84 FT BTOC	COMPLETION DATE: 10/31/2015
DRILLING COMPANY: CASCADE		DRILLING METHODS: SONIC



TOP OF CASING ELEVATION: 391.38 FT MSL

PROTECTIVE CASING (yes) / no): 4" X 5' ALUMINUM

PEA GRAVEL OR SAND

GROUND SURFACE ELEVATION: 389.2 FT MSL

DIAMETER OF RISER PIPE (in.): 2.0

DIAMETER OF BOREHOLE (in.): 6.0

CONCRETE SEAL DEPTH (ft. bgs): 2.5

TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 3.5 BAGS

TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 6 X 50 POUND BAGS

TOP OF BENTONITE SEAL DEPTH (ft. bgs): 61.0

TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAG

TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 66.0 FINE: 65.0

CENTRALIZER (yes) / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)

TOP OF SCREEN DEPTH (ft. bgs): 70.1

TYPE OF SCREEN: 2" X 9.8' SCHEDULE 40 PVC

SCREEN SLOT SIZE (in.): 0.010 IN

SIZE OF SAND PACK: COARSE: #1 FINE: #0

AMOUNT OF SAND: COARSE: 3.25 BAGS FINE: 1/2 BAG

BOTTOM OF SCREEN DEPTH (ft. bgs): 79.9

BOTTOM OF WELL DEPTH (ft. bgs): 80.3

BOTTOM OF FILTER PACK (ft. bgs): 80.3

TYPE AND AMOUNT OF BACKFILL: NONE

ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.
280 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 DECEMBER 1, 2015
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

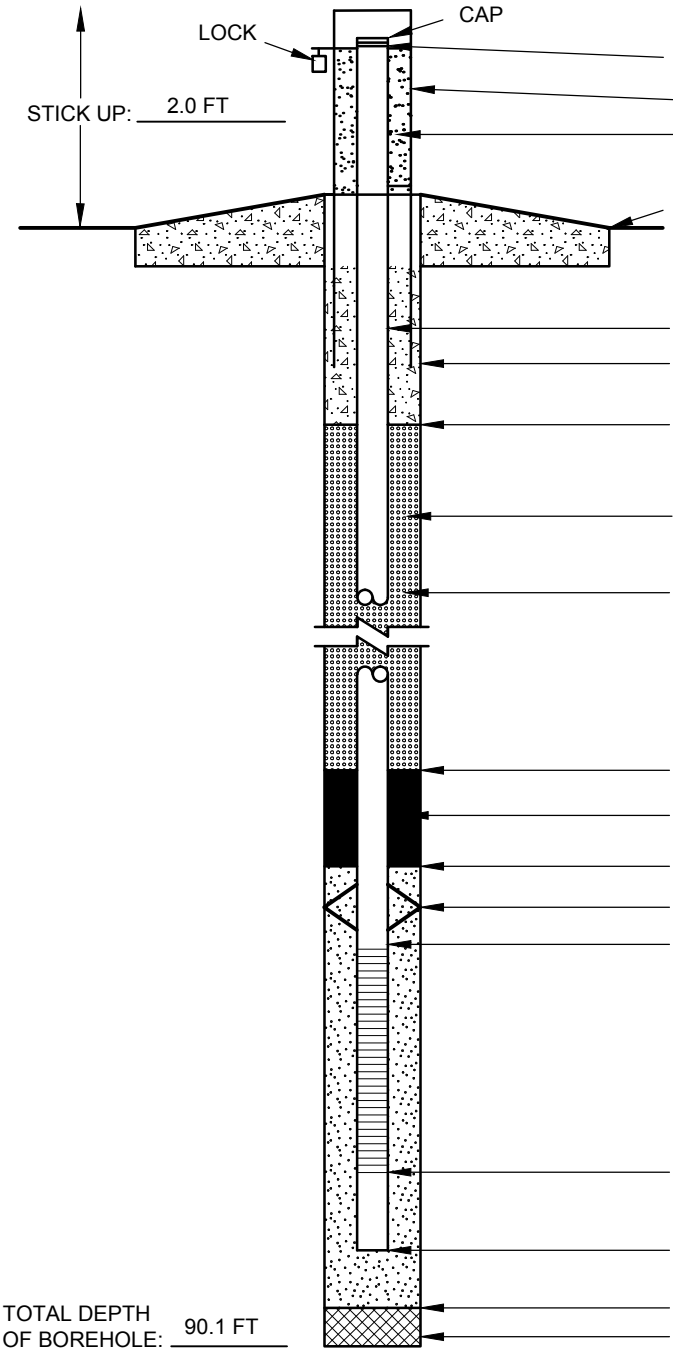
CHECKED BY: J. INGRAM

DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-4

PROJECT NAME: AMEREN CCR GW MONITORING	PROJECT NUMBER: 153-1406.0002A	
SITE NAME: RUSH ISLAND ENERGY CENTER	LOCATION: MW-4	
CLIENT: AMEREN MISSOURI	SURFACE ELEVATION: 390.8 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 831647.5	EASTING: 890830.5
DRILLER: J. DRABEK	STATIC WATER LEVEL: 22.64 FT BTOC	COMPLETION DATE: 10/30/2015
DRILLING COMPANY: CASCADE	DRILLING METHODS: SONIC	



TOP OF CASING ELEVATION: 392.78 FT MSL

PROTECTIVE CASING (yes / no): 4" X 5' ALUMINUM

PEA GRAVEL OR SAND

GROUND SURFACE ELEVATION: 390.8 FT MSL

DIAMETER OF RISER PIPE (in.): 2.0

DIAMETER OF BOREHOLE (in.): 6.0

CONCRETE SEAL DEPTH (ft. bgs): 2.5

TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 2.5 BAGS

TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 6 X 50 POUND BAGS

TOP OF BENTONITE SEAL DEPTH (ft. bgs): 71.0

TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAG

TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 77.0 FINE: 76.0

CENTRALIZER (yes / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)

TOP OF SCREEN DEPTH (ft. bgs): 79.9

TYPE OF SCREEN: 2" X 9.8' SCHEDULE 40 PVC

SCREEN SLOT SIZE (in.): 0.010 IN

SIZE OF SAND PACK: COARSE: #1 FINE: #0

AMOUNT OF SAND: COARSE: 4 BAGS FINE: 1/2 BAG

BOTTOM OF SCREEN DEPTH (ft. bgs): 89.7

BOTTOM OF WELL DEPTH (ft. bgs): 90.1

BOTTOM OF FILTER PACK (ft. bgs): 90.1

TYPE AND AMOUNT OF BACKFILL: NONE

ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.
325 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 DECEMBER 1, 2015
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

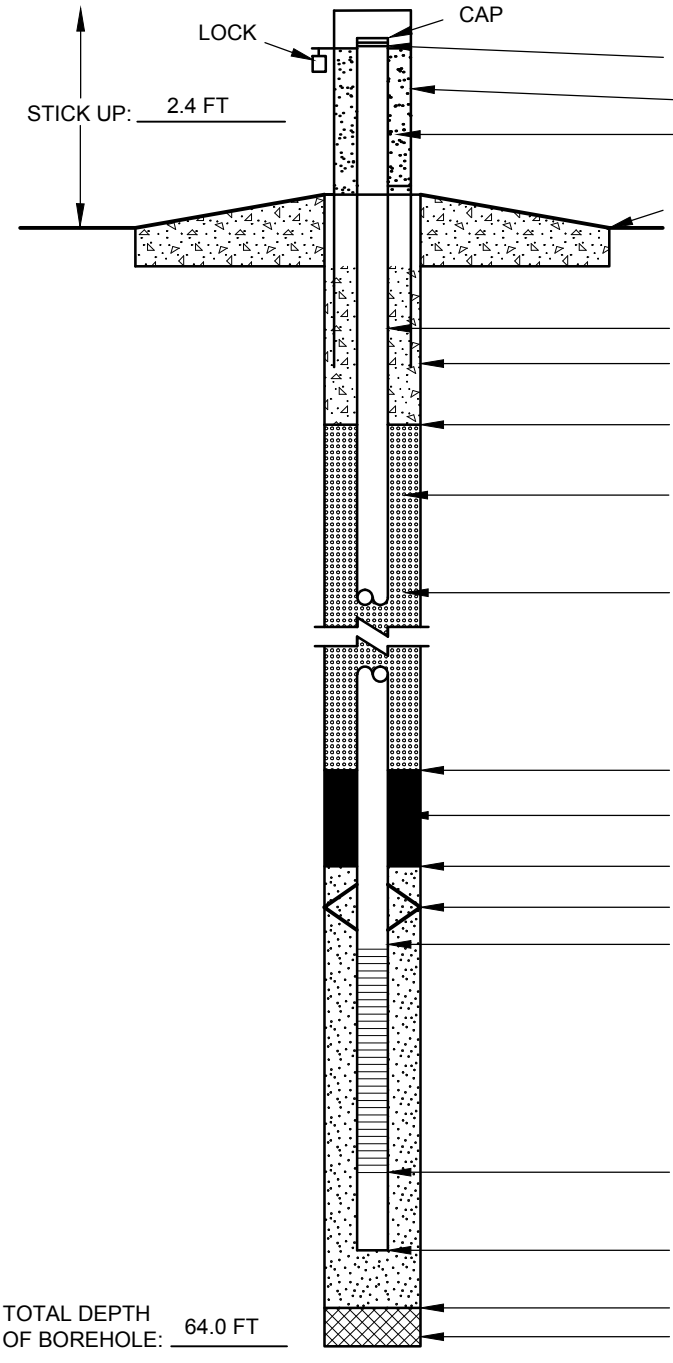
CHECKED BY: J. INGRAM

DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-5

PROJECT NAME: AMEREN CCR GW MONITORING	PROJECT NUMBER: 153-1406.0002A	
SITE NAME: RUSH ISLAND ENERGY CENTER	LOCATION: MW-5	
CLIENT: AMEREN MISSOURI	SURFACE ELEVATION: 388.0 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 831994.9	EASTING: 889984.5
DRILLER: J. DRABEK	STATIC WATER LEVEL: 19.38 FT BTOC	COMPLETION DATE: 10/29/2015
DRILLING COMPANY: CASCADE	DRILLING METHODS: SONIC	



TOP OF CASING ELEVATION: 390.36 FT MSL

PROTECTIVE CASING (yes / no): 4" X 5' ALUMINUM

PEA GRAVEL OR SAND

GROUND SURFACE ELEVATION: 388.0 FT MSL

DIAMETER OF RISER PIPE (in.): 2.0

DIAMETER OF BOREHOLE (in.): 6.0

CONCRETE SEAL DEPTH (ft. bgs): 2.5

TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 1.5 BAGS

TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 3 X 50 POUND BAGS

TOP OF BENTONITE SEAL DEPTH (ft. bgs): 46.0

TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAG

TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 53.0 FINE: 51.5

CENTRALIZER (yes / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)

TOP OF SCREEN DEPTH (ft. bgs): 55.0

TYPE OF SCREEN: 2" X 4.8' SCHEDULE 40 PVC

SCREEN SLOT SIZE (in.): 0.010 IN

SIZE OF SAND PACK: COARSE: #1 FINE: #0

AMOUNT OF SAND: COARSE: 2 BAGS FINE: 1/2 BAG

BOTTOM OF SCREEN DEPTH (ft. bgs): 59.8

BOTTOM OF WELL DEPTH (ft. bgs): 60.2

BOTTOM OF FILTER PACK (ft. bgs): 60.2

TYPE AND AMOUNT OF BACKFILL: 3.8 FT - NATURAL CAVE IN

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 DECEMBER 1, 2015
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

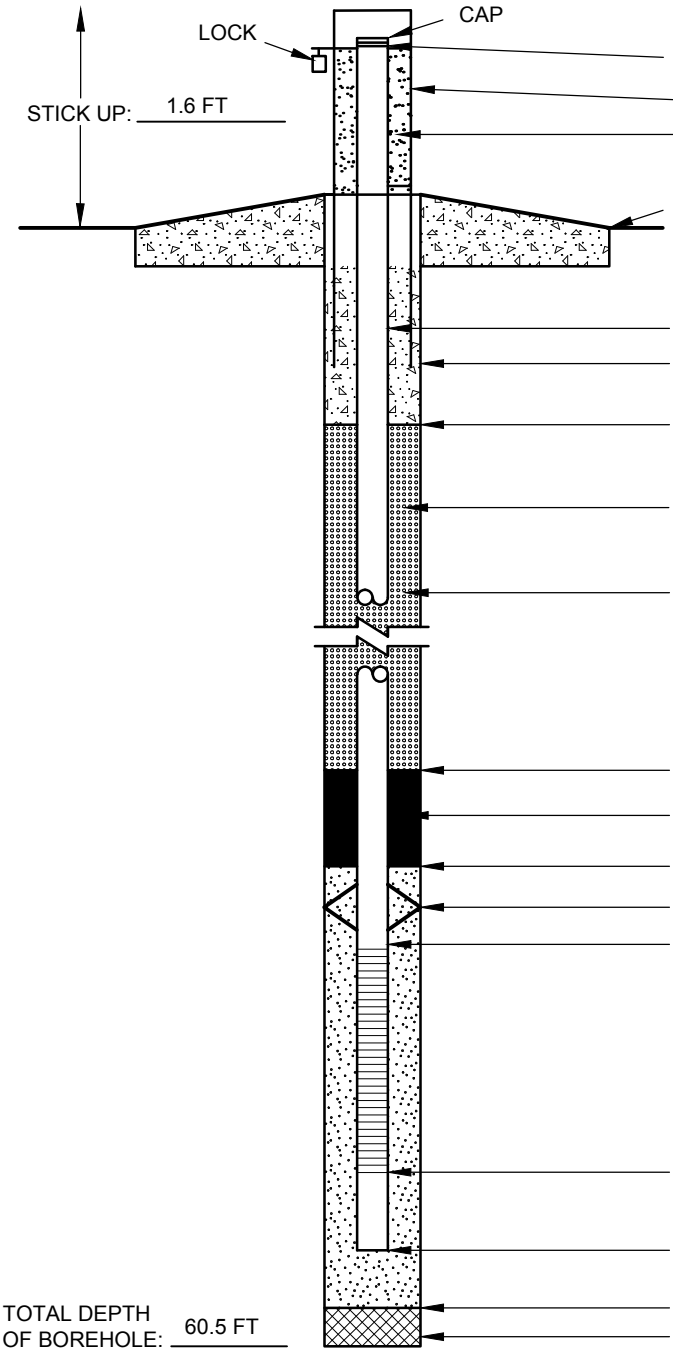
CHECKED BY: J. INGRAM

DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-6

PROJECT NAME: AMEREN CCR GW MONITORING	PROJECT NUMBER: 153-1406.0002A	
SITE NAME: RUSH ISLAND ENERGY CENTER	LOCATION: MW-6	
CLIENT: AMEREN MISSOURI	SURFACE ELEVATION: 401.1 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 833111.0	EASTING: 888977.0
DRILLER: J. DRABEK	STATIC WATER LEVEL: 36.11 FT BTOC	COMPLETION DATE: 10/28/2015
DRILLING COMPANY: CASCADE	DRILLING METHODS: SONIC	



TOP OF CASING ELEVATION: 402.71 FT MSL

PROTECTIVE CASING (yes / no): 4" X 5' ALUMINUM

PEA GRAVEL OR SAND

GROUND SURFACE ELEVATION: 401.1 FT MSL

DIAMETER OF RISER PIPE (in.): 2.0

DIAMETER OF BOREHOLE (in.): 6.0

CONCRETE SEAL DEPTH (ft. bgs): 2.5

TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 1.75 BAGS

TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 3 X 50 POUND BAGS

TOP OF BENTONITE SEAL DEPTH (ft. bgs): 46.0

TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAG

TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 52.0 FINE: 51.5

CENTRALIZER (yes / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)

TOP OF SCREEN DEPTH (ft. bgs): 54.6

TYPE OF SCREEN: 2" X 4.8' SCHEDULE 40 PVC

SCREEN SLOT SIZE (in.): 0.010 IN

SIZE OF SAND PACK: COARSE: #1 FINE: #0

AMOUNT OF SAND: COARSE: 2.5 BAGS FINE: 1/2 BAG

BOTTOM OF SCREEN DEPTH (ft. bgs): 59.4

BOTTOM OF WELL DEPTH (ft. bgs): 59.8

BOTTOM OF FILTER PACK (ft. bgs): 59.8

TYPE AND AMOUNT OF BACKFILL: 0.7 FT - NATURAL CAVE IN

ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.
120 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 DECEMBER 1, 2015
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

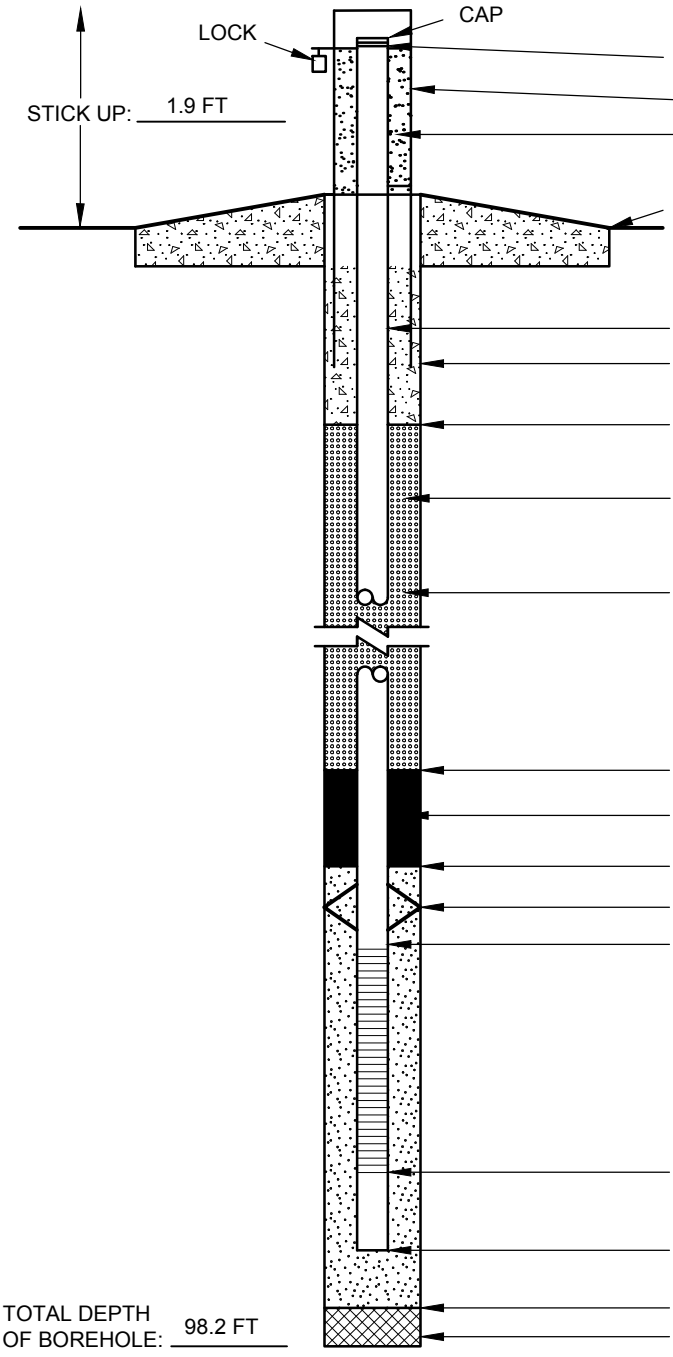
CHECKED BY: J. INGRAM

DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-7

PROJECT NAME: AMEREN CCR GW MONITORING	PROJECT NUMBER: 153-1406.0002A	
SITE NAME: RUSH ISLAND ENERGY CENTER	LOCATION: MW-7	
CLIENT: AMEREN MISSOURI	SURFACE ELEVATION: 406.1 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 834476.8	EASTING: 888483.3
DRILLER: J. DRABEK	STATIC WATER LEVEL: 36.11 FT BTOC	COMPLETION DATE: 10/28/2015
DRILLING COMPANY: CASCADE	DRILLING METHODS: SONIC	



TOP OF CASING ELEVATION: 407.95 FT MSL

PROTECTIVE CASING (yes) / no): 4" X 5' ALUMINUM

PEA GRAVEL OR SAND

GROUND SURFACE ELEVATION: 406.1 FT MSL

DIAMETER OF RISER PIPE (in.): 2.0

DIAMETER OF BOREHOLE (in.): 6.0

CONCRETE SEAL DEPTH (ft. bgs): 2.5

TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 2.5 BAGS

TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 9 X 50 POUND BAGS

TOP OF BENTONITE SEAL DEPTH (ft. bgs): 75.0

TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAG

TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 84.0 FINE: 82.0

CENTRALIZER (yes) / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)

TOP OF SCREEN DEPTH (ft. bgs): 88.0

TYPE OF SCREEN: 2" X 9.8' SCHEDULE 40 PVC

SCREEN SLOT SIZE (in.): 0.010 IN

SIZE OF SAND PACK: COARSE: #1 FINE: #0

AMOUNT OF SAND: COARSE: 3 BAGS FINE: 1/2 BAG

BOTTOM OF SCREEN DEPTH (ft. bgs): 97.8

BOTTOM OF WELL DEPTH (ft. bgs): 98.2

BOTTOM OF FILTER PACK (ft. bgs): 98.2

TYPE AND AMOUNT OF BACKFILL: NONE

ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL. 400 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 DECEMBER 1, 2015 FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

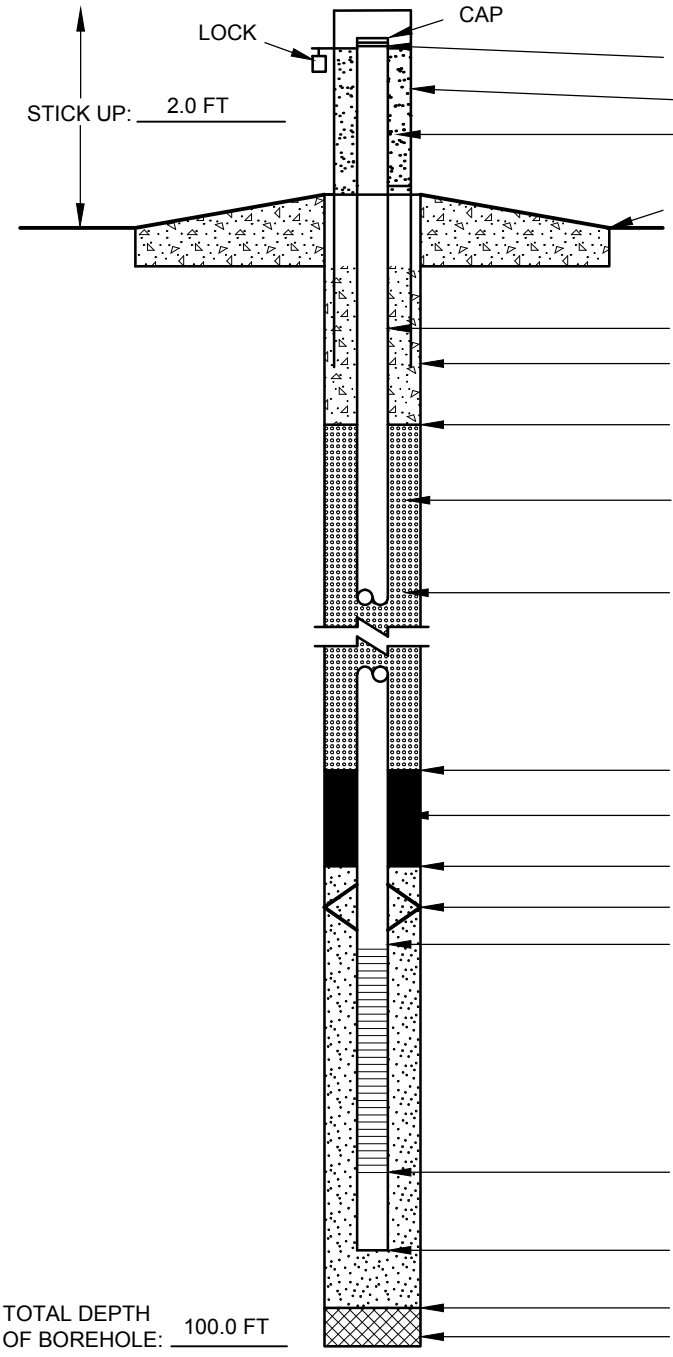
CHECKED BY: J. INGRAM

DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-B1

PROJECT NAME: AMEREN CCR GW MONITORING	PROJECT NUMBER: 153-1406.0002A	
SITE NAME: RUSH ISLAND ENERGY CENTER	LOCATION: MW-B1	
CLIENT: AMEREN MISSOURI	SURFACE ELEVATION: 409.6 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 837602.1	EASTING: 887903.9
DRILLER: J. DRABEK	STATIC WATER LEVEL: 40.33 FT BTOC	COMPLETION DATE: 10/28/2015
DRILLING COMPANY: CASCADE	DRILLING METHODS: SONIC	



TOP OF CASING ELEVATION: 411.61 FT MSL

PROTECTIVE CASING (yes) / no): 4" X 5' ALUMINUM

PEA GRAVEL OR SAND

GROUND SURFACE ELEVATION: 409.6 FT MSL

DIAMETER OF RISER PIPE (in.): 2.0

DIAMETER OF BOREHOLE (in.): 6.0

CONCRETE SEAL DEPTH (ft. bgs): 2.5

TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 3.5 BAG

TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 6 X 50 POUND BAGS

TOP OF BENTONITE SEAL DEPTH (ft. bgs): 79.0

TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAG

TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 86.0 FINE: 84.0

CENTRALIZER (yes) / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)

TOP OF SCREEN DEPTH (ft. bgs): 89.8

TYPE OF SCREEN: 2" X 9.8' SCHEDULE 40 PVC

SCREEN SLOT SIZE (in.): 0.010 IN

SIZE OF SAND PACK: COARSE: #1 FINE: #0

AMOUNT OF SAND: COARSE: 3 BAGS FINE: 1/2 BAG

BOTTOM OF SCREEN DEPTH (ft. bgs): 99.6

BOTTOM OF WELL DEPTH (ft. bgs): 100.0

BOTTOM OF FILTER PACK (ft. bgs): 100.0

TYPE AND AMOUNT OF BACKFILL: NONE

ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL. 450 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 DECEMBER 1, 2015 FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

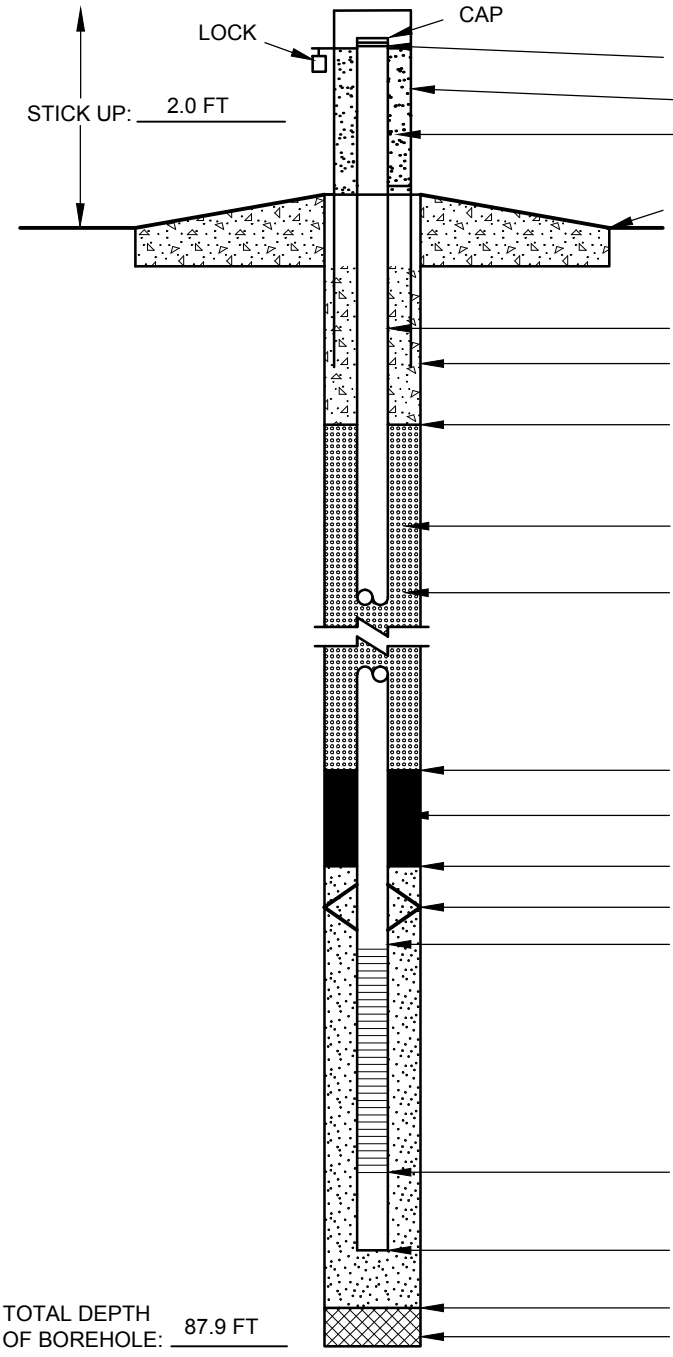
CHECKED BY: J. INGRAM

DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

ABOVE GROUND MONITORING WELL CONSTRUCTION LOG MW-B2

PROJECT NAME: AMEREN CCR GW MONITORING	PROJECT NUMBER: 153-1406.0002A	
SITE NAME: RUSH ISLAND ENERGY CENTER	LOCATION: MW-B2	
CLIENT: AMEREN MISSOURI	SURFACE ELEVATION: 395.9 FT MSL	
GEOLOGIST: J. INGRAM	NORTHING: 837801.7	EASTING: 885337.2
DRILLER: J. DRABEK	STATIC WATER LEVEL: 24.32 FT BTOC	COMPLETION DATE: 10/27/2015
DRILLING COMPANY: CASCADE	DRILLING METHODS: SONIC	



- TOP OF CASING ELEVATION: 397.85 FT MSL
- PROTECTIVE CASING (yes / no): 4" X 5' ALUMINUM
- PEA GRAVEL OR SAND
- GROUND SURFACE ELEVATION: 395.9 FT MSL
- DIAMETER OF RISER PIPE (in.): 2.0
- DIAMETER OF BOREHOLE (in.): 6.0
- CONCRETE SEAL DEPTH (ft. bgs): 2.5
- TYPE AND AMOUNT OF ANNULAR SEAL: 3/8" BENTONITE CHIPS - 1.5 BAGS
- TYPE AND AMOUNT OF ANNULAR SEAL: HIGH SOLIDS BENTONITE 5 X 50 POUND BAGS
- TOP OF BENTONITE SEAL DEPTH (ft. bgs): 65.0
- TYPE AND AMOUNT OF BENTONITE SEAL: 3/8" BENTONITE CHIPS - 1 BAG
- TOP OF SAND PACK DEPTH (ft. bgs): COARSE: 73.0 FINE: 72.0
- CENTRALIZER (yes / no) - TYPE: STAINLESS STEEL (TOP + BOTTOM)
- TOP OF SCREEN DEPTH (ft. bgs): 77.7
- TYPE OF SCREEN: 2" X 9.8' SCHEDULE 40 PVC
- SCREEN SLOT SIZE (in.): 0.010 IN
- SIZE OF SAND PACK: COARSE: #1 FINE: #0
- AMOUNT OF SAND: COARSE: 3 BAGS FINE: 1/2 BAG
- BOTTOM OF SCREEN DEPTH (ft. bgs): 87.5
- BOTTOM OF WELL DEPTH (ft. bgs): 87.9
- BOTTOM OF FILTER PACK (ft. bgs): 87.9
- TYPE AND AMOUNT OF BACKFILL: NONE

ADDITIONAL NOTES: FT BGS = FEET BELOW GROUND SURFACE. FT MSL = FEET ABOVE MEAN SEA LEVEL.
250 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 DECEMBER 1, 2015
FT BTOC = FEET BELOW TOP OF CASING. SAND AND BENTONITE BAGS WEIGH 50 LBS EACH.

CHECKED BY: J. INGRAM
DATE CHECKED: 4/21/2016

PREPARED BY: J. SUOZZI

APPENDIX B – LABORATORY ANALYTICAL DATA

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

March 29, 2016

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

RE: Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory on March 12, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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

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

CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Pennsylvania Certification IDs

Georgia Certification #: C040
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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60214801001	**R-MW-1**	Water	03/10/16 10:27	03/12/16 04:10
60214801002	**R-MW-2**	Water	03/10/16 13:00	03/12/16 04:10
60214801003	**R-MW-3**	Water	03/10/16 16:20	03/12/16 04:10
60214801004	**R-MW-B1**	Water	03/10/16 14:52	03/12/16 04:10
60214801005	**R-MW-7**	Water	03/10/16 16:48	03/12/16 04:10
60214801006	**R-DUP-1**	Water	03/10/16 08:00	03/12/16 04:10
60214801007	**R-MW-5**	Water	03/11/16 09:35	03/12/16 04:10
60214801008	**R-MW-4**	Water	03/11/16 10:49	03/12/16 04:10
60214801009	**R-MW-6**	Water	03/11/16 11:23	03/12/16 04:10
60214801010	**R-MW-B2**	Water	03/11/16 13:40	03/12/16 04:10
60214801011	**R-FB-1**	Water	03/11/16 10:44	03/12/16 04:10
60214801012	**R-MW-3 MS**	Water	03/10/16 16:20	03/12/16 04:10
60214801013	**R-MW-3 MSD**	Water	03/10/16 16:20	03/12/16 04:10

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60214801001	**R-MW-1**	EPA 200.7	JGP	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
60214801002	**R-MW-2**	EPA 200.7	JGP	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
60214801003	**R-MW-3**	EPA 200.7	JGP	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
60214801004	**R-MW-B1**	EPA 200.7	JGP	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
60214801005	**R-MW-7**	EPA 200.7	JGP	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

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

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
60214801006	**R-DUP-1**	EPA 200.7	JGP	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
60214801007	**R-MW-5**	EPA 200.7	JGP	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
60214801008	**R-MW-4**	EPA 200.7	JGP	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
60214801009	**R-MW-6**	EPA 200.7	JGP	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
60214801010	**R-MW-B2**	EPA 200.7	JGP	8	PASI-K
		EPA 200.8	SMW	6	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

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	AGO	1	PASI-K
		SM 4500-H+B	LJS	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
60214801011	**R-FB-1**	EPA 200.7	JGP	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
60214801012	**R-MW-3 MS**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60214801013	**R-MW-3 MSD**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-1 **Lab ID: 60214801001** Collected: 03/10/16 10:27 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**33.0**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:01	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:01	7440-41-7	
Boron	**2110**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:01	7440-42-8	
Calcium	**81100**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:01	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:01	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:01	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:01	7439-93-2	
Molybdenum	**69.8**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:01	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.65J**	ug/L	1.0	0.058	1	03/14/16 15:30	03/18/16 17:54	7440-36-0	
Arsenic	**5.8**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 17:54	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 17:54	7440-43-9	
Chromium	**0.42J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 17:54	7440-47-3	
Selenium	**8.1**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 17:54	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 17:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**554**	mg/L	5.0	5.0	1		03/15/16 08:48		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.5**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**22.7**	mg/L	2.0	1.0	2		03/15/16 11:12	16887-00-6	
Fluoride	**0.11J**	mg/L	0.20	0.073	1		03/15/16 12:10	16984-48-8	
Sulfate	**341**	mg/L	20.0	5.0	20		03/15/16 11:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-2 **Lab ID: 60214801002** Collected: 03/10/16 13:00 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**26.2**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 13:35	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 13:35	7440-41-7	
Boron	**3830**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 13:35	7440-42-8	
Calcium	**10000**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 13:35	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 13:35	7440-48-4	
Lead	**14.4**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 13:35	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 13:35	7439-93-2	
Molybdenum	**150**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 13:35	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**5.4**	ug/L	1.0	0.058	1	03/14/16 15:30	03/18/16 17:59	7440-36-0	
Arsenic	**257**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 17:59	7440-38-2	
Cadmium	**0.26J**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 17:59	7440-43-9	
Chromium	**1.1**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 17:59	7440-47-3	
Selenium	**1.1**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 17:59	7782-49-2	M1
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 17:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**795**	mg/L	5.0	5.0	1		03/15/16 08:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10.8**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**24.3**	mg/L	2.0	1.0	2		03/15/16 12:39	16887-00-6	
Fluoride	**0.61**	mg/L	0.20	0.073	1		03/15/16 12:25	16984-48-8	
Sulfate	**266**	mg/L	25.0	6.2	25		03/15/16 12:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-3 **Lab ID: 60214801003** Collected: 03/10/16 16:20 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**21.0**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:05	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:05	7440-41-7	
Boron	**15600**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:05	7440-42-8	
Calcium	**6030**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:05	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:05	7440-48-4	
Lead	**5.9**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:05	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:05	7439-93-2	
Molybdenum	**943**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:05	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.16J**	ug/L	1.0	0.058	1	03/14/16 15:30	03/18/16 18:08	7440-36-0	
Arsenic	**16.8**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 18:08	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 18:08	7440-43-9	
Chromium	**1.0**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 18:08	7440-47-3	
Selenium	**0.66J**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 18:08	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 18:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:35	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**688**	mg/L	5.0	5.0	1		03/15/16 08:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.6**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**31.1**	mg/L	2.0	1.0	2		03/15/16 13:08	16887-00-6	
Fluoride	**0.78**	mg/L	0.20	0.073	1		03/15/16 21:32	16984-48-8	
Sulfate	**167**	mg/L	20.0	5.0	20		03/15/16 20:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-B1 **Lab ID: 60214801004** Collected: 03/10/16 14:52 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**551**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 13:49	7440-39-3	
Beryllium	**0.42J**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 13:49	7440-41-7	
Boron	**151**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 13:49	7440-42-8	
Calcium	**156000**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 13:49	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 13:49	7440-48-4	
Lead	**3.1J**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 13:49	7439-92-1	
Lithium	**64.2**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 13:49	7439-93-2	
Molybdenum	**0.97J**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 13:49	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.065J**	ug/L	1.0	0.058	1	03/14/16 15:30	03/18/16 18:30	7440-36-0	
Arsenic	**27.7**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 18:30	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 18:30	7440-43-9	
Chromium	**0.44J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 18:30	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 18:30	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 18:30	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**677**	mg/L	5.0	5.0	1		03/15/16 08:50		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**60.3**	mg/L	5.0	2.5	5		03/15/16 16:01	16887-00-6	
Fluoride	**0.10J**	mg/L	0.20	0.073	1		03/15/16 15:46	16984-48-8	
Sulfate	**45.9**	mg/L	5.0	1.2	5		03/15/16 16:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-7 **Lab ID: 60214801005** Collected: 03/10/16 16:48 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**308**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:09	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:09	7440-41-7	
Boron	**2290**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:09	7440-42-8	
Calcium	**73600**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:09	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:09	7440-48-4	
Lead	**3.7J**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:09	7439-92-1	
Lithium	**34.7**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:09	7439-93-2	
Molybdenum	**170**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:09	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.55J**	ug/L	1.0	0.058	1	03/14/16 15:30	03/18/16 18:34	7440-36-0	
Arsenic	**34.5**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 18:34	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 18:34	7440-43-9	
Chromium	**0.56J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 18:34	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 18:34	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 18:34	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**365**	mg/L	5.0	5.0	1		03/15/16 08:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.0**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.5**	mg/L	1.0	0.50	1		03/15/16 16:15	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	0.073	1		03/15/16 16:15	16984-48-8	
Sulfate	**37.7**	mg/L	5.0	1.2	5		03/15/16 16:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-DUP-1 **Lab ID: 60214801006** Collected: 03/10/16 08:00 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**34.9**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:12	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:12	7440-41-7	
Boron	**2180**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:12	7440-42-8	
Calcium	**83400**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:12	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:12	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:12	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:12	7439-93-2	
Molybdenum	**70.4**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:12	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.62J**	ug/L	1.0	0.058	1	03/14/16 15:30	03/18/16 18:38	7440-36-0	
Arsenic	**5.8**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 18:38	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 18:38	7440-43-9	
Chromium	**0.49J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 18:38	7440-47-3	
Selenium	**8.2**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 18:38	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 18:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**541**	mg/L	5.0	5.0	1		03/15/16 08:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.8**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**22.7**	mg/L	2.0	1.0	2		03/15/16 16:58	16887-00-6	
Fluoride	**0.11J**	mg/L	0.20	0.073	1		03/15/16 16:44	16984-48-8	
Sulfate	**341**	mg/L	25.0	6.2	25		03/15/16 17:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-5 **Lab ID: 60214801007** Collected: 03/11/16 09:35 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**452**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:16	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:16	7440-41-7	
Boron	**91.3J**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:16	7440-42-8	
Calcium	**130000**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:16	7440-70-2	
Cobalt	**0.84J**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:16	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:16	7439-92-1	
Lithium	**5.5J**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:16	7439-93-2	
Molybdenum	**1.0J**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:16	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	03/14/16 15:30	03/18/16 18:43	7440-36-0	
Arsenic	**5.2**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 18:43	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 18:43	7440-43-9	
Chromium	**0.55J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 18:43	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 18:43	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 18:43	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**410**	mg/L	5.0	5.0	1		03/15/16 08:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.8**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**4.5**	mg/L	1.0	0.50	1		03/15/16 17:56	16887-00-6	
Fluoride	**0.10J**	mg/L	0.20	0.073	1		03/15/16 17:56	16984-48-8	
Sulfate	**11.8**	mg/L	1.0	0.25	1		03/15/16 17:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-4 **Lab ID: 60214801008** Collected: 03/11/16 10:49 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**314**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:20	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:20	7440-41-7	
Boron	**4200**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:20	7440-42-8	
Calcium	**76200**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:20	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:20	7440-48-4	
Lead	**3.1J**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:20	7439-92-1	
Lithium	**45.8**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:20	7439-93-2	
Molybdenum	**96.2**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:20	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	03/14/16 15:30	03/18/16 18:47	7440-36-0	
Arsenic	**10.3**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 18:47	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 18:47	7440-43-9	
Chromium	**0.83J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 18:47	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 18:47	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 18:47	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**419**	mg/L	5.0	5.0	1		03/15/16 08:52		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.7**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.9**	mg/L	2.0	1.0	2		03/15/16 18:25	16887-00-6	
Fluoride	**0.87**	mg/L	0.20	0.073	1		03/15/16 18:10	16984-48-8	
Sulfate	**38.5**	mg/L	2.0	0.50	2		03/15/16 18:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-6 **Lab ID: 60214801009** Collected: 03/11/16 11:23 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**132**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:24	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:24	7440-41-7	
Boron	**1260**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:24	7440-42-8	
Calcium	**93500**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:24	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:24	7440-48-4	
Lead	**3.2J**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:24	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:24	7439-93-2	
Molybdenum	**1.6J**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:24	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	03/14/16 15:30	03/18/16 18:52	7440-36-0	
Arsenic	**0.58J**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 18:52	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 18:52	7440-43-9	
Chromium	**0.86J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 18:52	7440-47-3	
Selenium	**0.26J**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 18:52	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 18:52	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 13:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**338**	mg/L	5.0	5.0	1		03/15/16 08:52		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.3**	Std. Units	0.10	0.10	1		03/21/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**7.6**	mg/L	1.0	0.50	1		03/15/16 18:54	16887-00-6	
Fluoride	**0.18J**	mg/L	0.20	0.073	1		03/15/16 18:54	16984-48-8	
Sulfate	**30.2**	mg/L	2.0	0.50	2		03/15/16 19:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-B2 **Lab ID: 60214801010** Collected: 03/11/16 13:40 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**434**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:27	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:27	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:27	7440-42-8	
Calcium	**108000**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:27	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:27	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:27	7439-92-1	
Lithium	**9.6J**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:27	7439-93-2	
Molybdenum	**1.2J**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:27	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.077J**	ug/L	1.0	0.058	1	03/14/16 15:30	03/18/16 18:56	7440-36-0	
Arsenic	**2.6**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 18:56	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 18:56	7440-43-9	
Chromium	**0.82J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 18:56	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 18:56	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 18:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 14:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**392**	mg/L	5.0	5.0	1		03/15/16 08:53		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.7**	Std. Units	0.10	0.10	1		03/21/16 13:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**32.0**	mg/L	2.0	1.0	2		03/15/16 19:37	16887-00-6	
Fluoride	**0.13J**	mg/L	0.20	0.073	1		03/15/16 19:22	16984-48-8	
Sulfate	**8.4**	mg/L	1.0	0.25	1		03/15/16 19:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-FB-1 **Lab ID: 60214801011** Collected: 03/11/16 10:44 Received: 03/12/16 04:10 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**<0.58**	ug/L	10.0	0.58	1	03/14/16 15:30	03/17/16 14:31	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	03/14/16 15:30	03/17/16 14:31	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	03/14/16 15:30	03/17/16 14:31	7440-42-8	
Calcium	**17.1J**	ug/L	100	8.1	1	03/14/16 15:30	03/17/16 14:31	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	03/14/16 15:30	03/17/16 14:31	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	03/14/16 15:30	03/17/16 14:31	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	03/14/16 15:30	03/17/16 14:31	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	03/14/16 15:30	03/17/16 14:31	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	03/14/16 15:30	03/18/16 19:00	7440-36-0	
Arsenic	**<0.10**	ug/L	1.0	0.10	1	03/14/16 15:30	03/18/16 19:00	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	03/14/16 15:30	03/18/16 19:00	7440-43-9	
Chromium	**0.40J**	ug/L	1.0	0.34	1	03/14/16 15:30	03/18/16 19:00	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	03/14/16 15:30	03/18/16 19:00	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	03/14/16 15:30	03/18/16 19:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	03/24/16 09:45	03/24/16 14:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		03/15/16 08:54		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**5.7**	Std. Units	0.10	0.10	1		03/21/16 13:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		03/15/16 19:51	16887-00-6	
Fluoride	**<0.073**	mg/L	0.20	0.073	1		03/15/16 19:51	16984-48-8	
Sulfate	**<0.25**	mg/L	1.0	0.25	1		03/15/16 19:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: MERP/10446 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

METHOD BLANK: 1729783 Matrix: Water
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.039	0.20	0.039	03/24/16 13:22	

LABORATORY CONTROL SAMPLE: 1729784

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1729785 1729786

Parameter	Units	60214801003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.039	5	5	4.0	4.0	80	80	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: MPRP/35172 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

METHOD BLANK: 1724263 Matrix: Water
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	0.60J	10.0	0.58	03/17/16 13:20	
Beryllium	ug/L	<0.26	1.0	0.26	03/17/16 13:20	
Boron	ug/L	<50.0	100	50.0	03/17/16 13:20	
Calcium	ug/L	<8.1	100	8.1	03/17/16 13:20	
Cobalt	ug/L	<0.72	5.0	0.72	03/17/16 13:20	
Lead	ug/L	<2.5	5.0	2.5	03/17/16 13:20	
Lithium	ug/L	<4.9	10.0	4.9	03/17/16 13:20	
Molybdenum	ug/L	<0.52	20.0	0.52	03/17/16 13:20	

LABORATORY CONTROL SAMPLE: 1724264

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1100	110	85-115	
Beryllium	ug/L	1000	1060	106	85-115	
Boron	ug/L	1000	1020	102	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Cobalt	ug/L	1000	1020	102	85-115	
Lead	ug/L	1000	1040	104	85-115	
Lithium	ug/L	1000	1080	108	85-115	
Molybdenum	ug/L	1000	1100	110	85-115	

MATRIX SPIKE SAMPLE: 1724265

Parameter	Units	60214801001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	33.0	1000	1110	108	70-130	
Beryllium	ug/L	<0.26	1000	1040	104	70-130	
Boron	ug/L	2110	1000	3160	105	70-130	
Calcium	ug/L	81100	10000	92800	117	70-130	
Cobalt	ug/L	<0.72	1000	996	100	70-130	
Lead	ug/L	<2.5	1000	1000	100	70-130	
Lithium	ug/L	<4.9	1000	1090	109	70-130	
Molybdenum	ug/L	69.8	1000	1170	110	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

MATRIX SPIKE SAMPLE: 1724266

Parameter	Units	60214801003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	21.0	1000	1130	111	70-130	
Beryllium	ug/L	<0.26	1000	1080	107	70-130	
Boron	ug/L	15600	1000	16500	94	70-130	
Calcium	ug/L	6030	10000	16100	101	70-130	
Cobalt	ug/L	<0.72	1000	1030	103	70-130	
Lead	ug/L	5.9	1000	1020	102	70-130	
Lithium	ug/L	<4.9	1000	1110	111	70-130	
Molybdenum	ug/L	943	1000	2050	110	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: MPRP/35173 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

METHOD BLANK: 1724268 Matrix: Water
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	03/18/16 17:32	
Arsenic	ug/L	<0.10	1.0	0.10	03/18/16 17:32	
Cadmium	ug/L	<0.029	0.50	0.029	03/18/16 17:32	
Chromium	ug/L	<0.34	1.0	0.34	03/18/16 17:32	
Selenium	ug/L	<0.18	1.0	0.18	03/18/16 17:32	
Thallium	ug/L	<0.50	1.0	0.50	03/18/16 17:32	

LABORATORY CONTROL SAMPLE: 1724269

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	42.5	106	85-115	
Arsenic	ug/L	40	44.5	111	85-115	
Cadmium	ug/L	40	42.9	107	85-115	
Chromium	ug/L	40	43.4	109	85-115	
Selenium	ug/L	40	44.7	112	85-115	
Thallium	ug/L	40	40.2	100	85-115	

MATRIX SPIKE SAMPLE: 1724270

Parameter	Units	60214801002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	5.4	40	46.6	103	70-130	
Arsenic	ug/L	257	40	294	93	70-130	
Cadmium	ug/L	0.26J	40	39.7	99	70-130	
Chromium	ug/L	1.1	40	41.2	100	70-130	
Selenium	ug/L	1.1	40	22.8	54	70-130	M1
Thallium	ug/L	<0.50	40	40.9	102	70-130	

MATRIX SPIKE SAMPLE: 1724271

Parameter	Units	60214801003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	0.16J	40	41.0	102	70-130	
Arsenic	ug/L	16.8	40	54.4	94	70-130	
Cadmium	ug/L	<0.029	40	38.5	96	70-130	
Chromium	ug/L	1.0	40	40.1	98	70-130	
Selenium	ug/L	0.66J	40	34.6	85	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

MATRIX SPIKE SAMPLE: 1724271

Parameter	Units	60214801003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Thallium	ug/L	<0.50	40	39.9	100	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: WET/60578 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

METHOD BLANK: 1724409 Matrix: Water
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/15/16 08:47	

LABORATORY CONTROL SAMPLE: 1724410

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	996	100	80-120	

SAMPLE DUPLICATE: 1724411

Parameter	Units	60214801003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	688	685	0	10	

SAMPLE DUPLICATE: 1724412

Parameter	Units	60214801009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	338	341	1	10	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: WET/60611 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009

SAMPLE DUPLICATE: 1725059

Parameter	Units	60214801003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	9.6	9.6	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: WET/60613
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60214801010, 60214801011

SAMPLE DUPLICATE: 1725062

Parameter	Units	60214801011 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.7	5.8	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: WETA/38511 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

METHOD BLANK: 1725356 Matrix: Water
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	03/15/16 09:11	
Fluoride	mg/L	<0.073	0.20	0.073	03/15/16 09:11	
Sulfate	mg/L	<0.25	1.0	0.25	03/15/16 09:11	

LABORATORY CONTROL SAMPLE: 1725357

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1724244 1724245

Parameter	Units	60214801003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	31.1	100	100	128	128	97	97	80-120	1	15	
Fluoride	mg/L	0.78	2.5	2.5	3.3	3.3	102	101	80-120	0	15	
Sulfate	mg/L	167	100	100	265	265	98	97	80-120	0	15	

MATRIX SPIKE SAMPLE: 1724246

Parameter	Units	60214866002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	3520	1250	4870	108	80-120	
Fluoride	mg/L	ND	625	676	108	80-120	
Sulfate	mg/L	4510	1250	5680	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.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-1 **Lab ID: 60214801001** Collected: 03/10/16 10:27 Received: 03/12/16 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	**0.0905 ± 0.507 (0.973) C:NA T:83%**	pCi/L	03/23/16 19:43	13982-63-3	
Radium-228	EPA 904.0	**0.619 ± 0.363 (0.669) C:93% T:77%**	pCi/L	03/24/16 11:56	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-2 **Lab ID: 60214801002** Collected: 03/10/16 13:00 Received: 03/12/16 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	**-0.077 ± 0.350 (0.711) C:NA T:84%**	pCi/L	03/23/16 19:55	13982-63-3	
Radium-228	EPA 904.0	**0.168 ± 0.398 (0.883) C:83% T:78%**	pCi/L	03/24/16 11:51	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-3 **Lab ID: 60214801003** Collected: 03/10/16 16:20 Received: 03/12/16 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	**0.218 ± 0.333 (0.536) C:NA T:95%**	pCi/L	03/28/16 10:56	13982-63-3	
Radium-228	EPA 904.0	**0.473 ± 0.430 (0.883) C:83% T:83%**	pCi/L	03/24/16 11:51	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-B1 **Lab ID: 60214801004** Collected: 03/10/16 14:52 Received: 03/12/16 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	**0.965 ± 0.707 (0.973) C:NA T:88%**	pCi/L	03/23/16 19:56	13982-63-3	
Radium-228	EPA 904.0	**0.876 ± 0.483 (0.901) C:85% T:85%**	pCi/L	03/24/16 11:51	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-7 **Lab ID: 60214801005** Collected: 03/10/16 16:48 Received: 03/12/16 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	**0.321 ± 0.335 (0.472) C:NA T:98%**	pCi/L	03/23/16 20:07	13982-63-3	
Radium-228	EPA 904.0	**0.468 ± 0.412 (0.842) C:85% T:85%**	pCi/L	03/24/16 11:51	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-DUP-1 **Lab ID: 60214801006** Collected: 03/10/16 08:00 Received: 03/12/16 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	**0.282 ± 0.438 (0.759) C:NA T:88%**	pCi/L	03/23/16 20:07	13982-63-3	
Radium-228	EPA 904.0	**0.244 ± 0.355 (0.764) C:84% T:81%**	pCi/L	03/24/16 11:55	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-5 **Lab ID: 60214801007** Collected: 03/11/16 09:35 Received: 03/12/16 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	**0.000 ± 0.324 (0.660) C:NA T:91%**	pCi/L	03/23/16 20:07	13982-63-3	
Radium-228	EPA 904.0	**0.251 ± 0.318 (0.676) C:82% T:90%**	pCi/L	03/24/16 11:56	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-4 **Lab ID: 60214801008** Collected: 03/11/16 10:49 Received: 03/12/16 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	**0.492 ± 0.460 (0.652) C:NA T:89%**	pCi/L	03/23/16 20:20	13982-63-3	
Radium-228	EPA 904.0	**0.568 ± 0.379 (0.726) C:79% T:87%**	pCi/L	03/24/16 11:56	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-6 **Lab ID: 60214801009** Collected: 03/11/16 11:23 Received: 03/12/16 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	**0.364 ± 0.554 (0.955) C:NA T:88%**	pCi/L	03/23/16 19:43	13982-63-3	
Radium-228	EPA 904.0	**0.330 ± 0.441 (0.947) C:83% T:93%**	pCi/L	03/24/16 11:51	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-B2 **Lab ID: 60214801010** Collected: 03/11/16 13:40 Received: 03/12/16 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	**0.425 ± 0.483 (0.762) C:NA T:89%**	pCi/L	03/23/16 20:20	13982-63-3	
Radium-228	EPA 904.0	**0.269 ± 0.352 (0.752) C:81% T:89%**	pCi/L	03/24/16 11:57	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-FB-1 **Lab ID: 60214801011** Collected: 03/11/16 10:44 Received: 03/12/16 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	**0.188 ± 0.286 (0.460) C:NA T:103%**	pCi/L	03/23/16 20:20	13982-63-3	
Radium-228	EPA 904.0	**0.361 ± 0.320 (0.649) C:87% T:91%**	pCi/L	03/24/16 11:58	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-3 MS **Lab ID: 60214801012** Collected: 03/10/16 16:20 Received: 03/12/16 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	**81.00 %REC ± NA (NA)**	pCi/L	03/28/16 11:30	13982-63-3	
Radium-228	EPA 904.0	**97.9 %REC ± NA (NA) C:NA T:NA**	pCi/L	03/24/16 11:58	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Sample: R-MW-3 MSD **Lab ID: 60214801013** Collected: 03/10/16 16:20 Received: 03/12/16 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	**57.90 % REC 33.26 RDP ± NA (NA)**	pCi/L	03/28/16 11:40	13982-63-3	
Radium-228	EPA 904.0	**92.8 %REC 5.31 RPD ± NA (NA) C:NA T:NA**	pCi/L	03/24/16 13:34	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: RADC/28500 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60214801001, 60214801002, 60214801003, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011, 60214801012, 60214801013

METHOD BLANK: 1042513 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.267 ± 0.301 (0.631) C:84% T:89%	pCi/L	03/24/16 11:55	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: RADC/28487 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60214801001, 60214801002, 60214801004, 60214801005, 60214801006, 60214801007, 60214801008, 60214801009, 60214801010, 60214801011

METHOD BLANK: 1042500 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.320 (0.516) C:NA T:96%	pCi/L	03/23/16 19:31	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

QC Batch: RADC/28541 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60214801003, 60214801012, 60214801013

METHOD BLANK: 1045293 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.230 ± 0.399 (0.713) C:NA T:92%	pCi/L	03/28/16 10:18	

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QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

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 (%)

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TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60214801001	**R-MW-1**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801002	**R-MW-2**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801003	**R-MW-3**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801004	**R-MW-B1**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801005	**R-MW-7**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801006	**R-DUP-1**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801007	**R-MW-5**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801008	**R-MW-4**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801009	**R-MW-6**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801010	**R-MW-B2**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801011	**R-FB-1**	EPA 200.7	MPRP/35172	EPA 200.7	ICP/25753
60214801001	**R-MW-1**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801002	**R-MW-2**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801003	**R-MW-3**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801004	**R-MW-B1**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801005	**R-MW-7**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801006	**R-DUP-1**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801007	**R-MW-5**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801008	**R-MW-4**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801009	**R-MW-6**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801010	**R-MW-B2**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801011	**R-FB-1**	EPA 200.8	MPRP/35173	EPA 200.8	ICPM/4132
60214801001	**R-MW-1**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801002	**R-MW-2**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801003	**R-MW-3**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801004	**R-MW-B1**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801005	**R-MW-7**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801006	**R-DUP-1**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801007	**R-MW-5**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801008	**R-MW-4**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801009	**R-MW-6**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801010	**R-MW-B2**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801011	**R-FB-1**	EPA 7470	MERP/10446	EPA 7470	MERC/10389
60214801001	**R-MW-1**	EPA 903.1	RADC/28487		
60214801002	**R-MW-2**	EPA 903.1	RADC/28487		
60214801003	**R-MW-3**	EPA 903.1	RADC/28541		
60214801004	**R-MW-B1**	EPA 903.1	RADC/28487		
60214801005	**R-MW-7**	EPA 903.1	RADC/28487		
60214801006	**R-DUP-1**	EPA 903.1	RADC/28487		
60214801007	**R-MW-5**	EPA 903.1	RADC/28487		
60214801008	**R-MW-4**	EPA 903.1	RADC/28487		
60214801009	**R-MW-6**	EPA 903.1	RADC/28487		
60214801010	**R-MW-B2**	EPA 903.1	RADC/28487		
60214801011	**R-FB-1**	EPA 903.1	RADC/28487		
60214801012	**R-MW-3 MS**	EPA 903.1	RADC/28541		
60214801013	**R-MW-3 MSD**	EPA 903.1	RADC/28541		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60214801

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60214801001	R-MW-1	EPA 904.0	RADC/28500		
60214801002	R-MW-2	EPA 904.0	RADC/28500		
60214801003	R-MW-3	EPA 904.0	RADC/28500		
60214801004	R-MW-B1	EPA 904.0	RADC/28500		
60214801005	R-MW-7	EPA 904.0	RADC/28500		
60214801006	R-DUP-1	EPA 904.0	RADC/28500		
60214801007	R-MW-5	EPA 904.0	RADC/28500		
60214801008	R-MW-4	EPA 904.0	RADC/28500		
60214801009	R-MW-6	EPA 904.0	RADC/28500		
60214801010	R-MW-B2	EPA 904.0	RADC/28500		
60214801011	R-FB-1	EPA 904.0	RADC/28500		
60214801012	R-MW-3 MS	EPA 904.0	RADC/28500		
60214801013	R-MW-3 MSD	EPA 904.0	RADC/28500		
60214801001	R-MW-1	SM 2540C	WET/60578		
60214801002	R-MW-2	SM 2540C	WET/60578		
60214801003	R-MW-3	SM 2540C	WET/60578		
60214801004	R-MW-B1	SM 2540C	WET/60578		
60214801005	R-MW-7	SM 2540C	WET/60578		
60214801006	R-DUP-1	SM 2540C	WET/60578		
60214801007	R-MW-5	SM 2540C	WET/60578		
60214801008	R-MW-4	SM 2540C	WET/60578		
60214801009	R-MW-6	SM 2540C	WET/60578		
60214801010	R-MW-B2	SM 2540C	WET/60578		
60214801011	R-FB-1	SM 2540C	WET/60578		
60214801001	R-MW-1	SM 4500-H+B	WET/60611		
60214801002	R-MW-2	SM 4500-H+B	WET/60611		
60214801003	R-MW-3	SM 4500-H+B	WET/60611		
60214801004	R-MW-B1	SM 4500-H+B	WET/60611		
60214801005	R-MW-7	SM 4500-H+B	WET/60611		
60214801006	R-DUP-1	SM 4500-H+B	WET/60611		
60214801007	R-MW-5	SM 4500-H+B	WET/60611		
60214801008	R-MW-4	SM 4500-H+B	WET/60611		
60214801009	R-MW-6	SM 4500-H+B	WET/60611		
60214801010	R-MW-B2	SM 4500-H+B	WET/60613		
60214801011	R-FB-1	SM 4500-H+B	WET/60613		
60214801001	R-MW-1	EPA 300.0	WETA/38511		
60214801002	R-MW-2	EPA 300.0	WETA/38511		
60214801003	R-MW-3	EPA 300.0	WETA/38511		
60214801004	R-MW-B1	EPA 300.0	WETA/38511		
60214801005	R-MW-7	EPA 300.0	WETA/38511		
60214801006	R-DUP-1	EPA 300.0	WETA/38511		
60214801007	R-MW-5	EPA 300.0	WETA/38511		
60214801008	R-MW-4	EPA 300.0	WETA/38511		
60214801009	R-MW-6	EPA 300.0	WETA/38511		
60214801010	R-MW-B2	EPA 300.0	WETA/38511		
60214801011	R-FB-1	EPA 300.0	WETA/38511		

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Sample Condition Upon Receipt

WO# : 60214801

60214801

Client Name: Golder

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

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

Optional
Proj Due Date:
Proj Name:

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

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

Thermometer Used: CF +1.0 / CF 0.0 T-239 / T-262 **Type of Ice:** (Wet) Blue None ☐ Samples received on ice, cooling process has begun. (circle one)

Cooler Temperature: 2.0/13.4/12.7

Date and initials of person examining contents: pv 3/12/16

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	1. Only the radium volumes were
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2. receive in the two high
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3. temp cooler.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	6. pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑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 ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: WT		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 ☑No	Initial when completed / Lot # of added 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 ☑N/A	18.

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Jami Church Date: 3/14/16

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: 1 of 1

Section A Required Client Information:

Company:	Golder Associates
Address:	820 South Main Street, Suite 100
	St Charles, MO 63301
Email To:	maddock@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Mark Haddock (mhaddock@golder.com)
Copy To:	Jeffrey Ingram
Purchase Order No.:	
Project Name:	Ameren Rush Island Engery Center
Project Number:	153 - 1406 . 0002A

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N	Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 + 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	R-MW-1	WT	G	3/10/16	0915	3/10/16	1027		4	1		3						N	1	1	1	1	2		1BP3U 1BP3N 2BP3N 2BP3U
2	R-MW-2	WT	G	3/10/16	1200		1360		4	1		3						N	1	1	1	1	2		
3	R-MW-3	WT	G	3/10/16	1420		1620		12	3		9						N	3	3	3	3	6		3BP3U 3BP3N 6BP1N
4	R-MW-B1	WT	G	3/10/16	1301		1452		4	1		3						N	1	1	1	1	2		
5	R-MW-7	WT	G	3/10/16	1535		1648		4	1		3						N	1	1	1	1	2		
6	R-DUP-1	WT	G	3/10/16	—	—	—		4	1		3						N	1	1	1	1	2		
7	R-MW-5	WT	G	3/11/16	0835	3/11/16	0935		4	1		3						N	1	1	1	1	2		
8	R-MW-4	WT	G		1010		1049		5	1		4						N	1	1	1	1	3		2BP2N 1BP1N
9	R-MW-6	WT	G		1028		1123		4	1		3						N	1	1	1	1	2		
10	R-MW-B2	WT	G		1242		1340		4	1		3						N	1	1	1	1	2		
11	R-FB-1	WT	G	—	1044	—	1044		4	1		3						N	1	1	1	1	2		
12		WT	G																						

60214801

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl		3/11/16	1609	PACE	3/11/16	1609				
	PACE	3/11/16	1700		3/12/16	0410	2.0	Y	Y	Y
							13.4	N	Y	Y
							12.7	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Snozzi

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 03/11/16

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

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

May 24, 2016

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

RE: Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory on May 05, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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

Pace Analytical Services, Inc.
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CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

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

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SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60218420001	**R-MW-1**	Water	05/02/16 09:40	05/05/16 03:25
60218420002	**R-MW-2**	Water	05/02/16 11:35	05/05/16 03:25
60218420003	**R-MW-3**	Water	05/02/16 13:42	05/05/16 03:25
60218420004	**R-MW-4**	Water	05/03/16 10:14	05/05/16 03:25
60218420005	**R-MW-5**	Water	05/03/16 09:10	05/05/16 03:25
60218420006	**R-MW-6**	Water	05/02/16 16:15	05/05/16 03:25
60218420007	**R-MW-7**	Water	05/03/16 09:50	05/05/16 03:25
60218420008	**R-MW-B1**	Water	05/02/16 13:41	05/05/16 03:25
60218420009	**R-MW-B2**	Water	05/02/16 12:19	05/05/16 03:25
60218420010	**R-DUP-1**	Water	05/02/16 08:00	05/05/16 03:25
60218420011	**R-FB-1**	Water	05/02/16 15:20	05/05/16 03:25
60218420012	**R-MW-3 MS**	Water	05/02/16 13:42	05/05/16 03:25
60218420013	**R-MW-3 MSD**	Water	05/02/16 13:42	05/05/16 03:25

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60218420001	**R-MW-1**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420002	**R-MW-2**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420003	**R-MW-3**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420004	**R-MW-4**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420005	**R-MW-5**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420006	**R-MW-6**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420007	**R-MW-7**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420008	**R-MW-B1**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420009	**R-MW-B2**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420010	**R-DUP-1**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420011	**R-FB-1**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	SMW	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	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60218420012	**R-MW-3 MS**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60218420013	**R-MW-3 MSD**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-1 **Lab ID: 60218420001** Collected: 05/02/16 09:40 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**21.3**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 16:34	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 16:34	7440-41-7	
Boron	**2140**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 16:34	7440-42-8	
Calcium	**55700**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 16:34	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 16:34	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 16:34	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 16:34	7439-93-2	
Molybdenum	**73.1**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 16:34	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.75J**	ug/L	1.0	0.058	1	05/06/16 11:30	05/21/16 15:23	7440-36-0	
Arsenic	**9.7**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 15:23	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 15:23	7440-43-9	
Chromium	**0.38J**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 15:23	7440-47-3	
Selenium	**10.2**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 15:23	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 15:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 14:39	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**424**	mg/L	5.0	5.0	1		05/09/16 12:18		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.7**	Std. Units	0.10	0.10	1		05/09/16 10:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**22.6**	mg/L	2.0	1.0	2		05/19/16 02:19	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	0.073	1		05/17/16 19:39	16984-48-8	
Sulfate	**234**	mg/L	20.0	5.0	20		05/19/16 02:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-2 **Lab ID: 60218420002** Collected: 05/02/16 11:35 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**18.8**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 16:37	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 16:37	7440-41-7	
Boron	**4080**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 16:37	7440-42-8	
Calcium	**9840**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 16:37	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 16:37	7440-48-4	
Lead	**8.8**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 16:37	7439-92-1	B
Lithium	**<4.9**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 16:37	7439-93-2	
Molybdenum	**173**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 16:37	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**5.2**	ug/L	1.0	0.058	1	05/06/16 11:30	05/21/16 15:28	7440-36-0	
Arsenic	**231**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 15:28	7440-38-2	
Cadmium	**0.25J**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 15:28	7440-43-9	
Chromium	**0.95J**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 15:28	7440-47-3	
Selenium	**2.1**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 15:28	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 15:28	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 14:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**794**	mg/L	5.0	5.0	1		05/09/16 12:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10.6**	Std. Units	0.10	0.10	1		05/09/16 10:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**23.0**	mg/L	2.0	1.0	2		05/19/16 02:50	16887-00-6	
Fluoride	**0.91**	mg/L	0.20	0.073	1		05/17/16 20:56	16984-48-8	
Sulfate	**242**	mg/L	20.0	5.0	20		05/19/16 03:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-3 **Lab ID: 60218420003** Collected: 05/02/16 13:42 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**18.3**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 16:39	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 16:39	7440-41-7	
Boron	**14900**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 16:39	7440-42-8	
Calcium	**6110**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 16:39	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 16:39	7440-48-4	
Lead	**6.2**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 16:39	7439-92-1	B
Lithium	**<4.9**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 16:39	7439-93-2	
Molybdenum	**826**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 16:39	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.098J**	ug/L	1.0	0.058	1	05/06/16 11:30	05/21/16 15:32	7440-36-0	
Arsenic	**36.2**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 15:32	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 15:32	7440-43-9	
Chromium	**1.4**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 15:32	7440-47-3	
Selenium	**0.60J**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 15:32	7782-49-2	M1
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 15:32	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 14:44	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**806**	mg/L	5.0	5.0	1		05/09/16 12:19		D6
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.6**	Std. Units	0.10	0.10	1		05/09/16 10:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**30.9**	mg/L	2.0	1.0	2		05/19/16 03:21	16887-00-6	
Fluoride	**0.80**	mg/L	0.20	0.073	1		05/17/16 21:12	16984-48-8	
Sulfate	**158**	mg/L	20.0	5.0	20		05/20/16 09:43	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-4 **Lab ID: 60218420004** Collected: 05/03/16 10:14 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**275**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 16:46	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 16:46	7440-41-7	
Boron	**4070**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 16:46	7440-42-8	
Calcium	**73500**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 16:46	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 16:46	7440-48-4	
Lead	**2.7J**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 16:46	7439-92-1	B
Lithium	**41.4**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 16:46	7439-93-2	
Molybdenum	**91.4**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 16:46	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.12J**	ug/L	1.0	0.058	1	05/06/16 11:30	05/21/16 15:45	7440-36-0	
Arsenic	**9.0**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 15:45	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 15:45	7440-43-9	
Chromium	**0.51J**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 15:45	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 15:45	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 15:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 14:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**395**	mg/L	5.0	5.0	1		05/09/16 12:26		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		05/09/16 13:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.4**	mg/L	2.0	1.0	2		05/20/16 10:27	16887-00-6	
Fluoride	**0.81**	mg/L	0.20	0.073	1		05/17/16 21:42	16984-48-8	
Sulfate	**40.6**	mg/L	5.0	1.2	5		05/20/16 11:11	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-5 **Lab ID: 60218420005** Collected: 05/03/16 09:10 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**395**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 16:48	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 16:48	7440-41-7	
Boron	**106**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 16:48	7440-42-8	
Calcium	**126000**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 16:48	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 16:48	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 16:48	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 16:48	7439-93-2	
Molybdenum	**0.74J**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 16:48	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	05/06/16 11:30	05/21/16 15:49	7440-36-0	
Arsenic	**3.6**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 15:49	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 15:49	7440-43-9	
Chromium	**0.38J**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 15:49	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 15:49	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 15:49	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 14:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**397**	mg/L	5.0	5.0	1		05/09/16 12:26		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		05/09/16 13:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**4.0**	mg/L	1.0	0.50	1		05/17/16 21:58	16887-00-6	
Fluoride	**0.19J**	mg/L	0.20	0.073	1		05/17/16 21:58	16984-48-8	
Sulfate	**5.3**	mg/L	1.0	0.25	1		05/17/16 21:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-6 **Lab ID: 60218420006** Collected: 05/02/16 16:15 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**105**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 16:50	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 16:50	7440-41-7	
Boron	**602**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 16:50	7440-42-8	
Calcium	**87600**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 16:50	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 16:50	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 16:50	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 16:50	7439-93-2	
Molybdenum	**1.9J**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 16:50	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.071J**	ug/L	1.0	0.058	1	05/06/16 11:30	05/21/16 15:54	7440-36-0	
Arsenic	**0.14J**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 15:54	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 15:54	7440-43-9	
Chromium	**0.73J**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 15:54	7440-47-3	
Selenium	**0.38J**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 15:54	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 15:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 14:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**317**	mg/L	5.0	5.0	1		05/09/16 12:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.7**	Std. Units	0.10	0.10	1		05/09/16 13:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**4.4**	mg/L	1.0	0.50	1		05/17/16 22:13	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.073	1		05/17/16 22:13	16984-48-8	
Sulfate	**36.8**	mg/L	5.0	1.2	5		05/20/16 11:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-7 **Lab ID: 60218420007** Collected: 05/03/16 09:50 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**286**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 16:57	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 16:57	7440-41-7	
Boron	**2280**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 16:57	7440-42-8	
Calcium	**72400**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 16:57	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 16:57	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 16:57	7439-92-1	
Lithium	**31.6**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 16:57	7439-93-2	
Molybdenum	**171**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 16:57	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	05/06/16 11:30	05/21/16 16:07	7440-36-0	
Arsenic	**76.3**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 16:07	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 16:07	7440-43-9	
Chromium	**0.41J**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 16:07	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 16:07	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 16:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 15:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**361**	mg/L	5.0	5.0	1		05/09/16 12:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		05/09/16 13:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.3**	mg/L	1.0	0.50	1		05/17/16 22:29	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	0.073	1		05/17/16 22:29	16984-48-8	
Sulfate	**43.1**	mg/L	5.0	1.2	5		05/20/16 11:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-B1 **Lab ID: 60218420008** Collected: 05/02/16 13:41 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**488**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 16:59	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 16:59	7440-41-7	
Boron	**121**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 16:59	7440-42-8	
Calcium	**158000**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 16:59	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 16:59	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 16:59	7439-92-1	
Lithium	**62.9**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 16:59	7439-93-2	
Molybdenum	**0.54J**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 16:59	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	05/06/16 11:30	05/21/16 16:15	7440-36-0	
Arsenic	**19.4**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 16:15	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 16:15	7440-43-9	
Chromium	**<0.34**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 16:15	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 16:15	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 16:15	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 15:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**757**	mg/L	5.0	5.0	1		05/09/16 12:22		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.10	1		05/09/16 10:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**58.7**	mg/L	5.0	2.5	5		05/20/16 11:55	16887-00-6	
Fluoride	**0.20**	mg/L	0.20	0.073	1		05/17/16 22:44	16984-48-8	
Sulfate	**46.9**	mg/L	5.0	1.2	5		05/20/16 11:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-B2 **Lab ID: 60218420009** Collected: 05/02/16 12:19 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**398**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 17:02	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 17:02	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 17:02	7440-42-8	
Calcium	**108000**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 17:02	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 17:02	7440-48-4	
Lead	**2.9J**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 17:02	7439-92-1	B
Lithium	**10.8**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 17:02	7439-93-2	
Molybdenum	**1.0J**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 17:02	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	05/06/16 11:30	05/21/16 16:20	7440-36-0	
Arsenic	**2.6**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 16:20	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 16:20	7440-43-9	
Chromium	**0.42J**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 16:20	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 16:20	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 16:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 15:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**399**	mg/L	5.0	5.0	1		05/09/16 12:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		05/09/16 10:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**30.1**	mg/L	2.0	1.0	2		05/20/16 12:10	16887-00-6	
Fluoride	**0.21**	mg/L	0.20	0.073	1		05/17/16 23:00	16984-48-8	
Sulfate	**6.5**	mg/L	1.0	0.25	1		05/17/16 23:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-DUP-1 **Lab ID: 60218420010** Collected: 05/02/16 08:00 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**21.2**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 17:06	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 17:06	7440-41-7	
Boron	**2120**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 17:06	7440-42-8	
Calcium	**56200**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 17:06	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 17:06	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 17:06	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 17:06	7439-93-2	
Molybdenum	**70.1**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 17:06	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.74J**	ug/L	1.0	0.058	1	05/06/16 11:30	05/21/16 16:24	7440-36-0	
Arsenic	**9.6**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 16:24	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 16:24	7440-43-9	
Chromium	**<0.34**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 16:24	7440-47-3	
Selenium	**10.1**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 16:24	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 16:24	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 15:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**422**	mg/L	5.0	5.0	1		05/09/16 12:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.9**	Std. Units	0.10	0.10	1		05/09/16 10:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**22.0**	mg/L	2.0	1.0	2		05/20/16 12:24	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	0.073	1		05/17/16 23:46	16984-48-8	
Sulfate	**248**	mg/L	20.0	5.0	20		05/20/16 12:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-FB-1 **Lab ID: 60218420011** Collected: 05/02/16 15:20 Received: 05/05/16 03:25 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**<0.58**	ug/L	10.0	0.58	1	05/06/16 11:30	05/06/16 17:08	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	05/06/16 11:30	05/06/16 17:08	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	05/06/16 11:30	05/06/16 17:08	7440-42-8	
Calcium	**15.8J**	ug/L	100	8.1	1	05/06/16 11:30	05/06/16 17:08	7440-70-2	B
Cobalt	**<0.72**	ug/L	5.0	0.72	1	05/06/16 11:30	05/06/16 17:08	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	05/06/16 11:30	05/06/16 17:08	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	05/06/16 11:30	05/06/16 17:08	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	05/06/16 11:30	05/06/16 17:08	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	05/06/16 11:30	05/21/16 16:28	7440-36-0	
Arsenic	**<0.10**	ug/L	1.0	0.10	1	05/06/16 11:30	05/21/16 16:28	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	05/06/16 11:30	05/21/16 16:28	7440-43-9	
Chromium	**0.43J**	ug/L	1.0	0.34	1	05/06/16 11:30	05/21/16 16:28	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	05/06/16 11:30	05/21/16 16:28	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	05/06/16 11:30	05/21/16 16:28	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	05/11/16 10:55	05/11/16 15:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**109**	mg/L	5.0	5.0	1		05/09/16 12:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.3**	Std. Units	0.10	0.10	1		05/09/16 13:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		05/18/16 00:01	16887-00-6	
Fluoride	**<0.073**	mg/L	0.20	0.073	1		05/18/16 00:01	16984-48-8	
Sulfate	**<0.25**	mg/L	1.0	0.25	1		05/18/16 00:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: MERP/10592 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

METHOD BLANK: 1756185 Matrix: Water
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.039	0.20	0.039	05/11/16 14:35	

LABORATORY CONTROL SAMPLE: 1756186

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1756187 1756188

Parameter	Units	60218420003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.039	5	5	3.4	3.2	67	65	75-125	3	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: MPRP/35800 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

METHOD BLANK: 1753045 Matrix: Water
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	10.0	0.58	05/06/16 16:30	
Beryllium	ug/L	<0.26	1.0	0.26	05/06/16 16:30	
Boron	ug/L	<50.0	100	50.0	05/06/16 16:30	
Calcium	ug/L	9.0J	100	8.1	05/06/16 16:30	
Cobalt	ug/L	<0.72	5.0	0.72	05/06/16 16:30	
Lead	ug/L	2.5J	5.0	2.5	05/06/16 16:30	
Lithium	ug/L	<4.9	10.0	4.9	05/06/16 16:30	
Molybdenum	ug/L	<0.52	20.0	0.52	05/06/16 16:30	

LABORATORY CONTROL SAMPLE: 1753046

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1010	101	85-115	
Beryllium	ug/L	1000	1020	102	85-115	
Boron	ug/L	1000	983	98	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Cobalt	ug/L	1000	1030	103	85-115	
Lead	ug/L	1000	1030	103	85-115	
Lithium	ug/L	1000	985	98	85-115	
Molybdenum	ug/L	1000	1080	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1753047 1753048

Parameter	Units	60218420003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	18.3	1000	1000	1010	1010	99	99	70-130	0	20	
Beryllium	ug/L	<0.26	1000	1000	1010	1010	101	101	70-130	0	20	
Boron	ug/L	14900	1000	1000	15700	16100	79	120	70-130	3	20	
Calcium	ug/L	6110	10000	10000	15900	16200	98	100	70-130	2	20	
Cobalt	ug/L	<0.72	1000	1000	992	988	99	99	70-130	0	20	
Lead	ug/L	6.2	1000	1000	980	973	97	97	70-130	1	20	
Lithium	ug/L	<4.9	1000	1000	1010	1010	101	101	70-130	0	20	
Molybdenum	ug/L	826	1000	1000	1860	1870	103	105	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

MATRIX SPIKE SAMPLE: 1753049

Parameter	Units	60218420009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	398	1000	1420	102	70-130	
Beryllium	ug/L	<0.26	1000	1030	103	70-130	
Boron	ug/L	<50.0	1000	1050	101	70-130	
Calcium	ug/L	108000	10000	118000	100	70-130	
Cobalt	ug/L	<0.72	1000	999	100	70-130	
Lead	ug/L	2.9J	1000	1000	100	70-130	
Lithium	ug/L	10.8	1000	1020	101	70-130	
Molybdenum	ug/L	1.0J	1000	1070	106	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: MPRP/35799 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

METHOD BLANK: 1753040 Matrix: Water
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	05/21/16 15:15	
Arsenic	ug/L	<0.10	1.0	0.10	05/21/16 15:15	
Cadmium	ug/L	<0.029	0.50	0.029	05/21/16 15:15	
Chromium	ug/L	<0.34	1.0	0.34	05/21/16 15:15	
Selenium	ug/L	<0.18	1.0	0.18	05/21/16 15:15	
Thallium	ug/L	<0.50	1.0	0.50	05/21/16 15:15	

LABORATORY CONTROL SAMPLE: 1753041

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.0	97	85-115	
Arsenic	ug/L	40	39.7	99	85-115	
Cadmium	ug/L	40	41.0	103	85-115	
Chromium	ug/L	40	40.6	102	85-115	
Selenium	ug/L	40	39.6	99	85-115	
Thallium	ug/L	40	40.3	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1753042 1753043

Parameter	Units	60218420003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.098J	40	40	39.1	38.9	98	97	70-130	1	20	
Arsenic	ug/L	36.2	40	40	73.8	73.5	94	93	70-130	0	20	
Cadmium	ug/L	<0.029	40	40	36.1	36.0	90	90	70-130	0	20	
Chromium	ug/L	1.4	40	40	41.4	41.4	100	100	70-130	0	20	
Selenium	ug/L	0.60J	40	40	27.4	27.4	67	67	70-130	0	20	M1
Thallium	ug/L	<0.50	40	40	38.5	38.3	96	96	70-130	1	20	

MATRIX SPIKE SAMPLE: 1753044

Parameter	Units	60218420007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	<0.058	40	38.8	97	70-130	
Arsenic	ug/L	76.3	40	117	101	70-130	
Cadmium	ug/L	<0.029	40	39.2	98	70-130	
Chromium	ug/L	0.41J	40	40.6	100	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

MATRIX SPIKE SAMPLE: 1753044

Parameter	Units	60218420007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Selenium	ug/L	<0.18	40	38.0	95	70-130	
Thallium	ug/L	<0.50	40	39.9	100	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: WET/61661 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

METHOD BLANK: 1754434 Matrix: Water
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/09/16 12:16	

LABORATORY CONTROL SAMPLE: 1754435

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	985	99	80-120	

SAMPLE DUPLICATE: 1754436

Parameter	Units	60218420003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	806	693	15	10	D6

SAMPLE DUPLICATE: 1754442

Parameter	Units	60218406007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1010	1020	1	10	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: WET/61664 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420008, 60218420009, 60218420010

SAMPLE DUPLICATE: 1754752

Parameter	Units	60218420003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	9.6	9.6	0	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: WET/61665 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60218420004, 60218420005, 60218420006, 60218420007, 60218420011

SAMPLE DUPLICATE: 1754753

Parameter	Units	60218420011 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.3	5.9	6	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: WETA/39511 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

METHOD BLANK: 1759866 Matrix: Water
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	05/17/16 19:08	
Fluoride	mg/L	<0.073	0.20	0.073	05/17/16 19:08	
Sulfate	mg/L	<0.25	1.0	0.25	05/17/16 19:08	

LABORATORY CONTROL SAMPLE: 1759867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1759868 1759869

Parameter	Units	60218420001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.26	2.5	2.5	2.7	2.7	97	99	80-120	2	15	

MATRIX SPIKE SAMPLE: 1759870

Parameter	Units	60218420003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.80	2.5	3.2	96	80-120	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: WETA/39543 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60218420001, 60218420002, 60218420003

METHOD BLANK: 1760682 Matrix: Water
Associated Lab Samples: 60218420001, 60218420002, 60218420003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	05/18/16 15:12	
Sulfate	mg/L	<0.25	1.0	0.25	05/18/16 15:12	

LABORATORY CONTROL SAMPLE: 1760683

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1760684 1760685

Parameter	Units	60218420003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	30.9	10	10	42.3	41.9	114	111	80-120	1	15	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: WETA/39582 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60218420003, 60218420004, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010

METHOD BLANK: 1762331 Matrix: Water
Associated Lab Samples: 60218420003, 60218420004, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	05/20/16 09:13	
Sulfate	mg/L	<0.25	1.0	0.25	05/20/16 09:13	

LABORATORY CONTROL SAMPLE: 1762332

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1762333 1762334

Parameter	Units	60218420003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	30.9			120	121				1	15	
Sulfate	mg/L	158	100	100	252	253	94	95	80-120	0	15	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-1 **Lab ID: 60218420001** Collected: 05/02/16 09:40 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.065 ± 0.444 (0.914) C:NA T:89%**	pCi/L	05/18/16 13:08	13982-63-3	
Radium-228	EPA 904.0	**0.208 ± 0.371 (0.811) C:78% T:80%**	pCi/L	05/17/16 15:41	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-2 **Lab ID: 60218420002** Collected: 05/02/16 11:35 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.159 ± 0.442 (0.857) C:NA T:90%**	pCi/L	05/18/16 12:30	13982-63-3	
Radium-228	EPA 904.0	**0.301 ± 0.386 (0.822) C:71% T:87%**	pCi/L	05/17/16 15:41	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-3 **Lab ID: 60218420003** Collected: 05/02/16 13:42 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.291 ± 0.524 (0.895) C:NA T:89%**	pCi/L	05/18/16 12:43	13982-63-3	
Radium-228	EPA 904.0	**0.345 ± 0.382 (0.799) C:67% T:87%**	pCi/L	05/17/16 12:32	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-4 **Lab ID: 60218420004** Collected: 05/03/16 10:14 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.164 ± 0.374 (0.222) C:NA T:88%**	pCi/L	05/18/16 12:53	13982-63-3	
Radium-228	EPA 904.0	**0.540 ± 0.420 (0.833) C:76% T:81%**	pCi/L	05/17/16 15:41	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-5 **Lab ID: 60218420005** Collected: 05/03/16 09:10 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.418 ± 0.548 (0.912) C:NA T:97%**	pCi/L	05/18/16 12:58	13982-63-3	
Radium-228	EPA 904.0	**-0.0196 ± 0.327 (0.767) C:73% T:89%**	pCi/L	05/17/16 15:41	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-6 **Lab ID: 60218420006** Collected: 05/02/16 16:15 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.151 ± 0.345 (0.812) C:NA T:91%**	pCi/L	05/18/16 13:10	13982-63-3	
Radium-228	EPA 904.0	**-0.0596 ± 0.335 (0.790) C:76% T:89%**	pCi/L	05/17/16 15:41	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-7 **Lab ID: 60218420007** Collected: 05/03/16 09:50 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0825 ± 0.377 (0.607) C:NA T:86%**	pCi/L	05/18/16 13:04	13982-63-3	
Radium-228	EPA 904.0	**0.718 ± 0.415 (0.771) C:77% T:91%**	pCi/L	05/17/16 15:42	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-B1 **Lab ID: 60218420008** Collected: 05/02/16 13:41 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.362 ± 0.571 (0.948) C:NA T:89%**	pCi/L	05/18/16 12:58	13982-63-3	
Radium-228	EPA 904.0	**1.43 ± 0.519 (0.769) C:76% T:86%**	pCi/L	05/17/16 15:42	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-B2 **Lab ID: 60218420009** Collected: 05/02/16 12:19 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.613 ± 0.566 (0.824) C:NA T:87%**	pCi/L	05/18/16 19:49	13982-63-3	
Radium-228	EPA 904.0	**0.677 ± 0.441 (0.836) C:69% T:82%**	pCi/L	05/17/16 15:42	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-DUP-1 **Lab ID: 60218420010** Collected: 05/02/16 08:00 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.434 ± 0.608 (0.973) C:NA T:80%**	pCi/L	05/18/16 19:49	13982-63-3	
Radium-228	EPA 904.0	**0.124 ± 0.369 (0.828) C:75% T:80%**	pCi/L	05/17/16 15:42	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-FB-1 **Lab ID: 60218420011** Collected: 05/02/16 15:20 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.144 ± 0.347 (0.671) C:NA T:91%**	pCi/L	05/18/16 19:38	13982-63-3	
Radium-228	EPA 904.0	**0.0216 ± 0.359 (0.826) C:76% T:90%**	pCi/L	05/17/16 15:42	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-3 MS **Lab ID: 60218420012** Collected: 05/02/16 13:42 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**101.9 %REC ± NA (NA) C:NA T:NA**	pCi/L	05/18/16 13:22	13982-63-3	
Radium-228	EPA 904.0	**115 %REC ± NA (NA) C:NA T:NA**	pCi/L	05/17/16 12:32	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Sample: R-MW-3 MSD **Lab ID: 60218420013** Collected: 05/02/16 13:42 Received: 05/05/16 03:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**123.3 %REC 19.89 RPD ± NA (NA) C:NA T:NA**	pCi/L	05/18/16 13:22	13982-63-3	
Radium-228	EPA 904.0	**99.6 %REC 14.4 RPD ± NA (NA) C:NA T:NA**	pCi/L	05/17/16 12:32	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: RADC/29375 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011, 60218420012, 60218420013

METHOD BLANK: 1073615 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.166 ± 0.503 (0.902) C:NA T:94%	pCi/L	05/18/16 12:43	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

QC Batch: RADC/29380 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60218420001, 60218420002, 60218420003, 60218420004, 60218420005, 60218420006, 60218420007, 60218420008, 60218420009, 60218420010, 60218420011, 60218420012, 60218420013

METHOD BLANK: 1073620 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0376 ± 0.327 (0.770) C:73% T:87%	pCi/L	05/17/16 12:32	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

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 (%)

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TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60218420001	R-MW-1	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420002	R-MW-2	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420003	R-MW-3	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420004	R-MW-4	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420005	R-MW-5	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420006	R-MW-6	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420007	R-MW-7	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420008	R-MW-B1	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420009	R-MW-B2	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420010	R-DUP-1	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420011	R-FB-1	EPA 200.7	MPRP/35800	EPA 200.7	ICP/26160
60218420001	R-MW-1	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420002	R-MW-2	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420003	R-MW-3	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420004	R-MW-4	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420005	R-MW-5	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420006	R-MW-6	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420007	R-MW-7	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420008	R-MW-B1	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420009	R-MW-B2	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420010	R-DUP-1	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420011	R-FB-1	EPA 200.8	MPRP/35799	EPA 200.8	ICPM/4245
60218420001	R-MW-1	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420002	R-MW-2	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420003	R-MW-3	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420004	R-MW-4	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420005	R-MW-5	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420006	R-MW-6	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420007	R-MW-7	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420008	R-MW-B1	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420009	R-MW-B2	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420010	R-DUP-1	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420011	R-FB-1	EPA 7470	MERP/10592	EPA 7470	MERC/10539
60218420001	R-MW-1	EPA 903.1	RADC/29375		
60218420002	R-MW-2	EPA 903.1	RADC/29375		
60218420003	R-MW-3	EPA 903.1	RADC/29375		
60218420004	R-MW-4	EPA 903.1	RADC/29375		
60218420005	R-MW-5	EPA 903.1	RADC/29375		
60218420006	R-MW-6	EPA 903.1	RADC/29375		
60218420007	R-MW-7	EPA 903.1	RADC/29375		
60218420008	R-MW-B1	EPA 903.1	RADC/29375		
60218420009	R-MW-B2	EPA 903.1	RADC/29375		
60218420010	R-DUP-1	EPA 903.1	RADC/29375		
60218420011	R-FB-1	EPA 903.1	RADC/29375		
60218420012	R-MW-3 MS	EPA 903.1	RADC/29375		
60218420013	R-MW-3 MSD	EPA 903.1	RADC/29375		
60218420001	R-MW-1	EPA 904.0	RADC/29380		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60218420002	R-MW-2	EPA 904.0	RADC/29380		
60218420003	R-MW-3	EPA 904.0	RADC/29380		
60218420004	R-MW-4	EPA 904.0	RADC/29380		
60218420005	R-MW-5	EPA 904.0	RADC/29380		
60218420006	R-MW-6	EPA 904.0	RADC/29380		
60218420007	R-MW-7	EPA 904.0	RADC/29380		
60218420008	R-MW-B1	EPA 904.0	RADC/29380		
60218420009	R-MW-B2	EPA 904.0	RADC/29380		
60218420010	R-DUP-1	EPA 904.0	RADC/29380		
60218420011	R-FB-1	EPA 904.0	RADC/29380		
60218420012	R-MW-3 MS	EPA 904.0	RADC/29380		
60218420013	R-MW-3 MSD	EPA 904.0	RADC/29380		
60218420001	R-MW-1	SM 2540C	WET/61661		
60218420002	R-MW-2	SM 2540C	WET/61661		
60218420003	R-MW-3	SM 2540C	WET/61661		
60218420004	R-MW-4	SM 2540C	WET/61661		
60218420005	R-MW-5	SM 2540C	WET/61661		
60218420006	R-MW-6	SM 2540C	WET/61661		
60218420007	R-MW-7	SM 2540C	WET/61661		
60218420008	R-MW-B1	SM 2540C	WET/61661		
60218420009	R-MW-B2	SM 2540C	WET/61661		
60218420010	R-DUP-1	SM 2540C	WET/61661		
60218420011	R-FB-1	SM 2540C	WET/61661		
60218420001	R-MW-1	SM 4500-H+B	WET/61664		
60218420002	R-MW-2	SM 4500-H+B	WET/61664		
60218420003	R-MW-3	SM 4500-H+B	WET/61664		
60218420004	R-MW-4	SM 4500-H+B	WET/61665		
60218420005	R-MW-5	SM 4500-H+B	WET/61665		
60218420006	R-MW-6	SM 4500-H+B	WET/61665		
60218420007	R-MW-7	SM 4500-H+B	WET/61665		
60218420008	R-MW-B1	SM 4500-H+B	WET/61664		
60218420009	R-MW-B2	SM 4500-H+B	WET/61664		
60218420010	R-DUP-1	SM 4500-H+B	WET/61664		
60218420011	R-FB-1	SM 4500-H+B	WET/61665		
60218420001	R-MW-1	EPA 300.0	WETA/39511		
60218420001	R-MW-1	EPA 300.0	WETA/39543		
60218420002	R-MW-2	EPA 300.0	WETA/39511		
60218420002	R-MW-2	EPA 300.0	WETA/39543		
60218420003	R-MW-3	EPA 300.0	WETA/39511		
60218420003	R-MW-3	EPA 300.0	WETA/39543		
60218420003	R-MW-3	EPA 300.0	WETA/39582		
60218420004	R-MW-4	EPA 300.0	WETA/39511		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60218420

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60218420004	**R-MW-4**	EPA 300.0	WETA/39582		
60218420005	**R-MW-5**	EPA 300.0	WETA/39511		
60218420006	**R-MW-6**	EPA 300.0	WETA/39511		
60218420006	**R-MW-6**	EPA 300.0	WETA/39582		
60218420007	**R-MW-7**	EPA 300.0	WETA/39511		
60218420007	**R-MW-7**	EPA 300.0	WETA/39582		
60218420008	**R-MW-B1**	EPA 300.0	WETA/39511		
60218420008	**R-MW-B1**	EPA 300.0	WETA/39582		
60218420009	**R-MW-B2**	EPA 300.0	WETA/39511		
60218420009	**R-MW-B2**	EPA 300.0	WETA/39582		
60218420010	**R-DUP-1**	EPA 300.0	WETA/39511		
60218420010	**R-DUP-1**	EPA 300.0	WETA/39582		
60218420011	**R-FB-1**	EPA 300.0	WETA/39511		

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Sample Condition Upon Receipt

WO# : 60218420

60218420

Client Name: Golder

Optional
Proj Due Date:
Proj Name:

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

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

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

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

Thermometer Used: CF +1.0 T-239 / CF 0.0 T-262 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1-7/15-4/16-2

Date and initials of person examining contents: pv 5/5/16

Temperature should be above freezing to 6°C

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:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	6. pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑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 ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: WT		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 ☑No	Initial when completed / Lot # of added 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 ☑N/A	18.

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 5/5

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: 1 of 1

Section A Required Client Information:

Company:	Golder Associates
Address:	820 South Main Street, Suite 100
	St Charles, MO 63301
Email To:	~~maddock@golder.com~~ mhaddock
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Mark Haddock (mhaddock@golder.com)
Copy To:	Jeffrey Ingram
Purchase Order No.:	
Project Name:	Ameren Rush Island Engery Center
Project Number:	153-1406.0002A

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 & 228								Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N									
1	R-MW-1	WT	G			5/2/16	940		4	1		3							1	1	1	1	2									18P3U 18P3N 20 2BP1N
2	R-MW-2	WT	G				1135		4	1		3							1	1	1	1	2									
3	R-MW-3	WT	G				1342		12	9		9							3	3	3	3	6	3BP3U	3BP3N	6BP1N						
4	R-MW-4	WT	G			5/3/16	1014		4	1		3							1	1	1	1	2									
5	R-MW-5	WT	G				0910		4	1		3																				
6	R-MW-6	WT	G			5/2/16	1615		4	1		3																				
7	R-MW-7	WT	G			5/3/16	~~1049~~ 950		4	1		3																				
8	R-MW-B1	WT	G			5/2/16	1341		4	1		3																				
9	R-MW-B2	WT	G				1219		4	1		3																				
10	R-DUP-1	WT	G				—		4	1		3																				
11	R-FB-1	WT	G				1520		4	1		3																				
12		WT	G																												

Lab 218420

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl	[illegible]	5/4/16	1334	[illegible] FACE	5/4/16	1334
	[illegible] FACE	5/4/16	1700	[illegible] FACE	5/5/16	0325

SAMPLE CONDITIONS	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	1.7	Y	Y	Y
	15.4	N	Y	Y
	16.2	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jeff Ingram

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 05/03/2016

*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

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

August 19, 2016

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

RE: Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory on July 27, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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

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

CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

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

Pace Analytical Services, Inc.
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(913)599-5665

SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60224349001	**R-MW-1**	Water	07/25/16 14:33	07/27/16 04:35
60224349002	**R-MW-2**	Water	07/26/16 09:49	07/27/16 04:35
60224349003	**R-MW-3**	Water	07/25/16 13:00	07/27/16 04:35
60224349004	**R-MW-4**	Water	07/25/16 11:27	07/27/16 04:35
60224349005	**R-MW-5**	Water	07/25/16 09:50	07/27/16 04:35
60224349006	**R-MW-6**	Water	07/25/16 14:50	07/27/16 04:35
60224349007	**R-MW-7**	Water	07/25/16 11:00	07/27/16 04:35
60224349008	**R-MW-B1**	Water	07/25/16 09:54	07/27/16 04:35
60224349009	**R-MW-B2**	Water	07/26/16 11:03	07/27/16 04:35
60224349010	**R-DUP-1**	Water	07/25/16 08:00	07/27/16 04:35
60224349011	**R-FB-1**	Water	07/25/16 14:25	07/27/16 04:35
60224349012	**R-MW-3 MS**	Water	07/25/16 13:00	07/27/16 04:35
60224349013	**R-MW-3 MSD**	Water	07/25/16 13:00	07/27/16 04:35

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60224349001	**R-MW-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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349002	**R-MW-2**	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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349003	**R-MW-3**	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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349004	**R-MW-4**	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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349005	**R-MW-5**	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

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

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
60224349006	**R-MW-6**	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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349007	**R-MW-7**	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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349008	**R-MW-B1**	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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349009	**R-MW-B2**	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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349010	**R-DUP-1**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	JGP	6	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

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	HAC	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349011	**R-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	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60224349012	**R-MW-3 MS**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60224349013	**R-MW-3 MSD**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-1 **Lab ID: 60224349001** Collected: 07/25/16 14:33 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**15.1**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 16:55	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 16:55	7440-41-7	
Boron	**2750**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 16:55	7440-42-8	
Calcium	**37700**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 16:55	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 16:55	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 16:55	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 16:55	7439-93-2	
Molybdenum	**57.7**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 16:55	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**1.0**	ug/L	1.0	0.058	1	07/27/16 14:45	07/28/16 10:11	7440-36-0	
Arsenic	**9.3**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 10:11	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 10:11	7440-43-9	
Chromium	**1.4**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 10:11	7440-47-3	
Selenium	**12.7**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 10:11	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 10:11	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**424**	mg/L	5.0	5.0	1		07/29/16 10:18		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.4**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.5**	mg/L	2.0	1.0	2		08/02/16 18:07	16887-00-6	
Fluoride	**0.40**	mg/L	0.20	0.027	1		07/31/16 20:09	16984-48-8	
Sulfate	**228**	mg/L	20.0	3.1	20		08/02/16 18:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-2 **Lab ID: 60224349002** Collected: 07/26/16 09:49 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**17.0**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 16:59	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 16:59	7440-41-7	
Boron	**3860**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 16:59	7440-42-8	
Calcium	**12000**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 16:59	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 16:59	7440-48-4	
Lead	**10.2**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 16:59	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 16:59	7439-93-2	
Molybdenum	**197**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 16:59	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**5.0**	ug/L	1.0	0.058	1	07/27/16 14:45	07/28/16 10:15	7440-36-0	
Arsenic	**238**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 10:15	7440-38-2	
Cadmium	**0.26J**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 10:15	7440-43-9	
Chromium	**0.96J**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 10:15	7440-47-3	
Selenium	**1.5**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 10:15	7782-49-2	M1
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 10:15	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**855**	mg/L	5.0	5.0	1		07/29/16 10:28		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10.4**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**25.0**	mg/L	2.0	1.0	2		08/02/16 18:36	16887-00-6	
Fluoride	**0.85**	mg/L	0.20	0.027	1		07/31/16 20:53	16984-48-8	
Sulfate	**310**	mg/L	20.0	3.1	20		08/02/16 18:50	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-3 **Lab ID: 60224349003** Collected: 07/25/16 13:00 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**16.0**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:06	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:06	7440-41-7	
Boron	**14100**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:06	7440-42-8	M1
Calcium	**5760**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:06	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:06	7440-48-4	
Lead	**3.4J**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:06	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:06	7439-93-2	
Molybdenum	**811**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:06	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.13J**	ug/L	1.0	0.058	1	07/27/16 14:45	07/28/16 10:24	7440-36-0	
Arsenic	**64.0**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 10:24	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 10:24	7440-43-9	
Chromium	**1.5**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 10:24	7440-47-3	
Selenium	**0.70J**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 10:24	7782-49-2	M1
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 10:24	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:11	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**705**	mg/L	5.0	5.0	1		07/29/16 10:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.5**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**28.3**	mg/L	2.0	1.0	2		08/02/16 19:05	16887-00-6	
Fluoride	**0.74**	mg/L	0.20	0.027	1		07/31/16 21:07	16984-48-8	
Sulfate	**174**	mg/L	20.0	3.1	20		08/02/16 19:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-4 **Lab ID: 60224349004** Collected: 07/25/16 11:27 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**256**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:13	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:13	7440-41-7	
Boron	**3980**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:13	7440-42-8	
Calcium	**65600**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:13	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:13	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:13	7439-92-1	
Lithium	**43.1**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:13	7439-93-2	
Molybdenum	**95.9**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:13	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	07/27/16 14:45	07/28/16 10:49	7440-36-0	
Arsenic	**7.2**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 10:49	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 10:49	7440-43-9	
Chromium	**0.66J**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 10:49	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 10:49	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 10:49	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**398**	mg/L	5.0	5.0	1		07/29/16 10:20		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.0**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.2**	mg/L	2.0	1.0	2		08/02/16 21:00	16887-00-6	
Fluoride	**0.75**	mg/L	0.20	0.027	1		07/31/16 22:05	16984-48-8	
Sulfate	**40.7**	mg/L	5.0	0.77	5		08/02/16 21:15	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-5 **Lab ID: 60224349005** Collected: 07/25/16 09:50 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**383**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:15	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:15	7440-41-7	
Boron	**99.8J**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:15	7440-42-8	
Calcium	**117000**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:15	7440-70-2	
Cobalt	**0.93J**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:15	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:15	7439-92-1	
Lithium	**6.5J**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:15	7439-93-2	
Molybdenum	**0.79J**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:15	7439-98-7	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	07/27/16 14:45	07/28/16 10:54	7440-36-0	
Arsenic	**4.1**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 10:54	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 10:54	7440-43-9	
Chromium	**1.1**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 10:54	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 10:54	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 10:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**409**	mg/L	5.0	5.0	1		07/29/16 10:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.9**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.8**	mg/L	1.0	0.50	1		07/31/16 22:19	16887-00-6	
Fluoride	**0.12J**	mg/L	0.20	0.027	1		07/31/16 22:19	16984-48-8	
Sulfate	**2.8**	mg/L	1.0	0.15	1		07/31/16 22:19	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-6 **Lab ID: 60224349006** Collected: 07/25/16 14:50 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**119**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:17	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:17	7440-41-7	
Boron	**462**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:17	7440-42-8	
Calcium	**82300**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:17	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:17	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:17	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:17	7439-93-2	
Molybdenum	**1.5J**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:17	7439-98-7	B
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.14J**	ug/L	1.0	0.058	1	07/27/16 14:45	07/28/16 10:58	7440-36-0	
Arsenic	**0.62J**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 10:58	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 10:58	7440-43-9	
Chromium	**1.7**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 10:58	7440-47-3	
Selenium	**0.70J**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 10:58	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 10:58	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**324**	mg/L	5.0	5.0	1		07/29/16 10:22		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.8**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.9**	mg/L	1.0	0.50	1		07/31/16 22:34	16887-00-6	
Fluoride	**0.15J**	mg/L	0.20	0.027	1		07/31/16 22:34	16984-48-8	
Sulfate	**35.7**	mg/L	2.0	0.31	2		08/02/16 21:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-7 **Lab ID: 60224349007** Collected: 07/25/16 11:00 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**287**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:20	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:20	7440-41-7	
Boron	**2250**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:20	7440-42-8	
Calcium	**68700**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:20	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:20	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:20	7439-92-1	
Lithium	**34.4**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:20	7439-93-2	
Molybdenum	**185**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:20	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	07/27/16 14:45	07/28/16 11:02	7440-36-0	
Arsenic	**91.8**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 11:02	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 11:02	7440-43-9	
Chromium	**0.70J**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 11:02	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 11:02	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 11:02	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**371**	mg/L	5.0	5.0	1		07/29/16 10:22		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.0**	mg/L	1.0	0.50	1		07/31/16 22:48	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	0.027	1		07/31/16 22:48	16984-48-8	
Sulfate	**42.8**	mg/L	5.0	0.77	5		08/02/16 21:43	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-B1 **Lab ID: 60224349008** Collected: 07/25/16 09:54 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**496**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:22	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:22	7440-41-7	
Boron	**115**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:22	7440-42-8	
Calcium	**146000**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:22	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:22	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:22	7439-92-1	
Lithium	**62.9**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:22	7439-93-2	
Molybdenum	**0.55J**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:22	7439-98-7	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	07/27/16 14:45	07/28/16 11:07	7440-36-0	
Arsenic	**24.3**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 11:07	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 11:07	7440-43-9	
Chromium	**1.8**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 11:07	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 11:07	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 11:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**712**	mg/L	5.0	5.0	1		07/29/16 10:23		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**55.7**	mg/L	5.0	2.5	5		08/02/16 21:58	16887-00-6	
Fluoride	**0.14J**	mg/L	0.20	0.027	1		07/31/16 23:02	16984-48-8	
Sulfate	**40.1**	mg/L	5.0	0.77	5		08/02/16 21:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-B2 **Lab ID: 60224349009** Collected: 07/26/16 11:03 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**382**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:24	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:24	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:24	7440-42-8	
Calcium	**98500**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:24	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:24	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:24	7439-92-1	
Lithium	**9.6J**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:24	7439-93-2	
Molybdenum	**0.94J**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:24	7439-98-7	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	07/27/16 14:45	07/28/16 11:11	7440-36-0	
Arsenic	**2.8**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 11:11	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 11:11	7440-43-9	
Chromium	**0.60J**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 11:11	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 11:11	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 11:11	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**410**	mg/L	5.0	5.0	1		07/29/16 10:28		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.9**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**29.5**	mg/L	2.0	1.0	2		08/02/16 22:12	16887-00-6	
Fluoride	**0.14J**	mg/L	0.20	0.027	1		07/31/16 23:17	16984-48-8	
Sulfate	**5.5**	mg/L	1.0	0.15	1		07/31/16 23:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-DUP-1 **Lab ID: 60224349010** Collected: 07/25/16 08:00 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**14.8**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:26	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:26	7440-41-7	
Boron	**2680**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:26	7440-42-8	
Calcium	**36800**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:26	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:26	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:26	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:26	7439-93-2	
Molybdenum	**56.3**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:26	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.99J**	ug/L	1.0	0.058	1	07/27/16 14:45	07/28/16 11:15	7440-36-0	
Arsenic	**9.2**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 11:15	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 11:15	7440-43-9	
Chromium	**0.94J**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 11:15	7440-47-3	
Selenium	**12.4**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 11:15	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 11:15	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:35	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**422**	mg/L	5.0	5.0	1		07/29/16 10:26		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.4**	Std. Units	0.10	0.10	1		08/01/16 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.5**	mg/L	2.0	1.0	2		08/02/16 22:27	16887-00-6	
Fluoride	**0.40**	mg/L	0.20	0.027	1		07/31/16 23:31	16984-48-8	
Sulfate	**228**	mg/L	20.0	3.1	20		08/02/16 22:41	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-FB-1 **Lab ID: 60224349011** Collected: 07/25/16 14:25 Received: 07/27/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**<0.58**	ug/L	10.0	0.58	1	07/27/16 14:45	08/01/16 17:33	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	07/27/16 14:45	08/01/16 17:33	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	07/27/16 14:45	08/01/16 17:33	7440-42-8	
Calcium	**<8.1**	ug/L	100	8.1	1	07/27/16 14:45	08/01/16 17:33	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	07/27/16 14:45	08/01/16 17:33	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	07/27/16 14:45	08/01/16 17:33	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	07/27/16 14:45	08/01/16 17:33	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	07/27/16 14:45	08/01/16 17:33	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	07/27/16 14:45	07/28/16 10:45	7440-36-0	
Arsenic	**<0.10**	ug/L	1.0	0.10	1	07/27/16 14:45	07/28/16 10:45	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	07/27/16 14:45	07/28/16 10:45	7440-43-9	
Chromium	**1.0**	ug/L	1.0	0.34	1	07/27/16 14:45	07/28/16 10:45	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	07/27/16 14:45	07/28/16 10:45	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	07/27/16 14:45	07/28/16 10:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	07/28/16 09:00	07/28/16 13:37	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		07/29/16 10:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**4.7**	Std. Units	0.10	0.10	1		08/03/16 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		07/31/16 23:46	16887-00-6	
Fluoride	**<0.027**	mg/L	0.20	0.027	1		07/31/16 23:46	16984-48-8	
Sulfate	**<0.15**	mg/L	1.0	0.15	1		07/31/16 23:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 440310 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

METHOD BLANK: 1801372 Matrix: Water
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.039	0.20	0.039	07/28/16 13:04	

LABORATORY CONTROL SAMPLE: 1801373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1801374 1801375

Parameter	Units	60224349003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.039	5	5	3.0	3.2	59	64	75-125	7	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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 440260 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

METHOD BLANK: 1801123 Matrix: Water
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	10.0	0.58	08/01/16 16:52	
Beryllium	ug/L	<0.26	1.0	0.26	08/01/16 16:52	
Boron	ug/L	<50.0	100	50.0	08/01/16 16:52	
Calcium	ug/L	14.5J	100	8.1	08/01/16 16:52	
Cobalt	ug/L	<0.72	5.0	0.72	08/01/16 16:52	
Lead	ug/L	<2.5	5.0	2.5	08/01/16 16:52	
Lithium	ug/L	<4.9	10.0	4.9	08/01/16 16:52	
Molybdenum	ug/L	0.54J	20.0	0.52	08/01/16 16:52	

LABORATORY CONTROL SAMPLE: 1801124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1010	101	85-115	
Beryllium	ug/L	1000	981	98	85-115	
Boron	ug/L	1000	956	96	85-115	
Calcium	ug/L	10000	9500	95	85-115	
Cobalt	ug/L	1000	1020	102	85-115	
Lead	ug/L	1000	1000	100	85-115	
Lithium	ug/L	1000	986	99	85-115	
Molybdenum	ug/L	1000	1070	107	85-115	

MATRIX SPIKE SAMPLE: 1801125

Parameter	Units	60224349001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	15.1	1000	996	98	70-130	
Beryllium	ug/L	<0.26	1000	966	97	70-130	
Boron	ug/L	2750	1000	3660	91	70-130	
Calcium	ug/L	37700	10000	45800	82	70-130	
Cobalt	ug/L	<0.72	1000	1000	100	70-130	
Lead	ug/L	<2.5	1000	958	96	70-130	
Lithium	ug/L	<4.9	1000	996	100	70-130	
Molybdenum	ug/L	57.7	1000	1120	106	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1801126 1801127

Parameter	Units	60224349003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	16.0	1000	1000	1010	984	99	97	70-130	2	20	
Beryllium	ug/L	<0.26	1000	1000	987	965	99	97	70-130	2	20	
Boron	ug/L	14100	1000	1000	14500	14400	46	32	70-130	1	20	M1
Calcium	ug/L	5760	10000	10000	15000	14700	92	89	70-130	2	20	
Cobalt	ug/L	<0.72	1000	1000	1010	988	101	99	70-130	2	20	
Lead	ug/L	3.4J	1000	1000	962	947	96	94	70-130	2	20	
Lithium	ug/L	<4.9	1000	1000	1020	993	102	99	70-130	2	20	
Molybdenum	ug/L	811	1000	1000	1850	1810	104	100	70-130	2	20	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 440261 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

METHOD BLANK: 1801128 Matrix: Water
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	07/28/16 09:54	
Arsenic	ug/L	<0.10	1.0	0.10	07/28/16 09:54	
Cadmium	ug/L	<0.029	0.50	0.029	07/28/16 09:54	
Chromium	ug/L	<0.34	1.0	0.34	07/28/16 09:54	
Selenium	ug/L	<0.18	1.0	0.18	07/28/16 09:54	
Thallium	ug/L	<0.50	1.0	0.50	07/28/16 09:54	

LABORATORY CONTROL SAMPLE: 1801129

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	41.1	103	85-115	
Arsenic	ug/L	40	42.3	106	85-115	
Cadmium	ug/L	40	41.6	104	85-115	
Chromium	ug/L	40	42.2	105	85-115	
Selenium	ug/L	40	42.2	106	85-115	
Thallium	ug/L	40	38.3	96	85-115	

MATRIX SPIKE SAMPLE: 1801130

Parameter	Units	60224349002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	5.0	40	45.5	101	70-130	
Arsenic	ug/L	238	40	277	98	70-130	
Cadmium	ug/L	0.26J	40	39.1	97	70-130	
Chromium	ug/L	0.96J	40	41.6	101	70-130	
Selenium	ug/L	1.5	40	22.0	51	70-130	M1
Thallium	ug/L	<0.50	40	40.0	100	70-130	

MATRIX SPIKE SAMPLE: 1801131

Parameter	Units	60224349003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	0.13J	40	41.2	103	70-130	
Arsenic	ug/L	64.0	40	102	95	70-130	
Cadmium	ug/L	<0.029	40	39.4	99	70-130	
Chromium	ug/L	1.5	40	43.0	104	70-130	
Selenium	ug/L	0.70J	40	26.4	64	70-130	M1

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

MATRIX SPIKE SAMPLE: 1801131

Parameter	Units	60224349003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Thallium	ug/L	<0.50	40	40.3	101	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 440514 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

METHOD BLANK: 1802310 Matrix: Water
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	07/29/16 10:13	

LABORATORY CONTROL SAMPLE: 1802311

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	979	98	80-120	

SAMPLE DUPLICATE: 1802312

Parameter	Units	60224253001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	347	351	1	10	

SAMPLE DUPLICATE: 1802313

Parameter	Units	60224349003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	705	709	1	10	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 440847 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010

SAMPLE DUPLICATE: 1803649

Parameter	Units	60224349003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	9.5	9.5	0	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 441159
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60224349011

SAMPLE DUPLICATE: 1804697

Parameter	Units	60224349011 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	4.7	4.7	0	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 440720 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

METHOD BLANK: 1803307 Matrix: Water
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	07/31/16 19:41	
Fluoride	mg/L	<0.027	0.20	0.027	07/31/16 19:41	
Sulfate	mg/L	<0.15	1.0	0.15	07/31/16 19:41	

LABORATORY CONTROL SAMPLE: 1803308

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1803309 1803310

Parameter	Units	60224349001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.40	2.5	2.5	2.7	2.8	93	94	80-120	1	15	

MATRIX SPIKE SAMPLE: 1803311

Parameter	Units	60224349003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.74	2.5	2.9	88	80-120	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 440989 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010

METHOD BLANK: 1803969 Matrix: Water
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	08/02/16 08:57	
Sulfate	mg/L	<0.15	1.0	0.15	08/02/16 08:57	

LABORATORY CONTROL SAMPLE: 1803970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE SAMPLE: 1803971

Parameter	Units	60223486008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	18.4	10	27.5	91	80-120	
Sulfate	mg/L	338	250	574	95	80-120	

MATRIX SPIKE SAMPLE: 1803972

Parameter	Units	60224349003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	28.3	10	36.9	86	80-120	
Sulfate	mg/L	174	100	266	92	80-120	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-1 **Lab ID: 60224349001** Collected: 07/25/16 14:33 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.205 ± 0.519 (0.963) C:NA T:80%**	pCi/L	08/18/16 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.134 ± 0.267 (0.589) C:79% T:90%**	pCi/L	08/17/16 16:04	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-2 **Lab ID: 60224349002** Collected: 07/26/16 09:49 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.514 ± 0.481 (0.681) C:NA T:81%**	pCi/L	08/18/16 11:39	13982-63-3	
Radium-228	EPA 904.0	**0.405 ± 0.303 (0.583) C:80% T:80%**	pCi/L	08/17/16 16:04	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-3 **Lab ID: 60224349003** Collected: 07/25/16 13:00 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.246 ± 0.383 (0.925) C:NA T:93%**	pCi/L	08/18/16 11:23	13982-63-3	
Radium-228	EPA 904.0	**0.223 ± 0.285 (0.605) C:75% T:86%**	pCi/L	08/17/16 16:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-4 **Lab ID: 60224349004** Collected: 07/25/16 11:27 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0592 ± 0.450 (0.889) C:NA T:91%**	pCi/L	08/18/16 11:06	13982-63-3	
Radium-228	EPA 904.0	**0.546 ± 0.323 (0.593) C:79% T:92%**	pCi/L	08/17/16 16:04	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-5 **Lab ID: 60224349005** Collected: 07/25/16 09:50 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.072 ± 0.375 (0.869) C:NA T:90%**	pCi/L	08/18/16 12:03	13982-63-3	
Radium-228	EPA 904.0	**0.386 ± 0.252 (0.475) C:81% T:107%**	pCi/L	08/17/16 16:05	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-6 **Lab ID: 60224349006** Collected: 07/25/16 14:50 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.114 ± 0.353 (0.684) C:NA T:94%**	pCi/L	08/18/16 11:24	13982-63-3	
Radium-228	EPA 904.0	**0.529 ± 0.264 (0.428) C:85% T:89%**	pCi/L	08/17/16 16:05	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-7 **Lab ID: 60224349007** Collected: 07/25/16 11:00 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.417 ± 0.423 (0.641) C:NA T:96%**	pCi/L	08/18/16 11:51	13982-63-3	
Radium-228	EPA 904.0	**0.695 ± 0.308 (0.490) C:85% T:90%**	pCi/L	08/17/16 16:05	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-B1 **Lab ID: 60224349008** Collected: 07/25/16 09:54 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.708 ± 0.584 (0.844) C:NA T:89%**	pCi/L	08/18/16 11:37	13982-63-3	
Radium-228	EPA 904.0	**1.57 ± 0.481 (0.596) C:85% T:85%**	pCi/L	08/17/16 16:05	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-B2 **Lab ID: 60224349009** Collected: 07/26/16 11:03 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.614 ± 0.556 (0.819) C:NA T:90%**	pCi/L	08/18/16 11:24	13982-63-3	
Radium-228	EPA 904.0	**0.746 ± 0.319 (0.510) C:82% T:102%**	pCi/L	08/17/16 16:05	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-DUP-1 **Lab ID: 60224349010** Collected: 07/25/16 08:00 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.061 ± 0.279 (0.659) C:NA T:96%**	pCi/L	08/18/16 11:51	13982-63-3	
Radium-228	EPA 904.0	**0.355 ± 0.274 (0.531) C:86% T:81%**	pCi/L	08/17/16 16:05	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-FB-1 **Lab ID: 60224349011** Collected: 07/25/16 14:25 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.132 ± 0.317 (0.792) C:NA T:95%**	pCi/L	08/18/16 12:14	13982-63-3	
Radium-228	EPA 904.0	**0.381 ± 0.309 (0.613) C:82% T:86%**	pCi/L	08/17/16 16:05	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-3 MS **Lab ID: 60224349012** Collected: 07/25/16 13:00 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**95.9 %REC ± NA (NA) C:NA T:NA**	pCi/L	08/18/16 11:50	13982-63-3	
Radium-228	EPA 904.0	**110 %REC +/- NA (NA) C:NA T:NA**	pCi/L	08/17/16 16:06	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Sample: R-MW-3 MSD **Lab ID: 60224349013** Collected: 07/25/16 13:00 Received: 07/27/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**98.0 %REC 2.14 RPD ± NA (NA) C:NA T:NA**	pCi/L	08/18/16 11:38	13982-63-3	
Radium-228	EPA 904.0	**87.9 %REC 22.7 RPD +/- NA (NA) C:NA T:NA**	pCi/L	08/17/16 16:06	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 229125 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011, 60224349012, 60224349013

METHOD BLANK: 1122821 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.175 ± 0.344 (0.629) C:NA T:96%	pCi/L	08/18/16 11:05	

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.

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

QC Batch: 229131 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60224349001, 60224349002, 60224349003, 60224349004, 60224349005, 60224349006, 60224349007, 60224349008, 60224349009, 60224349010, 60224349011, 60224349012, 60224349013

METHOD BLANK: 1122842 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.387 ± 0.263 (0.496) C:83% T:92%	pCi/L	08/17/16 16:04	

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.

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

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

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.

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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60224349001	R-MW-1	EPA 200.7	440260	EPA 200.7	440271
60224349002	R-MW-2	EPA 200.7	440260	EPA 200.7	440271
60224349003	R-MW-3	EPA 200.7	440260	EPA 200.7	440271
60224349004	R-MW-4	EPA 200.7	440260	EPA 200.7	440271
60224349005	R-MW-5	EPA 200.7	440260	EPA 200.7	440271
60224349006	R-MW-6	EPA 200.7	440260	EPA 200.7	440271
60224349007	R-MW-7	EPA 200.7	440260	EPA 200.7	440271
60224349008	R-MW-B1	EPA 200.7	440260	EPA 200.7	440271
60224349009	R-MW-B2	EPA 200.7	440260	EPA 200.7	440271
60224349010	R-DUP-1	EPA 200.7	440260	EPA 200.7	440271
60224349011	R-FB-1	EPA 200.7	440260	EPA 200.7	440271
60224349001	R-MW-1	EPA 200.8	440261	EPA 200.8	440272
60224349002	R-MW-2	EPA 200.8	440261	EPA 200.8	440272
60224349003	R-MW-3	EPA 200.8	440261	EPA 200.8	440272
60224349004	R-MW-4	EPA 200.8	440261	EPA 200.8	440272
60224349005	R-MW-5	EPA 200.8	440261	EPA 200.8	440272
60224349006	R-MW-6	EPA 200.8	440261	EPA 200.8	440272
60224349007	R-MW-7	EPA 200.8	440261	EPA 200.8	440272
60224349008	R-MW-B1	EPA 200.8	440261	EPA 200.8	440272
60224349009	R-MW-B2	EPA 200.8	440261	EPA 200.8	440272
60224349010	R-DUP-1	EPA 200.8	440261	EPA 200.8	440272
60224349011	R-FB-1	EPA 200.8	440261	EPA 200.8	440272
60224349001	R-MW-1	EPA 7470	440310	EPA 7470	440343
60224349002	R-MW-2	EPA 7470	440310	EPA 7470	440343
60224349003	R-MW-3	EPA 7470	440310	EPA 7470	440343
60224349004	R-MW-4	EPA 7470	440310	EPA 7470	440343
60224349005	R-MW-5	EPA 7470	440310	EPA 7470	440343
60224349006	R-MW-6	EPA 7470	440310	EPA 7470	440343
60224349007	R-MW-7	EPA 7470	440310	EPA 7470	440343
60224349008	R-MW-B1	EPA 7470	440310	EPA 7470	440343
60224349009	R-MW-B2	EPA 7470	440310	EPA 7470	440343
60224349010	R-DUP-1	EPA 7470	440310	EPA 7470	440343
60224349011	R-FB-1	EPA 7470	440310	EPA 7470	440343
60224349001	R-MW-1	EPA 903.1	229125		
60224349002	R-MW-2	EPA 903.1	229125		
60224349003	R-MW-3	EPA 903.1	229125		
60224349004	R-MW-4	EPA 903.1	229125		
60224349005	R-MW-5	EPA 903.1	229125		
60224349006	R-MW-6	EPA 903.1	229125		
60224349007	R-MW-7	EPA 903.1	229125		
60224349008	R-MW-B1	EPA 903.1	229125		
60224349009	R-MW-B2	EPA 903.1	229125		
60224349010	R-DUP-1	EPA 903.1	229125		
60224349011	R-FB-1	EPA 903.1	229125		
60224349012	R-MW-3 MS	EPA 903.1	229125		
60224349013	R-MW-3 MSD	EPA 903.1	229125		
60224349001	R-MW-1	EPA 904.0	229131		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60224349002	R-MW-2	EPA 904.0	229131		
60224349003	R-MW-3	EPA 904.0	229131		
60224349004	R-MW-4	EPA 904.0	229131		
60224349005	R-MW-5	EPA 904.0	229131		
60224349006	R-MW-6	EPA 904.0	229131		
60224349007	R-MW-7	EPA 904.0	229131		
60224349008	R-MW-B1	EPA 904.0	229131		
60224349009	R-MW-B2	EPA 904.0	229131		
60224349010	R-DUP-1	EPA 904.0	229131		
60224349011	R-FB-1	EPA 904.0	229131		
60224349012	R-MW-3 MS	EPA 904.0	229131		
60224349013	R-MW-3 MSD	EPA 904.0	229131		
60224349001	R-MW-1	SM 2540C	440514		
60224349002	R-MW-2	SM 2540C	440514		
60224349003	R-MW-3	SM 2540C	440514		
60224349004	R-MW-4	SM 2540C	440514		
60224349005	R-MW-5	SM 2540C	440514		
60224349006	R-MW-6	SM 2540C	440514		
60224349007	R-MW-7	SM 2540C	440514		
60224349008	R-MW-B1	SM 2540C	440514		
60224349009	R-MW-B2	SM 2540C	440514		
60224349010	R-DUP-1	SM 2540C	440514		
60224349011	R-FB-1	SM 2540C	440514		
60224349001	R-MW-1	SM 4500-H+B	440847		
60224349002	R-MW-2	SM 4500-H+B	440847		
60224349003	R-MW-3	SM 4500-H+B	440847		
60224349004	R-MW-4	SM 4500-H+B	440847		
60224349005	R-MW-5	SM 4500-H+B	440847		
60224349006	R-MW-6	SM 4500-H+B	440847		
60224349007	R-MW-7	SM 4500-H+B	440847		
60224349008	R-MW-B1	SM 4500-H+B	440847		
60224349009	R-MW-B2	SM 4500-H+B	440847		
60224349010	R-DUP-1	SM 4500-H+B	440847		
60224349011	R-FB-1	SM 4500-H+B	441159		
60224349001	R-MW-1	EPA 300.0	440720		
60224349001	R-MW-1	EPA 300.0	440989		
60224349002	R-MW-2	EPA 300.0	440720		
60224349002	R-MW-2	EPA 300.0	440989		
60224349003	R-MW-3	EPA 300.0	440720		
60224349003	R-MW-3	EPA 300.0	440989		
60224349004	R-MW-4	EPA 300.0	440720		
60224349004	R-MW-4	EPA 300.0	440989		
60224349005	R-MW-5	EPA 300.0	440720		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60224349

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60224349006	**R-MW-6**	EPA 300.0	440720		
60224349006	**R-MW-6**	EPA 300.0	440989		
60224349007	**R-MW-7**	EPA 300.0	440720		
60224349007	**R-MW-7**	EPA 300.0	440989		
60224349008	**R-MW-B1**	EPA 300.0	440720		
60224349008	**R-MW-B1**	EPA 300.0	440989		
60224349009	**R-MW-B2**	EPA 300.0	440720		
60224349009	**R-MW-B2**	EPA 300.0	440989		
60224349010	**R-DUP-1**	EPA 300.0	440720		
60224349010	**R-DUP-1**	EPA 300.0	440989		
60224349011	**R-FB-1**	EPA 300.0	440720		

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Sample Condition Upon Receipt

WO# : 60224349

60224349

Client Name: Golder

Optional	
Proj Due Date:	
Proj Name:	

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

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

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

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

Thermometer Used: CF +1.1 / CF -0.1 T-266 / T-239 **Type of Ice:** Wet Blue None (circle one) ☐ Samples received on ice, cooling process has begun.

Cooler Temperature: 6.7/7.1/5.7

Date and initials of person examining contents: PV 7/27/16

Temperature should be above freezing to 6°C

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:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr): PV 7/27/16	☑Yes ☐No ☐N/A	6. pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑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 ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: WT		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 ☑No	Initial when completed / Lot # of added 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 ☑N/A	18.

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: A Date: 7/27

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: of

Section A — Required Client Information:

Company:	Golder Associates
Address:	820 South Main Street, Suite 100
	St Charles, MO 63301
Email To:	maddock@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B — Required Project Information:

Report To:	Mark Haddock (mhaddock@golder.com)
Copy To:	Jeffrey Ingram
Purchase Order No.:	
Project Name:	Ameren Rush Island Engery Center
Project Number:	153-1406.0002A

Section C — Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D — Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 & 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N		60224349
1	R-MW-1	WT	G			7/25	1433		4	1		3							1	1	1	1	2		1BP3U 1BP3N 2BP1N 01
2	R-MW-2	WT	G			7/26	0949		1	1		1							1	1	1	1	1		02
3	R-MW-3	WT	G			7/25	1300		12	3		9							3	3	3	3	6	3BP3U 3BP3N 6BP1N	03
4	R-MW-4	WT	G			7/25	1127		4	1		3							1	1	1	1	2		04
5	R-MW-5	WT	G			7/25	0950												1	1	1	1	2		05
6	R-MW-6	WT	G			7/25	1450																		006
7	R-MW-7	WT	G			7/25	1100																		07
8	R-MW-B1	WT	G			7/25	0954																		008
9	R-MW-B2	WT	G			7/26	1103																		009
10	R-DUP-1	WT	G			7/25	—																		010
11	R-FB-1	WT	G			7/25	1425																		011
12		WT	G																						—

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl	Golder	7/26	1255	[illegible]	7/26/16	1255
	[illegible]	7/26/16	1700	[illegible]	7/27	0435

SAMPLE CONDITIONS

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

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ryan Feldmann

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 7/26/16

*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

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

November 01, 2016

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

RE: Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory between September 08, 2016 and October 14, 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 samples R-MW-B2 and R-DUP-1 required recollection for anions. Only R-MW-B2 was able to be recollected.

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
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CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

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

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SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60227171001	**R-MW-1**	Water	09/07/16 08:53	09/08/16 04:35
60227171002	**R-MW-2**	Water	09/06/16 15:23	09/08/16 04:35
60227171003	**R-MW-3**	Water	09/06/16 14:27	09/08/16 04:35
60227171004	**R-MW-4**	Water	09/06/16 12:45	09/08/16 04:35
60227171005	**R-MW-5**	Water	09/06/16 11:32	09/08/16 04:35
60227171006	**R-MW-6**	Water	09/07/16 10:25	09/08/16 04:35
60227171007	**R-MW-7**	Water	09/07/16 09:47	09/08/16 04:35
60227171008	**R-MW-B1**	Water	09/06/16 15:30	09/08/16 04:35
60227171009	**R-MW-B2**	Water	09/06/16 13:50	09/08/16 04:35
60227171010	**R-DUP-1**	Water	09/06/16 08:00	09/08/16 04:35
60227171011	**R-FB-1**	Water	09/07/16 09:40	09/08/16 04:35
60227171012	**R-MW-4 MS**	Water	09/06/16 12:45	09/08/16 04:35
60227171013	**R-MW-4 MSD**	Water	09/06/16 12:45	09/08/16 04:35
60229963001	**R-MW-B2**	Water	10/13/16 10:42	10/14/16 03:55

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60227171001	**R-MW-1**	EPA 200.7	SMW	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
60227171002	**R-MW-2**	EPA 200.7	SMW	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
60227171003	**R-MW-3**	EPA 200.7	SMW	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
60227171004	**R-MW-4**	EPA 200.7	SMW	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
60227171005	**R-MW-5**	EPA 200.7	SMW	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

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60227171006	**R-MW-6**	EPA 200.7	SMW	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
60227171007	**R-MW-7**	EPA 200.7	SMW	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
60227171008	**R-MW-B1**	EPA 200.7	SMW	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
60227171009	**R-MW-B2**	EPA 200.7	SMW	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
60227171010	**R-DUP-1**	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K
		EPA 7470	NDJ	1	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		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
60227171011	**R-FB-1**	EPA 200.7	SMW	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
60227171012	**R-MW-4 MS**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60227171013	**R-MW-4 MSD**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60229963001	**R-MW-B2**	EPA 300.0	OL	3	PASI-K

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-1 **Lab ID: 60227171001** Collected: 09/07/16 08:53 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**12.6**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:06	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:06	7440-41-7	
Boron	**1820**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:06	7440-42-8	
Calcium	**30800**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:06	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:06	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:06	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:06	7439-93-2	
Molybdenum	**42.8**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:06	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.80J**	ug/L	1.0	0.058	1	09/08/16 10:55	09/09/16 10:56	7440-36-0	
Arsenic	**13.1**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 10:56	7440-38-2	
Cadmium	**0.052J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 10:56	7440-43-9	B
Chromium	**<0.34**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 10:56	7440-47-3	
Selenium	**4.5**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 10:56	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 10:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**371**	mg/L	5.0	5.0	1		09/12/16 08:55		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.7**	Std. Units	0.10	0.10	1		09/12/16 09:15		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**23.2**	mg/L	2.0	1.0	2		09/23/16 17:54	16887-00-6	
Fluoride	**0.37**	mg/L	0.20	0.027	1		09/21/16 22:09	16984-48-8	
Sulfate	**211**	mg/L	20.0	3.1	20		09/23/16 18:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-2 **Lab ID: 60227171002** Collected: 09/06/16 15:23 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**13.7**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:10	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:10	7440-41-7	
Boron	**4350**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:10	7440-42-8	
Calcium	**11900**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:10	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:10	7440-48-4	
Lead	**17.7**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:10	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:10	7439-93-2	
Molybdenum	**183**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:10	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**5.4**	ug/L	1.0	0.058	1	09/08/16 10:55	09/09/16 11:00	7440-36-0	
Arsenic	**250**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:00	7440-38-2	
Cadmium	**0.31J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:00	7440-43-9	B
Chromium	**1.2**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:00	7440-47-3	
Selenium	**2.2**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:00	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**856**	mg/L	5.0	5.0	1		09/08/16 15:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10.5**	Std. Units	0.10	0.10	1		09/12/16 09:15		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**26.5**	mg/L	2.0	1.0	2		09/23/16 18:23	16887-00-6	
Fluoride	**0.89**	mg/L	0.20	0.027	1		09/21/16 22:52	16984-48-8	
Sulfate	**324**	mg/L	20.0	3.1	20		09/23/16 18:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-3 **Lab ID: 60227171003** Collected: 09/06/16 14:27 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**15.3**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:14	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:14	7440-41-7	
Boron	**14500**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:14	7440-42-8	
Calcium	**5940**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:14	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:14	7440-48-4	
Lead	**4.2J**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:14	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:14	7439-93-2	
Molybdenum	**804**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:14	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.12J**	ug/L	1.0	0.058	1	09/08/16 10:55	09/09/16 11:05	7440-36-0	
Arsenic	**74.3**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:05	7440-38-2	
Cadmium	**0.13J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:05	7440-43-9	B
Chromium	**1.9**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:05	7440-47-3	
Selenium	**0.66J**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:05	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:05	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**731**	mg/L	5.0	5.0	1		09/08/16 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.6**	Std. Units	0.10	0.10	1		09/09/16 17:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**29.3**	mg/L	2.0	1.0	2		09/23/16 19:20	16887-00-6	
Fluoride	**0.63**	mg/L	0.20	0.027	1		09/21/16 23:34	16984-48-8	
Sulfate	**195**	mg/L	20.0	3.1	20		09/23/16 19:34	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-4 **Lab ID: 60227171004** Collected: 09/06/16 12:45 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**268**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:18	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:18	7440-41-7	
Boron	**4350**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:18	7440-42-8	
Calcium	**72600**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:18	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:18	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:18	7439-92-1	
Lithium	**44.8**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:18	7439-93-2	
Molybdenum	**105**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:18	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	09/08/16 10:55	09/09/16 11:09	7440-36-0	
Arsenic	**7.4**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:09	7440-38-2	
Cadmium	**0.048J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:09	7440-43-9	B
Chromium	**0.86J**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:09	7440-47-3	
Selenium	**0.24J**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:09	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:09	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**414**	mg/L	5.0	5.0	1		09/08/16 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		09/09/16 17:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.7**	mg/L	2.0	1.0	2		09/23/16 19:48	16887-00-6	
Fluoride	**0.73**	mg/L	0.20	0.027	1		09/21/16 23:48	16984-48-8	
Sulfate	**43.9**	mg/L	5.0	0.77	5		09/23/16 20:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-5 **Lab ID: 60227171005** Collected: 09/06/16 11:32 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**391**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:28	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:28	7440-41-7	
Boron	**90.1J**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:28	7440-42-8	
Calcium	**125000**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:28	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:28	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:28	7439-92-1	
Lithium	**6.3J**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:28	7439-93-2	
Molybdenum	**0.88J**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:28	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	09/08/16 10:55	09/09/16 11:22	7440-36-0	
Arsenic	**4.1**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:22	7440-38-2	
Cadmium	**0.051J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:22	7440-43-9	B
Chromium	**1.4**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:22	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:22	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:22	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**401**	mg/L	5.0	5.0	1		09/08/16 15:42		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		09/09/16 17:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.6**	mg/L	1.0	0.50	1		09/23/16 20:45	16887-00-6	
Fluoride	**0.18J**	mg/L	0.20	0.027	1		09/23/16 20:45	16984-48-8	
Sulfate	**2.0**	mg/L	1.0	0.15	1		09/23/16 20:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-6 **Lab ID: 60227171006** Collected: 09/07/16 10:25 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**252**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:32	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:32	7440-41-7	
Boron	**353**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:32	7440-42-8	
Calcium	**90400**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:32	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:32	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:32	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:32	7439-93-2	
Molybdenum	**1.5J**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:32	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.10J**	ug/L	1.0	0.058	1	09/08/16 10:55	09/09/16 11:26	7440-36-0	
Arsenic	**0.97J**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:26	7440-38-2	
Cadmium	**0.052J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:26	7440-43-9	B
Chromium	**1.1**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:26	7440-47-3	
Selenium	**0.42J**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:26	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:26	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**319**	mg/L	5.0	5.0	1		09/12/16 08:55		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		09/09/16 17:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.3**	mg/L	1.0	0.50	1		09/22/16 00:31	16887-00-6	
Fluoride	**0.14J**	mg/L	0.20	0.027	1		09/22/16 00:31	16984-48-8	
Sulfate	**37.3**	mg/L	5.0	0.77	5		09/23/16 21:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-7 **Lab ID: 60227171007** Collected: 09/07/16 09:47 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**285**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:43	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:43	7440-41-7	
Boron	**2340**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:43	7440-42-8	
Calcium	**72300**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:43	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:43	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:43	7439-92-1	
Lithium	**32.4**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:43	7439-93-2	
Molybdenum	**188**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:43	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	09/08/16 10:55	09/09/16 11:43	7440-36-0	
Arsenic	**96.3**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:43	7440-38-2	
Cadmium	**0.061J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:43	7440-43-9	B
Chromium	**2.1**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:43	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:43	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:43	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**380**	mg/L	5.0	5.0	1		09/12/16 08:57		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		09/09/16 17:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.3**	mg/L	1.0	0.50	1		09/22/16 00:45	16887-00-6	
Fluoride	**0.27**	mg/L	0.20	0.027	1		09/22/16 00:45	16984-48-8	
Sulfate	**50.0**	mg/L	5.0	0.77	5		09/23/16 22:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-B1 **Lab ID: 60227171008** Collected: 09/06/16 15:30 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**490**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:47	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:47	7440-41-7	
Boron	**116**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:47	7440-42-8	
Calcium	**153000**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:47	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:47	7440-48-4	
Lead	**3.1J**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:47	7439-92-1	
Lithium	**61.5**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:47	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:47	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	09/08/16 10:55	09/09/16 11:48	7440-36-0	
Arsenic	**22.6**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:48	7440-38-2	
Cadmium	**0.049J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:48	7440-43-9	B
Chromium	**1.4**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:48	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:48	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:48	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**733**	mg/L	5.0	5.0	1		09/08/16 15:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		09/09/16 17:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**56.1**	mg/L	5.0	2.5	5		09/23/16 22:24	16887-00-6	
Fluoride	**0.098J**	mg/L	0.20	0.027	1		09/22/16 00:59	16984-48-8	
Sulfate	**46.0**	mg/L	5.0	0.77	5		09/23/16 22:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-B2 **Lab ID: 60227171009** Collected: 09/06/16 13:50 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**407**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:50	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:50	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:50	7440-42-8	
Calcium	**109000**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:50	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:50	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:50	7439-92-1	
Lithium	**9.8J**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:50	7439-93-2	
Molybdenum	**0.82J**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:50	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	09/08/16 10:55	09/09/16 11:52	7440-36-0	
Arsenic	**3.1**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:52	7440-38-2	
Cadmium	**0.044J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:52	7440-43-9	B
Chromium	**1.8**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:52	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:52	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:52	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 12:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**404**	mg/L	5.0	5.0	1		09/08/16 15:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		09/09/16 17:00		H6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-DUP-1 **Lab ID: 60227171010** Collected: 09/06/16 08:00 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**394**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 17:54	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 17:54	7440-41-7	
Boron	**75.5J**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 17:54	7440-42-8	
Calcium	**127000**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 17:54	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 17:54	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 17:54	7439-92-1	
Lithium	**5.4J**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 17:54	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 17:54	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	09/08/16 10:55	09/09/16 11:56	7440-36-0	
Arsenic	**4.1**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:56	7440-38-2	
Cadmium	**0.040J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:56	7440-43-9	B
Chromium	**0.61J**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:56	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:56	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 13:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**407**	mg/L	5.0	5.0	1		09/08/16 15:44		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		09/09/16 17:00		H6

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-FB-1 **Lab ID: 60227171011** Collected: 09/07/16 09:40 Received: 09/08/16 04:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**<0.58**	ug/L	10.0	0.58	1	09/08/16 10:55	09/08/16 18:01	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	09/08/16 10:55	09/08/16 18:01	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	09/08/16 10:55	09/08/16 18:01	7440-42-8	
Calcium	**22.1J**	ug/L	100	8.1	1	09/08/16 10:55	09/08/16 18:01	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	09/08/16 10:55	09/08/16 18:01	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	09/08/16 10:55	09/08/16 18:01	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	09/08/16 10:55	09/08/16 18:01	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	09/08/16 10:55	09/08/16 18:01	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	09/08/16 10:55	09/09/16 11:39	7440-36-0	
Arsenic	**<0.10**	ug/L	1.0	0.10	1	09/08/16 10:55	09/09/16 11:39	7440-38-2	
Cadmium	**0.042J**	ug/L	0.50	0.029	1	09/08/16 10:55	09/09/16 11:39	7440-43-9	B
Chromium	**0.55J**	ug/L	1.0	0.34	1	09/08/16 10:55	09/09/16 11:39	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	09/08/16 10:55	09/09/16 11:39	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	09/08/16 10:55	09/09/16 11:39	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	09/09/16 08:45	09/09/16 13:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**5.0**	mg/L	5.0	5.0	1		09/12/16 08:58		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.1**	Std. Units	0.10	0.10	1		09/12/16 09:15		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		09/23/16 22:38	16887-00-6	
Fluoride	**<0.027**	mg/L	0.20	0.027	1		09/23/16 22:38	16984-48-8	
Sulfate	**<0.15**	mg/L	1.0	0.15	1		09/23/16 22:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-B2 **Lab ID: 60229963001** Collected: 10/13/16 10:42 Received: 10/14/16 03:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**36.5**	mg/L	5.0	2.5	5		10/27/16 13:34	16887-00-6	
Fluoride	**0.19J**	mg/L	0.20	0.027	1		10/27/16 12:46	16984-48-8	
Sulfate	**11.2**	mg/L	1.0	0.15	1		10/27/16 12:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 445886 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011

METHOD BLANK: 1822798 Matrix: Water
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.039	0.20	0.039	09/09/16 12:27	

LABORATORY CONTROL SAMPLE: 1822799

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.4	109	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1822800 1822801

Parameter	Units	60227171004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.039	5	5	4.8	5.8	96	117	75-125	20	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 445742 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011

METHOD BLANK: 1822268 Matrix: Water
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.58	5.0	0.58	09/08/16 16:59	
Beryllium	ug/L	<0.26	1.0	0.26	09/08/16 16:59	
Boron	ug/L	<50.0	100	50.0	09/08/16 16:59	
Calcium	ug/L	<8.1	100	8.1	09/08/16 16:59	
Cobalt	ug/L	<0.72	5.0	0.72	09/08/16 16:59	
Lead	ug/L	<2.5	5.0	2.5	09/08/16 16:59	
Lithium	ug/L	<4.9	10.0	4.9	09/08/16 16:59	
Molybdenum	ug/L	<0.52	20.0	0.52	09/08/16 16:59	

LABORATORY CONTROL SAMPLE: 1822269

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1822270 1822271

Parameter	Units	60227171004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	268	1000	1000	1270	1280	100	101	70-130	1	20	
Beryllium	ug/L	<0.26	1000	1000	1010	1020	101	102	70-130	1	20	
Boron	ug/L	4350	1000	1000	5330	5220	98	87	70-130	2	20	
Calcium	ug/L	72600	10000	10000	81500	80700	89	81	70-130	1	20	
Cobalt	ug/L	<0.72	1000	1000	1030	1020	103	102	70-130	0	20	
Lead	ug/L	<2.5	1000	1000	1020	1020	102	102	70-130	1	20	
Lithium	ug/L	44.8	1000	1000	1050	1060	101	102	70-130	1	20	
Molybdenum	ug/L	105	1000	1000	1190	1190	109	108	70-130	1	20	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

MATRIX SPIKE SAMPLE: 1822272

Parameter	Units	60227171010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	394	1000	1420	102	70-130	
Beryllium	ug/L	<0.26	1000	1030	103	70-130	
Boron	ug/L	75.5J	1000	1090	102	70-130	
Calcium	ug/L	127000	10000	136000	86	70-130	
Cobalt	ug/L	<0.72	1000	1030	103	70-130	
Lead	ug/L	<2.5	1000	1030	103	70-130	
Lithium	ug/L	5.4J	1000	1040	104	70-130	
Molybdenum	ug/L	<0.52	1000	1090	109	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 445743 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011

METHOD BLANK: 1822275 Matrix: Water
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.058	1.0	0.058	09/09/16 10:47	
Arsenic	ug/L	<0.10	1.0	0.10	09/09/16 10:47	
Cadmium	ug/L	0.047J	0.50	0.029	09/09/16 10:47	
Chromium	ug/L	<0.34	1.0	0.34	09/09/16 10:47	
Selenium	ug/L	<0.18	1.0	0.18	09/09/16 10:47	
Thallium	ug/L	<0.50	1.0	0.50	09/09/16 10:47	

LABORATORY CONTROL SAMPLE: 1822276

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.2	100	85-115	
Arsenic	ug/L	40	40.8	102	85-115	
Cadmium	ug/L	40	40.0	100	85-115	
Chromium	ug/L	40	41.1	103	85-115	
Selenium	ug/L	40	40.8	102	85-115	
Thallium	ug/L	40	37.8	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1822277 1822278

Parameter	Units	60227171004 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	41.4	41.2	103	103	70-130	1	20	
Arsenic	ug/L	7.4	40	40	49.1	49.7	104	106	70-130	1	20	
Cadmium	ug/L	0.048J	40	40	39.9	39.3	100	98	70-130	1	20	
Chromium	ug/L	0.86J	40	40	45.7	44.5	112	109	70-130	3	20	
Selenium	ug/L	0.24J	40	40	38.9	39.3	97	98	70-130	1	20	
Thallium	ug/L	<0.50	40	40	39.3	39.6	98	99	70-130	1	20	

MATRIX SPIKE SAMPLE: 1822279

Parameter	Units	60227172002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	0.62J	40	39.7	98	70-130	
Arsenic	ug/L	0.99J	40	40.6	99	70-130	
Cadmium	ug/L	0.049J	40	36.6	91	70-130	
Chromium	ug/L	<0.34	40	40.5	101	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

MATRIX SPIKE SAMPLE: 1822279

Parameter	Units	60227172002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Selenium	ug/L	0.36J	40	37.1	92	70-130	
Thallium	ug/L	<0.50	40	37.7	94	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 445811 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60227171002, 60227171003, 60227171004, 60227171005, 60227171008, 60227171009, 60227171010

METHOD BLANK: 1822528 Matrix: Water
Associated Lab Samples: 60227171002, 60227171003, 60227171004, 60227171005, 60227171008, 60227171009, 60227171010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	09/08/16 15:38	

LABORATORY CONTROL SAMPLE: 1822529

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

SAMPLE DUPLICATE: 1822530

Parameter	Units	60227171004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	414	417	1	10	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 446024 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60227171001, 60227171006, 60227171007, 60227171011

METHOD BLANK: 1823374 Matrix: Water
Associated Lab Samples: 60227171001, 60227171006, 60227171007, 60227171011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	09/12/16 08:42	

LABORATORY CONTROL SAMPLE: 1823375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	988	99	80-120	

SAMPLE DUPLICATE: 1823376

Parameter	Units	60227119001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1310	1340	2	10	

SAMPLE DUPLICATE: 1823377

Parameter	Units	60227197001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	420	422	0	10	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 446033 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010

SAMPLE DUPLICATE: 1823453

Parameter	Units	60226671001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.6	1	5	H6

SAMPLE DUPLICATE: 1823482

Parameter	Units	60227171004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	1	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 446082 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60227171001, 60227171002, 60227171011

SAMPLE DUPLICATE: 1823928

Parameter	Units	60226914001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	9.2	9.2	0	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 447440 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171006, 60227171007, 60227171008

METHOD BLANK: 1830341 Matrix: Water
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171006, 60227171007, 60227171008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	09/21/16 21:41	
Fluoride	mg/L	<0.027	0.20	0.027	09/21/16 21:41	

LABORATORY CONTROL SAMPLE: 1830342

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1830343 1830344

Parameter	Units	60227171001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.37	2.5	2.5	3.0	3.0	104	106	80-120	1	15	

MATRIX SPIKE SAMPLE: 1830345

Parameter	Units	60227171004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.73	2.5	3.1	96	80-120	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 447719 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171011

METHOD BLANK: 1831437 Matrix: Water
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	09/23/16 17:26	
Fluoride	mg/L	<0.027	0.20	0.027	09/23/16 17:26	
Sulfate	mg/L	<0.15	1.0	0.15	09/23/16 17:26	

LABORATORY CONTROL SAMPLE: 1831438

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE SAMPLE: 1831439

Parameter	Units	60227171004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	19.7	10	28.9	92	80-120	
Fluoride	mg/L	0.73		6.2			
Sulfate	mg/L	43.9	25	70.6	107	80-120	

MATRIX SPIKE SAMPLE: 1831440

Parameter	Units	60227171005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	3.6	5	8.2	92	80-120	
Fluoride	mg/L	0.18J	2.5	3.0	114	80-120	
Sulfate	mg/L	2.0	5	7.0	101	80-120	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 451880 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60229963001

METHOD BLANK: 1849696 Matrix: Water
Associated Lab Samples: 60229963001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	10/27/16 05:37	
Fluoride	mg/L	<0.027	0.20	0.027	10/27/16 05:37	
Sulfate	mg/L	<0.15	1.0	0.15	10/27/16 05:37	

LABORATORY CONTROL SAMPLE: 1849697

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	4.8	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1849698 1849699

Parameter	Units	60229963001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	36.5	25	25	63.2	62.5	107	104	80-120	1	15	
Fluoride	mg/L	0.19J	2.5	2.5	2.8	2.9	105	107	80-120	2	15	
Sulfate	mg/L	11.2	5	5	16.6	16.5	107	105	80-120	0	15	

MATRIX SPIKE SAMPLE: 1849700

Parameter	Units	60230198001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	ND	5	5.6	91	80-120	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-1 **Lab ID: 60227171001** Collected: 09/07/16 08:53 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0651 ± 0.337 (0.700) C:NA T:81%**	pCi/L	09/27/16 12:33	13982-63-3	
Radium-228	EPA 904.0	**1.26 ± 0.529 (0.852) C:77% T:77%**	pCi/L	09/21/16 22:02	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-2 **Lab ID: 60227171002** Collected: 09/06/16 15:23 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.134 ± 0.307 (0.723) C:NA T:80%**	pCi/L	09/27/16 12:44	13982-63-3	
Radium-228	EPA 904.0	**0.613 ± 0.475 (0.942) C:73% T:77%**	pCi/L	09/21/16 22:03	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-3 **Lab ID: 60227171003** Collected: 09/06/16 14:27 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.138 ± 0.316 (0.188) C:NA T:80%**	pCi/L	09/27/16 12:59	13982-63-3	
Radium-228	EPA 904.0	**1.10 ± 0.537 (0.911) C:65% T:77%**	pCi/L	09/21/16 22:05	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-4 **Lab ID: 60227171004** Collected: 09/06/16 12:45 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.312 ± 0.376 (0.574) C:NA T:77%**	pCi/L	09/27/16 13:10	13982-63-3	
Radium-228	EPA 904.0	**1.58 ± 0.609 (0.960) C:76% T:85%**	pCi/L	09/21/16 22:30	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-5 **Lab ID: 60227171005** Collected: 09/06/16 11:32 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0646 ± 0.420 (0.847) C:NA T:83%**	pCi/L	09/27/16 19:08	13982-63-3	
Radium-228	EPA 904.0	**1.13 ± 0.515 (0.860) C:66% T:88%**	pCi/L	09/21/16 22:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-6 **Lab ID: 60227171006** Collected: 09/07/16 10:25 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0726 ± 0.472 (0.952) C:NA T:79%**	pCi/L	09/27/16 19:19	13982-63-3	
Radium-228	EPA 904.0	**1.15 ± 0.583 (1.02) C:63% T:79%**	pCi/L	09/21/16 22:30	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-7 **Lab ID: 60227171007** Collected: 09/07/16 09:47 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.482 ± 0.504 (0.790) C:NA T:85%**	pCi/L	09/27/16 19:07	13982-63-3	
Radium-228	EPA 904.0	**0.302 ± 0.341 (0.712) C:81% T:81%**	pCi/L	09/21/16 22:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-B1 **Lab ID: 60227171008** Collected: 09/06/16 15:30 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.420 ± 0.458 (0.720) C:NA T:86%**	pCi/L	09/27/16 19:08	13982-63-3	
Radium-228	EPA 904.0	**1.50 ± 0.542 (0.781) C:81% T:77%**	pCi/L	09/21/16 22:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-B2 **Lab ID: 60227171009** Collected: 09/06/16 13:50 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.268 ± 0.280 (0.395) C:NA T:97%**	pCi/L	09/27/16 19:09	13982-63-3	
Radium-228	EPA 904.0	**1.99 ± 0.571 (0.612) C:82% T:82%**	pCi/L	09/21/16 22:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-DUP-1 **Lab ID: 60227171010** Collected: 09/06/16 08:00 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.564 ± 0.413 (0.461) C:NA T:83%**	pCi/L	09/27/16 19:09	13982-63-3	
Radium-228	EPA 904.0	**0.281 ± 0.338 (0.713) C:75% T:89%**	pCi/L	09/21/16 22:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-FB-1 **Lab ID: 60227171011** Collected: 09/07/16 09:40 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.266 (0.429) C:NA T:88%**	pCi/L	09/27/16 19:19	13982-63-3	
Radium-228	EPA 904.0	**0.724 ± 0.396 (0.708) C:80% T:88%**	pCi/L	09/21/16 22:31	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-4 MS **Lab ID: 60227171012** Collected: 09/06/16 12:45 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**96.4 %REC ± NA (NA) C:NA T:NA**	pCi/L	09/27/16 19:19	13982-63-3	
Radium-228	EPA 904.0	**88.6 %REC +/- NA (NA) C:NA T:NA**	pCi/L	09/21/16 22:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Sample: R-MW-4 MSD **Lab ID: 60227171013** Collected: 09/06/16 12:45 Received: 09/08/16 04:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**121.7 %REC 22.4 RPD ± NA (NA) C:NA T:NA**	pCi/L	09/27/16 20:57	13982-63-3	
Radium-228	EPA 904.0	**113 %REC 24.6 RPD +/- NA (NA) C:NA T:NA**	pCi/L	09/21/16 22:28	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 233291 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011, 60227171012, 60227171013

METHOD BLANK: 1143396 Matrix: Water
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011, 60227171012, 60227171013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.697 ± 0.465 (0.895) C:80% T:79%	pCi/L	09/21/16 22:30	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

QC Batch: 233277 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011, 60227171012, 60227171013

METHOD BLANK: 1143370 Matrix: Water
Associated Lab Samples: 60227171001, 60227171002, 60227171003, 60227171004, 60227171005, 60227171006, 60227171007, 60227171008, 60227171009, 60227171010, 60227171011, 60227171012, 60227171013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0583 ± 0.266 (0.541) C:NA T:94%	pCi/L	09/27/16 12:39	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

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

B	Analyte was detected in the associated method blank.
H6	Analysis initiated outside of the 15 minute EPA required holding time.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60227171001	R-MW-1	EPA 200.7	445742	EPA 200.7	445771
60227171002	R-MW-2	EPA 200.7	445742	EPA 200.7	445771
60227171003	R-MW-3	EPA 200.7	445742	EPA 200.7	445771
60227171004	R-MW-4	EPA 200.7	445742	EPA 200.7	445771
60227171005	R-MW-5	EPA 200.7	445742	EPA 200.7	445771
60227171006	R-MW-6	EPA 200.7	445742	EPA 200.7	445771
60227171007	R-MW-7	EPA 200.7	445742	EPA 200.7	445771
60227171008	R-MW-B1	EPA 200.7	445742	EPA 200.7	445771
60227171009	R-MW-B2	EPA 200.7	445742	EPA 200.7	445771
60227171010	R-DUP-1	EPA 200.7	445742	EPA 200.7	445771
60227171011	R-FB-1	EPA 200.7	445742	EPA 200.7	445771
60227171001	R-MW-1	EPA 200.8	445743	EPA 200.8	445773
60227171002	R-MW-2	EPA 200.8	445743	EPA 200.8	445773
60227171003	R-MW-3	EPA 200.8	445743	EPA 200.8	445773
60227171004	R-MW-4	EPA 200.8	445743	EPA 200.8	445773
60227171005	R-MW-5	EPA 200.8	445743	EPA 200.8	445773
60227171006	R-MW-6	EPA 200.8	445743	EPA 200.8	445773
60227171007	R-MW-7	EPA 200.8	445743	EPA 200.8	445773
60227171008	R-MW-B1	EPA 200.8	445743	EPA 200.8	445773
60227171009	R-MW-B2	EPA 200.8	445743	EPA 200.8	445773
60227171010	R-DUP-1	EPA 200.8	445743	EPA 200.8	445773
60227171011	R-FB-1	EPA 200.8	445743	EPA 200.8	445773
60227171001	R-MW-1	EPA 7470	445886	EPA 7470	445897
60227171002	R-MW-2	EPA 7470	445886	EPA 7470	445897
60227171003	R-MW-3	EPA 7470	445886	EPA 7470	445897
60227171004	R-MW-4	EPA 7470	445886	EPA 7470	445897
60227171005	R-MW-5	EPA 7470	445886	EPA 7470	445897
60227171006	R-MW-6	EPA 7470	445886	EPA 7470	445897
60227171007	R-MW-7	EPA 7470	445886	EPA 7470	445897
60227171008	R-MW-B1	EPA 7470	445886	EPA 7470	445897
60227171009	R-MW-B2	EPA 7470	445886	EPA 7470	445897
60227171010	R-DUP-1	EPA 7470	445886	EPA 7470	445897
60227171011	R-FB-1	EPA 7470	445886	EPA 7470	445897
60227171001	R-MW-1	EPA 903.1	233277		
60227171002	R-MW-2	EPA 903.1	233277		
60227171003	R-MW-3	EPA 903.1	233277		
60227171004	R-MW-4	EPA 903.1	233277		
60227171005	R-MW-5	EPA 903.1	233277		
60227171006	R-MW-6	EPA 903.1	233277		
60227171007	R-MW-7	EPA 903.1	233277		
60227171008	R-MW-B1	EPA 903.1	233277		
60227171009	R-MW-B2	EPA 903.1	233277		
60227171010	R-DUP-1	EPA 903.1	233277		
60227171011	R-FB-1	EPA 903.1	233277		
60227171012	R-MW-4 MS	EPA 903.1	233277		
60227171013	R-MW-4 MSD	EPA 903.1	233277		
60227171001	R-MW-1	EPA 904.0	233291		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60227171002	R-MW-2	EPA 904.0	233291		
60227171003	R-MW-3	EPA 904.0	233291		
60227171004	R-MW-4	EPA 904.0	233291		
60227171005	R-MW-5	EPA 904.0	233291		
60227171006	R-MW-6	EPA 904.0	233291		
60227171007	R-MW-7	EPA 904.0	233291		
60227171008	R-MW-B1	EPA 904.0	233291		
60227171009	R-MW-B2	EPA 904.0	233291		
60227171010	R-DUP-1	EPA 904.0	233291		
60227171011	R-FB-1	EPA 904.0	233291		
60227171012	R-MW-4 MS	EPA 904.0	233291		
60227171013	R-MW-4 MSD	EPA 904.0	233291		
60227171001	R-MW-1	SM 2540C	446024		
60227171002	R-MW-2	SM 2540C	445811		
60227171003	R-MW-3	SM 2540C	445811		
60227171004	R-MW-4	SM 2540C	445811		
60227171005	R-MW-5	SM 2540C	445811		
60227171006	R-MW-6	SM 2540C	446024		
60227171007	R-MW-7	SM 2540C	446024		
60227171008	R-MW-B1	SM 2540C	445811		
60227171009	R-MW-B2	SM 2540C	445811		
60227171010	R-DUP-1	SM 2540C	445811		
60227171011	R-FB-1	SM 2540C	446024		
60227171001	R-MW-1	SM 4500-H+B	446082		
60227171002	R-MW-2	SM 4500-H+B	446082		
60227171003	R-MW-3	SM 4500-H+B	446033		
60227171004	R-MW-4	SM 4500-H+B	446033		
60227171005	R-MW-5	SM 4500-H+B	446033		
60227171006	R-MW-6	SM 4500-H+B	446033		
60227171007	R-MW-7	SM 4500-H+B	446033		
60227171008	R-MW-B1	SM 4500-H+B	446033		
60227171009	R-MW-B2	SM 4500-H+B	446033		
60227171010	R-DUP-1	SM 4500-H+B	446033		
60227171011	R-FB-1	SM 4500-H+B	446082		
60227171001	R-MW-1	EPA 300.0	447440		
60227171001	R-MW-1	EPA 300.0	447719		
60227171002	R-MW-2	EPA 300.0	447440		
60227171002	R-MW-2	EPA 300.0	447719		
60227171003	R-MW-3	EPA 300.0	447440		
60227171003	R-MW-3	EPA 300.0	447719		
60227171004	R-MW-4	EPA 300.0	447440		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60227171

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60227171004	**R-MW-4**	EPA 300.0	447719		
60227171005	**R-MW-5**	EPA 300.0	447719		
60227171006	**R-MW-6**	EPA 300.0	447440		
60227171006	**R-MW-6**	EPA 300.0	447719		
60227171007	**R-MW-7**	EPA 300.0	447440		
60227171007	**R-MW-7**	EPA 300.0	447719		
60227171008	**R-MW-B1**	EPA 300.0	447440		
60227171008	**R-MW-B1**	EPA 300.0	447719		
60227171011	**R-FB-1**	EPA 300.0	447719		
60229963001	**R-MW-B2**	EPA 300.0	451880		

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Sample Condition Upon Receipt

WO# : 60227171

60227171

Client Name: Golder

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

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

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

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

Thermometer Used: T-268 (CF +1.1) / T-239 (CF -0.1) **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.2/22.5/21.5 **Corr. Factor** (CF +1.1) (CF -0.1) **Corrected** 2.3/23.6/22.6

Date and initials of person examining contents: P 9/8/16

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Jami Church 9/8/16

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.

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Page: of

Section A Required Client Information:

Company:	Golder Associates
Address:	820 South Main Street, Suite 100
	St Charles, MO 63301
Email To:	maddock@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Mark Haddock (mhaddock@golder.com)
Copy To:	Jeffrey Ingram
Purchase Order No.:	
Project Name:	Ameren Rush Island Engery Center
Project Number:	153-1406.0002A

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 & 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N		6022717
1	R-MW-1	WT	G			9/7/16	0853		4	1		3							1	1	1	1	2		1BPSU 1BPSN 2BPSN 001
2	R-MW-2	WT	G			9/6/16	1523		1	1		1							1	1	1	1	2		002
3	R-MW-3	WT	G				1427		1	1		1							1	1	1	1	2		003
4	R-MW-4	WT	G				1245		12	3		9							3	3	3	3	6	3BPSU 3BPSN 6RDN	004
5	R-MW-5	WT	G				1132		4	1		3							1	1	1	1	2		005
6	R-MW-6	WT	G			9/7/16	1025		1	1		1							1	1	1	1	2		006
7	R-MW-7	WT	G				0947		1	1		1							1	1	1	1	2		007
8	R-MW-B1	WT	G			9/6/16	1530		1	1		1							1	1	1	1	2		008
9	R-MW-B2	WT	G				1350		1	1		1							1	1	1	1	2		009
10	R-DUP-1	WT	G				—		1	1		1							1	1	1	1	2		010
11	R-FB-1	WT	G			9/7/16	0940		1	1		1							1	1	1	1	2		011
12		WT	G																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl	[signature] /AECOM	9/7/16	1630	[signature] PACE	9/7/16	1635
	[signature] /PACE	9-7-16	1720	[signature] PACE	9/8/16	0435

SAMPLE CONDITIONS	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	2.3	X	X	X
	23.6	N	X	X
	22.6	N	X	X

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: JEFF INGRAM

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 9/7/16

*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.

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Sample Condition Upon Receipt

WO# : 60229963

60229963

JC

Client Name: Golder

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

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

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

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

Thermometer Used: (CF +0.7 / CF -0.5) T-266 / T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.5 **Corr. Factor** (CF +0.7 plastic / CF -0.5 label) **Corrected** 2.2

Date and initials of person examining contents: pw 10/14/16

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): pw 10/14/16 (2)	☑Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Jani Check 10/14/16

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	Golder Associates
Address:	820 South Main Street, Suite 100
	St Charles, MO 63301
Email To:	mhaddock@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Mark Haddock (mhaddock@golder.com)
Copy To:	Jeffrey Ingram
Purchase Order No.:	
Project Name:	Ameren Rush Island Engery Center
Project Number:	153-1406.0002A

Section C Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	Section D SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 & 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N		60229963
1	R-MW-B2	WT	G			10/13/16	1042		2	2										X	X	X				28934 001
2		WT	G																						
3		WT	G																						
4		WT	G																						
5		WT	G																						
6		WT	G																						
7		WT	G																						
8		WT	G																						
9		WT	G																						
10		WT	G																						
11		WT	G																						
12		WT	G																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl	John Snoozy / Golder	10/13/16	1230	[signature]	10/13/16	13:00				
	[signature]	10/13/16	17:00	[signature]	10/14/16	0355	2.2	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Snoozy

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 10/13/2016

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

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

December 21, 2016

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

RE: Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory on 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

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

CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

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

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SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60232589001	**R-MW-1**	Water	11/16/16 09:27	11/18/16 03:35
60232589002	**R-MW-2**	Water	11/16/16 10:32	11/18/16 03:35
60232589003	**R-MW-3**	Water	11/16/16 11:30	11/18/16 03:35
60232589004	**R-MW-4**	Water	11/16/16 12:35	11/18/16 03:35
60232589005	**R-MW-5**	Water	11/16/16 13:47	11/18/16 03:35
60232589006	**R-MW-6**	Water	11/16/16 11:35	11/18/16 03:35
60232589007	**R-MW-7**	Water	11/16/16 10:25	11/18/16 03:35
60232589008	**R-MW-B1**	Water	11/16/16 09:25	11/18/16 03:35
60232589009	**R-MW-B2**	Water	11/16/16 14:41	11/18/16 03:35
60232589010	**R-DUP-1**	Water	11/16/16 00:00	11/18/16 03:35
60232589011	**R-FB-1**	Water	11/16/16 10:03	11/18/16 03:35
60232589012	**R-MW-4 MS**	Water	11/16/16 12:35	11/18/16 03:35
60232589013	**R-MW-4 MSD**	Water	11/16/16 12:35	11/18/16 03:35

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60232589001	**R-MW-1**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589002	**R-MW-2**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589003	**R-MW-3**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589004	**R-MW-4**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589005	**R-MW-5**	EPA 200.7	NDJ	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

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589006	**R-MW-6**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589007	**R-MW-7**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589008	**R-MW-B1**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589009	**R-MW-B2**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589010	**R-DUP-1**	EPA 200.7	NDJ	8	PASI-K
		EPA 200.8	SMW	6	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589011	**R-FB-1**	EPA 200.7	NDJ	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	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60232589012	**R-MW-4 MS**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60232589013	**R-MW-4 MSD**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-1 **Lab ID: 60232589001** Collected: 11/16/16 09:27 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**15.5**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 14:42	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 14:42	7440-41-7	
Boron	**1520**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 14:42	7440-42-8	
Calcium	**42100**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 14:42	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 14:42	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 14:42	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 14:42	7439-93-2	
Molybdenum	**32.6**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 14:42	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.84J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 16:32	7440-36-0	B
Arsenic	**12.0**	ug/L	1.0	0.10	1	11/18/16 16:30	12/01/16 18:21	7440-38-2	
Cadmium	**0.045J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 16:32	7440-43-9	B
Chromium	**<0.34**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 16:32	7440-47-3	
Selenium	**3.8**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 16:32	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 16:32	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.045J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:05	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**390**	mg/L	5.0	5.0	1		11/23/16 15:16		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**21.2**	mg/L	2.0	1.0	2		12/11/16 17:53	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.027	1		12/09/16 18:18	16984-48-8	
Sulfate	**223**	mg/L	20.0	3.1	20		12/11/16 18:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-2 **Lab ID: 60232589002** Collected: 11/16/16 10:32 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**10.4**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 14:44	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 14:44	7440-41-7	
Boron	**5730**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 14:44	7440-42-8	
Calcium	**10800**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 14:44	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 14:44	7440-48-4	
Lead	**4.5J**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 14:44	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 14:44	7439-93-2	
Molybdenum	**201**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 14:44	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**6.4**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 16:36	7440-36-0	
Arsenic	**257**	ug/L	1.0	0.10	1	11/18/16 16:30	12/01/16 18:26	7440-38-2	
Cadmium	**0.28J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 16:36	7440-43-9	B
Chromium	**0.58J**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 16:36	7440-47-3	
Selenium	**1.6**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 16:36	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 16:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.058J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:07	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**783**	mg/L	5.0	5.0	1		11/23/16 15:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10.8**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**23.5**	mg/L	2.0	1.0	2		12/11/16 18:21	16887-00-6	
Fluoride	**0.95**	mg/L	0.20	0.027	1		12/09/16 18:59	16984-48-8	
Sulfate	**288**	mg/L	20.0	3.1	20		12/11/16 18:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-3 **Lab ID: 60232589003** Collected: 11/16/16 11:30 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**19.7**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 14:46	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 14:46	7440-41-7	
Boron	**15600**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 14:46	7440-42-8	
Calcium	**5940**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 14:46	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 14:46	7440-48-4	
Lead	**6.4**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 14:46	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 14:46	7439-93-2	
Molybdenum	**869**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 14:46	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.32J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 16:41	7440-36-0	B
Arsenic	**28.6**	ug/L	1.0	0.10	1	11/18/16 16:30	12/02/16 14:03	7440-38-2	
Cadmium	**<0.029**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 16:41	7440-43-9	
Chromium	**0.89J**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 16:41	7440-47-3	
Selenium	**0.66J**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 16:41	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 16:41	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.046J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:09	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**664**	mg/L	5.0	5.0	1		11/23/16 15:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.2**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**28.3**	mg/L	2.0	1.0	2		12/11/16 18:49	16887-00-6	
Fluoride	**0.80**	mg/L	0.20	0.027	1		12/09/16 19:13	16984-48-8	
Sulfate	**156**	mg/L	20.0	3.1	20		12/11/16 19:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-4 **Lab ID: 60232589004** Collected: 11/16/16 12:35 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**256**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 14:49	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 14:49	7440-41-7	
Boron	**4450**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 14:49	7440-42-8	
Calcium	**69700**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 14:49	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 14:49	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 14:49	7439-92-1	
Lithium	**39.9**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 14:49	7439-93-2	
Molybdenum	**109**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 14:49	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.18J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 16:45	7440-36-0	B
Arsenic	**6.4**	ug/L	1.0	0.10	1	11/18/16 16:30	12/02/16 14:08	7440-38-2	
Cadmium	**0.032J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 16:45	7440-43-9	B
Chromium	**0.57J**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 16:45	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 16:45	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 16:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.044J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:12	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**406**	mg/L	5.0	5.0	1		11/23/16 15:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.0**	mg/L	2.0	1.0	2		12/11/16 19:44	16887-00-6	M1
Fluoride	**0.80**	mg/L	0.20	0.027	1		12/09/16 19:27	16984-48-8	
Sulfate	**41.2**	mg/L	2.0	0.31	2		12/11/16 19:44	14808-79-8	E
Sulfate	**40.8**	mg/L	5.0	0.77	5		12/21/16 04:48	14808-79-8	H5

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-5 **Lab ID: 60232589005** Collected: 11/16/16 13:47 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**392**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 15:00	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 15:00	7440-41-7	
Boron	**89.2J**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 15:00	7440-42-8	
Calcium	**126000**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 15:00	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 15:00	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 15:00	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 15:00	7439-93-2	
Molybdenum	**1.5J**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 15:00	7439-98-7	B
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.20J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 17:07	7440-36-0	B
Arsenic	**4.3**	ug/L	1.0	0.10	1	11/18/16 16:30	11/30/16 17:07	7440-38-2	
Cadmium	**0.048J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 17:07	7440-43-9	B
Chromium	**0.51J**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 17:07	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 17:07	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 17:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.041J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:18	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**420**	mg/L	5.0	5.0	1		11/23/16 15:20		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.3**	mg/L	1.0	0.50	1		12/09/16 20:09	16887-00-6	
Fluoride	**0.14J**	mg/L	0.20	0.027	1		12/09/16 20:09	16984-48-8	
Sulfate	**3.1**	mg/L	1.0	0.15	1		12/09/16 20:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-6 **Lab ID: 60232589006** Collected: 11/16/16 11:35 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**166**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 15:02	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 15:02	7440-41-7	
Boron	**1820**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 15:02	7440-42-8	
Calcium	**90200**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 15:02	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 15:02	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 15:02	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 15:02	7439-93-2	
Molybdenum	**1.0J**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 15:02	7439-98-7	B
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.22J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 17:16	7440-36-0	B
Arsenic	**0.75J**	ug/L	1.0	0.10	1	11/18/16 16:30	11/30/16 17:16	7440-38-2	
Cadmium	**0.048J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 17:16	7440-43-9	B
Chromium	**0.60J**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 17:16	7440-47-3	
Selenium	**0.25J**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 17:16	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 17:16	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.044J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:20	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**343**	mg/L	5.0	5.0	1		11/23/16 15:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**9.6**	mg/L	1.0	0.50	1		12/09/16 20:23	16887-00-6	
Fluoride	**0.23**	mg/L	0.20	0.027	1		12/09/16 20:23	16984-48-8	
Sulfate	**18.8**	mg/L	1.0	0.15	1		12/09/16 20:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-7 **Lab ID: 60232589007** Collected: 11/16/16 10:25 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**284**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 15:06	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 15:06	7440-41-7	
Boron	**2360**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 15:06	7440-42-8	
Calcium	**71700**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 15:06	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 15:06	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 15:06	7439-92-1	
Lithium	**29.2**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 15:06	7439-93-2	
Molybdenum	**162**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 15:06	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.24J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 17:21	7440-36-0	B
Arsenic	**90.7**	ug/L	1.0	0.10	1	11/18/16 16:30	11/30/16 17:21	7440-38-2	
Cadmium	**0.041J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 17:21	7440-43-9	B
Chromium	**0.48J**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 17:21	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 17:21	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 17:21	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.056J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:23	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**368**	mg/L	5.0	5.0	1		11/23/16 15:22		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**11.8**	mg/L	1.0	0.50	1		12/09/16 20:37	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	0.027	1		12/09/16 20:37	16984-48-8	
Sulfate	**36.8**	mg/L	2.0	0.31	2		12/11/16 21:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-B1 **Lab ID: 60232589008** Collected: 11/16/16 09:25 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**464**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 15:09	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 15:09	7440-41-7	
Boron	**112**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 15:09	7440-42-8	
Calcium	**143000**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 15:09	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 15:09	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 15:09	7439-92-1	
Lithium	**54.7**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 15:09	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 15:09	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.19J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 17:25	7440-36-0	B
Arsenic	**30.0**	ug/L	1.0	0.10	1	11/18/16 16:30	11/30/16 17:25	7440-38-2	
Cadmium	**0.046J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 17:25	7440-43-9	B
Chromium	**0.38J**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 17:25	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 17:25	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 17:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.045J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:25	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**658**	mg/L	5.0	5.0	1		11/23/16 15:22		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**60.6**	mg/L	5.0	2.5	5		12/11/16 21:36	16887-00-6	
Fluoride	**0.14J**	mg/L	0.20	0.027	1		12/09/16 20:51	16984-48-8	
Sulfate	**36.6**	mg/L	2.0	0.31	2		12/11/16 21:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-B2 **Lab ID: 60232589009** Collected: 11/16/16 14:41 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**405**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 15:11	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 15:11	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 15:11	7440-42-8	
Calcium	**110000**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 15:11	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 15:11	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 15:11	7439-92-1	
Lithium	**5.5J**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 15:11	7439-93-2	
Molybdenum	**0.57J**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 15:11	7439-98-7	B
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.19J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 17:29	7440-36-0	B
Arsenic	**3.6**	ug/L	1.0	0.10	1	11/18/16 16:30	11/30/16 17:29	7440-38-2	
Cadmium	**0.048J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 17:29	7440-43-9	B
Chromium	**<0.34**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 17:29	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 17:29	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 17:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.044J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:34	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**405**	mg/L	5.0	5.0	1		11/23/16 15:23		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		11/30/16 16:23		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**34.7**	mg/L	2.0	1.0	2		12/11/16 22:17	16887-00-6	
Fluoride	**0.18J**	mg/L	0.20	0.027	1		12/09/16 21:05	16984-48-8	
Sulfate	**9.7**	mg/L	1.0	0.15	1		12/09/16 21:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-DUP-1 **Lab ID: 60232589010** Collected: 11/16/16 00:00 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**15.3**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 15:13	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 15:13	7440-41-7	
Boron	**1520**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 15:13	7440-42-8	
Calcium	**41600**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 15:13	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 15:13	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 15:13	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 15:13	7439-93-2	
Molybdenum	**32.5**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 15:13	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.85J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 17:34	7440-36-0	B
Arsenic	**13.7**	ug/L	1.0	0.10	1	11/18/16 16:30	11/30/16 17:34	7440-38-2	
Cadmium	**0.047J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 17:34	7440-43-9	B
Chromium	**0.39J**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 17:34	7440-47-3	
Selenium	**3.8**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 17:34	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 17:34	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.044J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:37	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**374**	mg/L	5.0	5.0	1		11/23/16 15:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.8**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**20.4**	mg/L	2.0	1.0	2		12/11/16 22:31	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.027	1		12/09/16 21:46	16984-48-8	
Sulfate	**216**	mg/L	20.0	3.1	20		12/11/16 22:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-FB-1 **Lab ID: 60232589011** Collected: 11/16/16 10:03 Received: 11/18/16 03:35 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**<0.58**	ug/L	5.0	0.58	1	11/18/16 16:30	11/23/16 15:16	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	11/18/16 16:30	11/23/16 15:16	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	11/18/16 16:30	11/23/16 15:16	7440-42-8	
Calcium	**<8.1**	ug/L	100	8.1	1	11/18/16 16:30	11/23/16 15:16	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	11/18/16 16:30	11/23/16 15:16	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	11/18/16 16:30	11/23/16 15:16	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	11/18/16 16:30	11/23/16 15:16	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	11/18/16 16:30	11/23/16 15:16	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.17J**	ug/L	1.0	0.058	1	11/18/16 16:30	11/30/16 17:38	7440-36-0	B
Arsenic	**0.13J**	ug/L	1.0	0.10	1	11/18/16 16:30	11/30/16 17:38	7440-38-2	
Cadmium	**0.043J**	ug/L	0.50	0.029	1	11/18/16 16:30	11/30/16 17:38	7440-43-9	B
Chromium	**<0.34**	ug/L	1.0	0.34	1	11/18/16 16:30	11/30/16 17:38	7440-47-3	
Selenium	**<0.18**	ug/L	1.0	0.18	1	11/18/16 16:30	11/30/16 17:38	7782-49-2	
Thallium	**<0.50**	ug/L	1.0	0.50	1	11/18/16 16:30	11/30/16 17:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.043J**	ug/L	0.20	0.039	1	11/28/16 16:30	11/29/16 11:39	7439-97-6	B
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		11/23/16 15:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.0**	Std. Units	0.10	0.10	1		11/30/16 15:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		12/09/16 22:00	16887-00-6	
Fluoride	**<0.027**	mg/L	0.20	0.027	1		12/09/16 22:00	16984-48-8	
Sulfate	**<0.15**	mg/L	1.0	0.15	1		12/09/16 22:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 456625 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

METHOD BLANK: 1869658 Matrix: Water
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	0.045J	0.20	0.039	11/29/16 10:56	

LABORATORY CONTROL SAMPLE: 1869659

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.8	115	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1869660 1869661

Parameter	Units	60232589004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	0.044J	5	5	5.5	5.8	110	115	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 455694 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

METHOD BLANK: 1865875 Matrix: Water
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

Parameter	Units	Blank Result	Reporting 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	

LABORATORY CONTROL SAMPLE: 1865876

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
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 SPIKE DUPLICATE: 1865877 1865878

Parameter	Units	60232589004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max 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	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

MATRIX SPIKE SAMPLE: 1865879

Parameter	Units	60232589006 Result	Spike Conc.	MS Result	MS % Rec	% 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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 455691 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

METHOD BLANK: 1865866 Matrix: Water
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

Parameter	Units	Blank Result	Reporting 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

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% 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 SPIKE DUPLICATE: 1865868 1865869

Parameter	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

Parameter	Units	60232589005 Result	Spike Conc.	MS Result	MS % Rec	% 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	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

MATRIX SPIKE SAMPLE: 1865870

Parameter	Units	60232589005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Selenium	ug/L	<0.18	40	38.4	96	70-130	
Thallium	ug/L	<0.50	40	40.3	101	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 456308 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

METHOD BLANK: 1868508 Matrix: Water
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/23/16 15:12	

LABORATORY CONTROL SAMPLE: 1868509

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

SAMPLE DUPLICATE: 1867313

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

SAMPLE DUPLICATE: 1868510

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

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 456987 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589010, 60232589011

SAMPLE DUPLICATE: 1871021

Parameter	Units	60232589004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 457036
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60232589009

SAMPLE DUPLICATE: 1871119

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

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 458213 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

METHOD BLANK: 1875985 Matrix: Water
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	12/09/16 17:08	
Fluoride	mg/L	<0.027	0.20	0.027	12/09/16 17:08	
Sulfate	mg/L	<0.15	1.0	0.15	12/09/16 17:08	

LABORATORY CONTROL SAMPLE: 1875986

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1875987 1875988

Parameter	Units	60232589004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.80	2.5	2.5	3.6	3.7	111	115	80-120	3	15	

MATRIX SPIKE SAMPLE: 1875989

Parameter	Units	60232361003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	7.1	5	13.2	121	80-120	M1
Fluoride	mg/L	0.14J	2.5	3.0	114	80-120	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 458452 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589007, 60232589008, 60232589009, 60232589010

METHOD BLANK: 1876996 Matrix: Water
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589007, 60232589008, 60232589009, 60232589010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	12/11/16 17:25	
Sulfate	mg/L	<0.15	1.0	0.15	12/11/16 17:25	

LABORATORY CONTROL SAMPLE: 1876997

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1876998 1876999

Parameter	Units	60232589004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	19.0	10	10	30.7	31.7	117	127	80-120	3	15	M1

MATRIX SPIKE SAMPLE: 1877000

Parameter	Units	60232361003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	7.1		65.9			
Sulfate	mg/L	89.9	50	155	130	80-120	M1

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 459611
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60232589004

METHOD BLANK: 1881771
Matrix: Water
Associated Lab Samples: 60232589004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	<0.15	1.0	0.15	12/21/16 00:11	

LABORATORY CONTROL SAMPLE: 1881772

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.9	99	90-110	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-1 **Lab ID: 60232589001** Collected: 11/16/16 09:27 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	**0.000 ± 0.312 (0.503) C:NA T:88%**	pCi/L	12/19/16 11:20	13982-63-3	
Radium-228	EPA 904.0	**0.497 ± 0.496 (1.02) C:57% T:85%**	pCi/L	12/19/16 12:49	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-2 **Lab ID: 60232589002** Collected: 11/16/16 10:32 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	**0.120 ± 0.549 (0.326) C:NA T:49%**	pCi/L	12/19/16 11:20	13982-63-3	
Radium-228	EPA 904.0	**-0.179 ± 0.716 (1.70) C:42% T:73%**	pCi/L	12/19/16 12:49	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-3 **Lab ID: 60232589003** Collected: 11/16/16 11:30 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	**-0.063 ± 0.290 (0.590) C:NA T:90%**	pCi/L	12/19/16 11:32	13982-63-3	
Radium-228	EPA 904.0	**0.0291 ± 0.501 (1.17) C:52% T:72%**	pCi/L	12/19/16 16:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-4 **Lab ID: 60232589004** Collected: 11/16/16 12:35 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	**0.0639 ± 0.292 (0.593) C:NA T:89%**	pCi/L	12/19/16 11:32	13982-63-3	
Radium-228	EPA 904.0	**0.896 ± 0.451 (0.764) C:65% T:84%**	pCi/L	12/19/16 16:04	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-5 **Lab ID: 60232589005** Collected: 11/16/16 13:47 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	**0.187 ± 0.325 (0.580) C:NA T:90%**	pCi/L	12/19/16 11:35	13982-63-3	
Radium-228	EPA 904.0	**0.0765 ± 0.341 (0.778) C:68% T:89%**	pCi/L	12/19/16 12:25	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-6 **Lab ID: 60232589006** Collected: 11/16/16 11:35 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	**0.528 ± 0.452 (0.613) C:NA T:93%**	pCi/L	12/19/16 11:35	13982-63-3	
Radium-228	EPA 904.0	**0.277 ± 0.376 (0.804) C:69% T:88%**	pCi/L	12/19/16 12:54	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-7 **Lab ID: 60232589007** Collected: 11/16/16 10:25 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	**0.375 ± 0.349 (0.460) C:NA T:96%**	pCi/L	12/19/16 11:35	13982-63-3	
Radium-228	EPA 904.0	**0.519 ± 0.411 (0.805) C:61% T:87%**	pCi/L	12/19/16 12:26	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-B1 **Lab ID: 60232589008** Collected: 11/16/16 09:25 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	**0.228 ± 0.396 (0.707) C:NA T:86%**	pCi/L	12/19/16 11:35	13982-63-3	
Radium-228	EPA 904.0	**1.32 ± 0.499 (0.718) C:71% T:81%**	pCi/L	12/19/16 12:26	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-B2 **Lab ID: 60232589009** Collected: 11/16/16 14:41 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	**0.974 ± 0.490 (0.165) C:NA T:95%**	pCi/L	12/19/16 11:46	13982-63-3	
Radium-228	EPA 904.0	**-0.0155 ± 0.352 (0.825) C:68% T:87%**	pCi/L	12/19/16 12:26	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-DUP-1 **Lab ID: 60232589010** Collected: 11/16/16 00:00 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	**0.000 ± 0.286 (0.462) C:NA T:96%**	pCi/L	12/19/16 11:46	13982-63-3	
Radium-228	EPA 904.0	**-0.205 ± 0.390 (0.957) C:67% T:80%**	pCi/L	12/19/16 12:54	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-FB-1 **Lab ID: 60232589011** Collected: 11/16/16 10:03 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	**0.366 ± 0.296 (0.165) C:NA T:93%**	pCi/L	12/19/16 11:46	13982-63-3	
Radium-228	EPA 904.0	**0.537 ± 0.403 (0.783) C:71% T:78%**	pCi/L	12/19/16 12:26	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-4 MS **Lab ID: 60232589012** Collected: 11/16/16 12:35 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	**83.6 %REC ± NA (NA) C:NA T:NA**	pCi/L	12/19/16 11:47	13982-63-3	
Radium-228	EPA 904.0	**131.70 %REC ± NA (NA) C:NA T:NA**	pCi/L	12/19/16 16:04	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Sample: R-MW-4 MSD **Lab ID: 60232589013** Collected: 11/16/16 12:35 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	**94.3 %REC 12.12 RPD ± NA (NA) C:NA T:NA**	pCi/L	12/19/16 11:59	13982-63-3	
Radium-228	EPA 904.0	**98.22 %REC 29.12 RPD ± NA (NA) C:NA T:NA**	pCi/L	12/19/16 16:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 243053 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011, 60232589012, 60232589013

METHOD BLANK: 1195488 Matrix: Water
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011, 60232589012, 60232589013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0712 ± 0.325 (0.193) C:NA T:81%	pCi/L	12/19/16 11:20	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

QC Batch: 243054 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011, 60232589012, 60232589013

METHOD BLANK: 1195489 Matrix: Water
Associated Lab Samples: 60232589001, 60232589002, 60232589003, 60232589004, 60232589005, 60232589006, 60232589007, 60232589008, 60232589009, 60232589010, 60232589011, 60232589012, 60232589013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.733 ± 0.475 (0.900) C:64% T:80%	pCi/L	12/19/16 12:49	

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QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

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

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H5	Reanalysis conducted in excess of EPA method holding time. Results confirm original analysis performed in hold time.
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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60232589001	R-MW-1	EPA 200.7	455694	EPA 200.7	455911
60232589002	R-MW-2	EPA 200.7	455694	EPA 200.7	455911
60232589003	R-MW-3	EPA 200.7	455694	EPA 200.7	455911
60232589004	R-MW-4	EPA 200.7	455694	EPA 200.7	455911
60232589005	R-MW-5	EPA 200.7	455694	EPA 200.7	455911
60232589006	R-MW-6	EPA 200.7	455694	EPA 200.7	455911
60232589007	R-MW-7	EPA 200.7	455694	EPA 200.7	455911
60232589008	R-MW-B1	EPA 200.7	455694	EPA 200.7	455911
60232589009	R-MW-B2	EPA 200.7	455694	EPA 200.7	455911
60232589010	R-DUP-1	EPA 200.7	455694	EPA 200.7	455911
60232589011	R-FB-1	EPA 200.7	455694	EPA 200.7	455911
60232589001	R-MW-1	EPA 200.8	455691	EPA 200.8	455912
60232589002	R-MW-2	EPA 200.8	455691	EPA 200.8	455912
60232589003	R-MW-3	EPA 200.8	455691	EPA 200.8	455912
60232589004	R-MW-4	EPA 200.8	455691	EPA 200.8	455912
60232589005	R-MW-5	EPA 200.8	455691	EPA 200.8	455912
60232589006	R-MW-6	EPA 200.8	455691	EPA 200.8	455912
60232589007	R-MW-7	EPA 200.8	455691	EPA 200.8	455912
60232589008	R-MW-B1	EPA 200.8	455691	EPA 200.8	455912
60232589009	R-MW-B2	EPA 200.8	455691	EPA 200.8	455912
60232589010	R-DUP-1	EPA 200.8	455691	EPA 200.8	455912
60232589011	R-FB-1	EPA 200.8	455691	EPA 200.8	455912
60232589001	R-MW-1	EPA 7470	456625	EPA 7470	456654
60232589002	R-MW-2	EPA 7470	456625	EPA 7470	456654
60232589003	R-MW-3	EPA 7470	456625	EPA 7470	456654
60232589004	R-MW-4	EPA 7470	456625	EPA 7470	456654
60232589005	R-MW-5	EPA 7470	456625	EPA 7470	456654
60232589006	R-MW-6	EPA 7470	456625	EPA 7470	456654
60232589007	R-MW-7	EPA 7470	456625	EPA 7470	456654
60232589008	R-MW-B1	EPA 7470	456625	EPA 7470	456654
60232589009	R-MW-B2	EPA 7470	456625	EPA 7470	456654
60232589010	R-DUP-1	EPA 7470	456625	EPA 7470	456654
60232589011	R-FB-1	EPA 7470	456625	EPA 7470	456654
60232589001	R-MW-1	EPA 903.1	243053		
60232589002	R-MW-2	EPA 903.1	243053		
60232589003	R-MW-3	EPA 903.1	243053		
60232589004	R-MW-4	EPA 903.1	243053		
60232589005	R-MW-5	EPA 903.1	243053		
60232589006	R-MW-6	EPA 903.1	243053		
60232589007	R-MW-7	EPA 903.1	243053		
60232589008	R-MW-B1	EPA 903.1	243053		
60232589009	R-MW-B2	EPA 903.1	243053		
60232589010	R-DUP-1	EPA 903.1	243053		
60232589011	R-FB-1	EPA 903.1	243053		
60232589012	R-MW-4 MS	EPA 903.1	243053		
60232589013	R-MW-4 MSD	EPA 903.1	243053		
60232589001	R-MW-1	EPA 904.0	243054		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60232589002	**R-MW-2**	EPA 904.0	243054		
60232589003	**R-MW-3**	EPA 904.0	243054		
60232589004	**R-MW-4**	EPA 904.0	243054		
60232589005	**R-MW-5**	EPA 904.0	243054		
60232589006	**R-MW-6**	EPA 904.0	243054		
60232589007	**R-MW-7**	EPA 904.0	243054		
60232589008	**R-MW-B1**	EPA 904.0	243054		
60232589009	**R-MW-B2**	EPA 904.0	243054		
60232589010	**R-DUP-1**	EPA 904.0	243054		
60232589011	**R-FB-1**	EPA 904.0	243054		
60232589012	**R-MW-4 MS**	EPA 904.0	243054		
60232589013	**R-MW-4 MSD**	EPA 904.0	243054		
60232589001	**R-MW-1**	SM 2540C	456308		
60232589002	**R-MW-2**	SM 2540C	456308		
60232589003	**R-MW-3**	SM 2540C	456308		
60232589004	**R-MW-4**	SM 2540C	456308		
60232589005	**R-MW-5**	SM 2540C	456308		
60232589006	**R-MW-6**	SM 2540C	456308		
60232589007	**R-MW-7**	SM 2540C	456308		
60232589008	**R-MW-B1**	SM 2540C	456308		
60232589009	**R-MW-B2**	SM 2540C	456308		
60232589010	**R-DUP-1**	SM 2540C	456308		
60232589011	**R-FB-1**	SM 2540C	456308		
60232589001	**R-MW-1**	SM 4500-H+B	456987		
60232589002	**R-MW-2**	SM 4500-H+B	456987		
60232589003	**R-MW-3**	SM 4500-H+B	456987		
60232589004	**R-MW-4**	SM 4500-H+B	456987		
60232589005	**R-MW-5**	SM 4500-H+B	456987		
60232589006	**R-MW-6**	SM 4500-H+B	456987		
60232589007	**R-MW-7**	SM 4500-H+B	456987		
60232589008	**R-MW-B1**	SM 4500-H+B	456987		
60232589009	**R-MW-B2**	SM 4500-H+B	457036		
60232589010	**R-DUP-1**	SM 4500-H+B	456987		
60232589011	**R-FB-1**	SM 4500-H+B	456987		
60232589001	**R-MW-1**	EPA 300.0	458213		
60232589001	**R-MW-1**	EPA 300.0	458452		
60232589002	**R-MW-2**	EPA 300.0	458213		
60232589002	**R-MW-2**	EPA 300.0	458452		
60232589003	**R-MW-3**	EPA 300.0	458213		
60232589003	**R-MW-3**	EPA 300.0	458452		
60232589004	**R-MW-4**	EPA 300.0	458213		
60232589004	**R-MW-4**	EPA 300.0	458452		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60232589

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60232589004	**R-MW-4**	EPA 300.0	459611		
60232589005	**R-MW-5**	EPA 300.0	458213		
60232589006	**R-MW-6**	EPA 300.0	458213		
60232589007	**R-MW-7**	EPA 300.0	458213		
60232589007	**R-MW-7**	EPA 300.0	458452		
60232589008	**R-MW-B1**	EPA 300.0	458213		
60232589008	**R-MW-B1**	EPA 300.0	458452		
60232589009	**R-MW-B2**	EPA 300.0	458213		
60232589009	**R-MW-B2**	EPA 300.0	458452		
60232589010	**R-DUP-1**	EPA 300.0	458213		
60232589010	**R-DUP-1**	EPA 300.0	458452		
60232589011	**R-FB-1**	EPA 300.0	458213		

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Sample Condition Upon Receipt

WO# : 60232589

60232589

SLC

Client Name: Golder

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

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

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

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

Thermometer Used: CF +0.7 T-266 / CF -0.5 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.7/16.9/16.2 **Corr. Factor** CF +0.7 CF -0.5 **Corrected** 1.4/17.6/16.9

Date and initials of person examining contents: PM 11/18/16

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	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	Collected 11/16/16
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Jann Check 11/18/16

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.

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Page: 1 of 1

Section A — **Required** Client Information:

Company:	Golder Associates
Address:	820 South Main Street, Suite 100
	St Charles, MO 63301
Email To:	maddock@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	**Standard**

Section B — **Required** Project Information:

Report To:	Mark Haddock (mhaddock@golder.com)
Copy To:	Jeffrey Ingram
Purchase Order No.:	
Project Name:	Ameren Rush Island Engery Center
Project Number:	153-1406.0002A

Section C — Invoice Information:

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

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location — ***STATE:*** MO

Section D — **Required** Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 & 228						Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																			N	N	N	N	N						
1	R-MW-1	WT	G				0927		4	1		3							1	1	1	1	2	1BP2U		2BP1N			60232589 001
2	R-MW-2	WT	G				1032		5	2		3							1	2	2	2	2	2BP3U					002
3	R-MW-3	WT	G				1130		4	1		3							1	1	1	1	2	1BP2U					003
4	R-MW-4	WT	G				1235		13	5		5	3						3	4	4	4	6	2BP3U	2BP2U	3BP3N	6BP1N		004
5	R-MW-5	WT	G				1347		4	1		3							1	1	1	1	2	1BP2U	2BP1N				005
6	R-MW-6	WT	G				1135		4	1		3							1	1	1	1	2						006
7	R-MW-7	WT	G				1025		4	1		3							1	1	1	1	2						007
8	R-MW-B1	WT	G				0925		4	1		3							1	1	1	1	2						008
9	R-MW-B2	WT	G				1441		4	1		3							1	1	1	1	2						009
10	R-DUP-1	WT	G				—		4	1		3							1	1	1	1	2						010
11	R-FB-1	WT	G				1003		4	1		3							1	1	1	1	2						011
12		WT	G																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl	Jeff Ingram (GOLDER)	11/17/16	1500	PACE	11/17/16	1500				
	PACE	11/17/16	1700	PACE	11/18/16	0335	1.4	X	X	X
							1.6	N		
							1.9	N		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jeff Ingram

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/17/16

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

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

February 20, 2017

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

RE: Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory on January 21, 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
Project Manager

Enclosures

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

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

CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

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

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60236480001	**R-MW-1**	Water	01/19/17 09:29	01/21/17 02:55
60236480002	**R-MW-2**	Water	01/19/17 10:28	01/21/17 02:55
60236480003	**R-MW-3**	Water	01/19/17 11:35	01/21/17 02:55
60236480004	**R-MW-4**	Water	01/19/17 13:10	01/21/17 02:55
60236480005	**R-MW-5**	Water	01/19/17 14:20	01/21/17 02:55
60236480006	**R-MW-6**	Water	01/19/17 14:40	01/21/17 02:55
60236480007	**R-MW-7**	Water	01/19/17 13:34	01/21/17 02:55
60236480008	**R-MW-B1**	Water	01/19/17 12:17	01/21/17 02:55
60236480009	**R-MW-B2**	Water	01/19/17 11:14	01/21/17 02:55
60236480010	**R-DUP-1**	Water	01/19/17 08:00	01/21/17 02:55
60236480011	**R-FB-1**	Water	01/19/17 13:21	01/21/17 02:55
60236480012	**R-MW-5 MS**	Water	01/19/17 14:20	01/21/17 02:55
60236480013	**R-MW-5 MSD**	Water	01/19/17 14:20	01/21/17 02:55

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60236480001	**R-MW-1**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480002	**R-MW-2**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480003	**R-MW-3**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480004	**R-MW-4**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480005	**R-MW-5**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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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Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

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
60236480006	**R-MW-6**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480007	**R-MW-7**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480008	**R-MW-B1**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480009	**R-MW-B2**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480010	**R-DUP-1**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	ZBM	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
60236480011	**R-FB-1**	EPA 200.7	ZBM	8	PASI-K
		EPA 200.8	SMW	6	PASI-K
		EPA 7470	ZBM	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
60236480012	**R-MW-5 MS**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60236480013	**R-MW-5 MSD**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-1 **Lab ID: 60236480001** Collected: 01/19/17 09:29 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**18.1**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 11:59	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 11:59	7440-41-7	
Boron	**1550**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 11:59	7440-42-8	
Calcium	**43600**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 11:59	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 11:59	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 11:59	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 11:59	7439-93-2	
Molybdenum	**32.8**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 11:59	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.87J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 16:09	7440-36-0	B
Arsenic	**9.4**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 16:09	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 16:09	7440-43-9	
Chromium	**0.46J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 16:09	7440-47-3	B
Selenium	**3.4**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 16:09	7782-49-2	
Thallium	**0.12J**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 16:09	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 09:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**395**	mg/L	5.0	5.0	1		01/26/17 09:01		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.6**	Std. Units	0.10	0.10	1		02/02/17 09:45		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.9**	mg/L	2.0	1.0	2		01/25/17 15:33	16887-00-6	
Fluoride	**0.16J**	mg/L	0.20	0.027	1		01/24/17 11:05	16984-48-8	
Sulfate	**213**	mg/L	20.0	3.1	20		01/25/17 15:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-2 **Lab ID: 60236480002** Collected: 01/19/17 10:28 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**12.2**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:01	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:01	7440-41-7	
Boron	**4850**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:01	7440-42-8	
Calcium	**12100**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:01	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:01	7440-48-4	
Lead	**9.7**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:01	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:01	7439-93-2	
Molybdenum	**160**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:01	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**4.6**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 16:13	7440-36-0	
Arsenic	**224**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 16:13	7440-38-2	
Cadmium	**0.14J**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 16:13	7440-43-9	
Chromium	**0.86J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 16:13	7440-47-3	B
Selenium	**1.1**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 16:13	7782-49-2	
Thallium	**<0.052**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 16:13	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 09:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**874**	mg/L	5.0	5.0	1		01/26/17 09:03		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10.6**	Std. Units	0.10	0.10	1		02/02/17 09:46		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**27.7**	mg/L	2.0	1.0	2		01/25/17 16:04	16887-00-6	
Fluoride	**1.2**	mg/L	0.20	0.027	1		01/24/17 11:47	16984-48-8	
Sulfate	**321**	mg/L	20.0	3.1	20		01/25/17 16:19	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-3 **Lab ID: 60236480003** Collected: 01/19/17 11:35 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**16.3**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:03	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:03	7440-41-7	
Boron	**14500**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:03	7440-42-8	
Calcium	**6120**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:03	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:03	7440-48-4	
Lead	**5.3**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:03	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:03	7439-93-2	
Molybdenum	**697**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:03	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.22J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 16:17	7440-36-0	B
Arsenic	**72.0**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 16:17	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 16:17	7440-43-9	
Chromium	**0.80J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 16:17	7440-47-3	B
Selenium	**0.55J**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 16:17	7782-49-2	
Thallium	**<0.052**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 16:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 09:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**718**	mg/L	5.0	5.0	1		01/26/17 09:04		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.6**	Std. Units	0.10	0.10	1		02/02/17 09:49		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**30.2**	mg/L	2.0	1.0	2		01/25/17 16:35	16887-00-6	
Fluoride	**0.82**	mg/L	0.20	0.027	1		01/24/17 12:01	16984-48-8	
Sulfate	**205**	mg/L	20.0	3.1	20		01/25/17 16:50	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-4 **Lab ID: 60236480004** Collected: 01/19/17 13:10 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**280**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:06	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:06	7440-41-7	
Boron	**4180**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:06	7440-42-8	
Calcium	**69400**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:06	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:06	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:06	7439-92-1	
Lithium	**44.6**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:06	7439-93-2	
Molybdenum	**96.5**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:06	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.11J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 16:31	7440-36-0	B
Arsenic	**6.7**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 16:31	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 16:31	7440-43-9	
Chromium	**0.41J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 16:31	7440-47-3	B
Selenium	**0.12J**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 16:31	7782-49-2	
Thallium	**<0.052**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 16:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 09:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**405**	mg/L	5.0	5.0	1		01/26/17 09:05		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.10	1		02/02/17 09:51		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**18.5**	mg/L	2.0	1.0	2		01/25/17 17:06	16887-00-6	
Fluoride	**0.82**	mg/L	0.20	0.027	1		01/24/17 12:43	16984-48-8	
Sulfate	**29.7**	mg/L	2.0	0.31	2		01/25/17 17:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-5 **Lab ID: 60236480005** Collected: 01/19/17 14:20 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**413**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:08	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:08	7440-41-7	
Boron	**98.8J**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:08	7440-42-8	
Calcium	**130000**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:08	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:08	7440-48-4	
Lead	**3.0J**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:08	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:08	7439-93-2	
Molybdenum	**0.86J**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:08	7439-98-7	B
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.11J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 16:35	7440-36-0	B
Arsenic	**4.3**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 16:35	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 16:35	7440-43-9	
Chromium	**0.52J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 16:35	7440-47-3	B
Selenium	**<0.12**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 16:35	7782-49-2	
Thallium	**<0.052**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 16:35	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 09:50	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**413**	mg/L	5.0	5.0	1		01/26/17 09:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		02/02/17 09:57		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.7**	mg/L	1.0	0.50	1		01/24/17 12:57	16887-00-6	
Fluoride	**0.12J**	mg/L	0.20	0.027	1		01/24/17 12:57	16984-48-8	
Sulfate	**4.9**	mg/L	1.0	0.15	1		01/24/17 12:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-6 **Lab ID: 60236480006** Collected: 01/19/17 14:40 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**190**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:19	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:19	7440-41-7	
Boron	**2130**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:19	7440-42-8	
Calcium	**90500**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:19	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:19	7440-48-4	
Lead	**2.6J**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:19	7439-92-1	
Lithium	**7.0J**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:19	7439-93-2	
Molybdenum	**1.6J**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:19	7439-98-7	B
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.14J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 16:48	7440-36-0	B
Arsenic	**0.50J**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 16:48	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 16:48	7440-43-9	
Chromium	**0.46J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 16:48	7440-47-3	B
Selenium	**0.24J**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 16:48	7782-49-2	
Thallium	**0.090J**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 16:48	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 09:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**350**	mg/L	5.0	5.0	1		01/26/17 09:07		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		02/02/17 10:01		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**13.0**	mg/L	1.0	0.50	1		01/24/17 13:25	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.027	1		01/24/17 13:25	16984-48-8	
Sulfate	**19.0**	mg/L	1.0	0.15	1		01/24/17 13:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-7 **Lab ID: 60236480007** Collected: 01/19/17 13:34 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**328**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:23	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:23	7440-41-7	
Boron	**2420**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:23	7440-42-8	
Calcium	**77300**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:23	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:23	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:23	7439-92-1	
Lithium	**38.7**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:23	7439-93-2	
Molybdenum	**180**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:23	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.14J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 16:53	7440-36-0	B
Arsenic	**96.6**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 16:53	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 16:53	7440-43-9	
Chromium	**0.27J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 16:53	7440-47-3	B
Selenium	**<0.12**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 16:53	7782-49-2	
Thallium	**0.063J**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 16:53	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 09:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**371**	mg/L	5.0	5.0	1		01/26/17 09:07		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		02/02/17 09:56		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.3**	mg/L	1.0	0.50	1		01/24/17 13:38	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	0.027	1		01/24/17 13:38	16984-48-8	
Sulfate	**42.8**	mg/L	5.0	0.77	5		01/25/17 18:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-B1 **Lab ID: 60236480008** Collected: 01/19/17 12:17 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**556**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:25	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:25	7440-41-7	
Boron	**115**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:25	7440-42-8	
Calcium	**161000**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:25	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:25	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:25	7439-92-1	
Lithium	**64.7**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:25	7439-93-2	
Molybdenum	**1.9J**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:25	7439-98-7	B
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.13J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 17:02	7440-36-0	B
Arsenic	**24.3**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 17:02	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 17:02	7440-43-9	
Chromium	**0.24J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 17:02	7440-47-3	B
Selenium	**<0.12**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 17:02	7782-49-2	
Thallium	**0.071J**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 17:02	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 10:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**704**	mg/L	5.0	5.0	1		01/26/17 09:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		02/02/17 09:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**43.0**	mg/L	5.0	2.5	5		01/25/17 18:53	16887-00-6	
Fluoride	**0.11J**	mg/L	0.20	0.027	1		01/24/17 13:52	16984-48-8	
Sulfate	**40.6**	mg/L	5.0	0.77	5		01/25/17 18:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-B2 **Lab ID: 60236480009** Collected: 01/19/17 11:14 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**448**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:27	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:27	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:27	7440-42-8	
Calcium	**108000**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:27	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:27	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:27	7439-92-1	
Lithium	**9.7J**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:27	7439-93-2	
Molybdenum	**0.98J**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:27	7439-98-7	B
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.11J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 17:06	7440-36-0	B
Arsenic	**3.7**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 17:06	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 17:06	7440-43-9	
Chromium	**0.42J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 17:06	7440-47-3	B
Selenium	**<0.12**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 17:06	7782-49-2	
Thallium	**<0.052**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 17:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 10:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**426**	mg/L	5.0	5.0	1		01/26/17 09:09		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.5**	Std. Units	0.10	0.10	1		02/02/17 09:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**33.5**	mg/L	5.0	2.5	5		01/25/17 19:09	16887-00-6	
Fluoride	**0.15J**	mg/L	0.20	0.027	1		01/24/17 14:06	16984-48-8	
Sulfate	**14.3**	mg/L	1.0	0.15	1		01/24/17 14:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-DUP-1 **Lab ID: 60236480010** Collected: 01/19/17 08:00 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**299**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:29	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:29	7440-41-7	
Boron	**4420**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:29	7440-42-8	
Calcium	**74300**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:29	7440-70-2	
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:29	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:29	7439-92-1	
Lithium	**48.3**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:29	7439-93-2	
Molybdenum	**102**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:29	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.11J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 17:10	7440-36-0	B
Arsenic	**7.5**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 17:10	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 17:10	7440-43-9	
Chromium	**0.40J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 17:10	7440-47-3	B
Selenium	**0.14J**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 17:10	7782-49-2	
Thallium	**<0.052**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 17:10	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 10:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**414**	mg/L	5.0	5.0	1		01/26/17 09:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		02/02/17 09:44		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**18.5**	mg/L	2.0	1.0	2		01/25/17 19:24	16887-00-6	
Fluoride	**0.83**	mg/L	0.20	0.027	1		01/24/17 14:20	16984-48-8	
Sulfate	**29.5**	mg/L	2.0	0.31	2		01/25/17 19:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-FB-1 **Lab ID: 60236480011** Collected: 01/19/17 13:21 Received: 01/21/17 02:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**<0.58**	ug/L	5.0	0.58	1	01/24/17 13:30	01/27/17 12:32	7440-39-3	
Beryllium	**<0.26**	ug/L	1.0	0.26	1	01/24/17 13:30	01/27/17 12:32	7440-41-7	
Boron	**<50.0**	ug/L	100	50.0	1	01/24/17 13:30	01/27/17 12:32	7440-42-8	
Calcium	**31.6J**	ug/L	100	8.1	1	01/24/17 13:30	01/27/17 12:32	7440-70-2	B
Cobalt	**<0.72**	ug/L	5.0	0.72	1	01/24/17 13:30	01/27/17 12:32	7440-48-4	
Lead	**<2.5**	ug/L	5.0	2.5	1	01/24/17 13:30	01/27/17 12:32	7439-92-1	
Lithium	**<4.9**	ug/L	10.0	4.9	1	01/24/17 13:30	01/27/17 12:32	7439-93-2	
Molybdenum	**<0.52**	ug/L	20.0	0.52	1	01/24/17 13:30	01/27/17 12:32	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.099J**	ug/L	1.0	0.055	1	01/24/17 13:30	02/01/17 17:24	7440-36-0	B
Arsenic	**<0.25**	ug/L	1.0	0.25	1	01/24/17 13:30	02/01/17 17:24	7440-38-2	
Cadmium	**<0.082**	ug/L	0.50	0.082	1	01/24/17 13:30	02/01/17 17:24	7440-43-9	
Chromium	**0.89J**	ug/L	1.0	0.16	1	01/24/17 13:30	02/01/17 17:24	7440-47-3	B
Selenium	**<0.12**	ug/L	1.0	0.12	1	01/24/17 13:30	02/01/17 17:24	7782-49-2	
Thallium	**<0.052**	ug/L	1.0	0.052	1	01/24/17 13:30	02/01/17 17:24	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.039**	ug/L	0.20	0.039	1	02/01/17 08:35	02/02/17 10:07	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**7.5**	mg/L	5.0	5.0	1		01/26/17 09:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**5.6**	Std. Units	0.10	0.10	1		02/02/17 09:54		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		01/24/17 14:34	16887-00-6	
Fluoride	**<0.027**	mg/L	0.20	0.027	1		01/24/17 14:34	16984-48-8	
Sulfate	**<0.15**	mg/L	1.0	0.15	1		01/24/17 14:34	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 463895 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

METHOD BLANK: 1898807 Matrix: Water
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.039	0.20	0.039	02/02/17 09:29	

LABORATORY CONTROL SAMPLE: 1898808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1898809 1898810

Parameter	Units	60236480005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.039	5	5	5.2	5.3	105	105	75-125	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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 462989 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

METHOD BLANK: 1895622 Matrix: Water
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	01/27/17 11:57	
Beryllium	ug/L	0.19J	1.0	0.16	01/27/17 11:57	
Boron	ug/L	4.1J	100	3.5	01/27/17 11:57	
Calcium	ug/L	<36.0	100	36.0	01/27/17 11:57	
Cobalt	ug/L	<0.73	5.0	0.73	01/27/17 11:57	
Lead	ug/L	<2.4	5.0	2.4	01/27/17 11:57	
Lithium	ug/L	<2.9	10.0	2.9	01/27/17 11:57	
Molybdenum	ug/L	2.3J	20.0	1.3	01/27/17 11:57	

LABORATORY CONTROL SAMPLE: 1895623

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1080	108	85-115	
Beryllium	ug/L	1000	1060	106	85-115	
Boron	ug/L	1000	977	98	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Cobalt	ug/L	1000	993	99	85-115	
Lead	ug/L	1000	1040	104	85-115	
Lithium	ug/L	1000	1090	109	85-115	
Molybdenum	ug/L	1000	995	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895624 1895625

Parameter	Units	60236480005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	413	1000	1000	1510	1520	110	110	70-130	0	20	
Beryllium	ug/L	<0.26	1000	1000	1090	1090	109	109	70-130	0	20	
Boron	ug/L	98.8J	1000	1000	1100	1090	100	99	70-130	1	20	
Calcium	ug/L	130000	10000	10000	139000	141000	90	113	70-130	2	20	
Cobalt	ug/L	<0.72	1000	1000	980	974	98	97	70-130	1	20	
Lead	ug/L	3.0J	1000	1000	1030	1030	103	102	70-130	0	20	
Lithium	ug/L	<4.9	1000	1000	1140	1150	114	114	70-130	0	20	
Molybdenum	ug/L	0.86J	1000	1000	1010	1010	101	101	70-130	0	20	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

MATRIX SPIKE SAMPLE: 1895626

Parameter	Units	60236480006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	190	1000	1320	113	70-130	
Beryllium	ug/L	<0.26	1000	1120	111	70-130	
Boron	ug/L	2130	1000	3120	99	70-130	
Calcium	ug/L	90500	10000	99800	94	70-130	
Cobalt	ug/L	<0.72	1000	1000	100	70-130	
Lead	ug/L	2.6J	1000	1050	104	70-130	
Lithium	ug/L	7.0J	1000	1170	116	70-130	
Molybdenum	ug/L	1.6J	1000	1030	103	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 462990 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

METHOD BLANK: 1895632 Matrix: Water
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.098J	1.0	0.026	02/01/17 16:00	
Arsenic	ug/L	<0.052	1.0	0.052	02/01/17 16:00	
Cadmium	ug/L	<0.018	0.50	0.018	02/01/17 16:00	
Chromium	ug/L	0.17J	1.0	0.054	02/01/17 16:00	
Selenium	ug/L	<0.086	1.0	0.086	02/01/17 16:00	
Thallium	ug/L	0.051J	1.0	0.036	02/01/17 16:00	

LABORATORY CONTROL SAMPLE: 1895633

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.0	98	85-115	
Arsenic	ug/L	40	39.8	99	85-115	
Cadmium	ug/L	40	39.4	98	85-115	
Chromium	ug/L	40	39.1	98	85-115	
Selenium	ug/L	40	41.4	103	85-115	
Thallium	ug/L	40	35.8	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895634 1895635

Parameter	Units	60236480005 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	39.6	39.8	99	99	70-130	1	20	
Arsenic	ug/L	4.3	40	40	43.7	44.5	98	100	70-130	2	20	
Cadmium	ug/L	<0.082	40	40	38.3	37.9	96	95	70-130	1	20	
Chromium	ug/L	0.52J	40	40	39.9	39.4	98	97	70-130	1	20	
Selenium	ug/L	<0.12	40	40	37.9	39.4	95	99	70-130	4	20	
Thallium	ug/L	<0.052	40	40	37.6	37.3	94	93	70-130	1	20	

MATRIX SPIKE SAMPLE: 1895636

Parameter	Units	60236480007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	0.14J	40	39.8	99	70-130	
Arsenic	ug/L	96.6	40	132	88	70-130	
Cadmium	ug/L	<0.082	40	38.1	95	70-130	
Chromium	ug/L	0.27J	40	39.2	97	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

MATRIX SPIKE SAMPLE: 1895636

Parameter	Units	60236480007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Selenium	ug/L	<0.12	40	36.2	90	70-130	
Thallium	ug/L	0.063J	40	36.8	92	70-130	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 463313 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

METHOD BLANK: 1896649 Matrix: Water
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	01/26/17 08:59	

LABORATORY CONTROL SAMPLE: 1896650

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	995	99	80-120	

SAMPLE DUPLICATE: 1896651

Parameter	Units	60236480005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	413	415	0	10	

SAMPLE DUPLICATE: 1896652

Parameter	Units	60236480009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	426	436	2	10	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 464174 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

SAMPLE DUPLICATE: 1899720

Parameter	Units	60236480005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.3	7.2	0	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 462961 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

METHOD BLANK: 1895519 Matrix: Water
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	01/24/17 10:38	
Fluoride	mg/L	<0.027	0.20	0.027	01/24/17 10:38	
Sulfate	mg/L	<0.15	1.0	0.15	01/24/17 10:38	

LABORATORY CONTROL SAMPLE: 1895520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	101	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1895521 1895522

Parameter	Units	60236480001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.16J	2.5	2.5	2.8	2.9	106	108	80-120	1	15	

MATRIX SPIKE SAMPLE: 1895523

Parameter	Units	60236480005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	3.7	5	9.0	106	80-120	
Fluoride	mg/L	0.12J	2.5	2.9	111	80-120	
Sulfate	mg/L	4.9	5	10.3	109	80-120	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 463224 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480007, 60236480008, 60236480009, 60236480010

METHOD BLANK: 1896364 Matrix: Water
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480007, 60236480008, 60236480009, 60236480010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	01/25/17 15:02	
Sulfate	mg/L	<0.15	1.0	0.15	01/25/17 15:02	

LABORATORY CONTROL SAMPLE: 1896365

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1896366 1896367

Parameter	Units	60236480004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	18.5	10	10	29.6	29.5	111	110	80-120	0	15	

MATRIX SPIKE SAMPLE: 1896368

Parameter	Units	60236480007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.3		37.8			
Sulfate	mg/L	42.8	25	69.8	108	80-120	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-1 **Lab ID: 60236480001** Collected: 01/19/17 09:29 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.073 ± 0.335 (0.790) C:NA T:90%**	pCi/L	02/15/17 00:12	13982-63-3	
Radium-228	EPA 904.0	**0.533 ± 0.690 (1.48) C:58% T:86%**	pCi/L	02/14/17 12:16	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-2 **Lab ID: 60236480002** Collected: 01/19/17 10:28 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.402 (0.902) C:NA T:80%**	pCi/L	02/15/17 00:45	13982-63-3	
Radium-228	EPA 904.0	**0.291 ± 0.687 (1.52) C:51% T:77%**	pCi/L	02/14/17 12:16	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-3 **Lab ID: 60236480003** Collected: 01/19/17 11:35 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.348 (0.709) C:NA T:92%**	pCi/L	02/15/17 00:45	13982-63-3	
Radium-228	EPA 904.0	**0.669 ± 0.708 (1.48) C:58% T:75%**	pCi/L	02/14/17 12:16	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-4 **Lab ID: 60236480004** Collected: 01/19/17 13:10 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.209 ± 0.362 (0.646) C:NA T:101%**	pCi/L	02/15/17 00:45	13982-63-3	
Radium-228	EPA 904.0	**0.133 ± 0.691 (1.56) C:56% T:85%**	pCi/L	02/14/17 17:14	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-5 **Lab ID: 60236480005** Collected: 01/19/17 14:20 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.333 (0.678) C:NA T:91%**	pCi/L	02/15/17 00:12	13982-63-3	
Radium-228	EPA 904.0	**0.549 ± 0.476 (0.970) C:73% T:85%**	pCi/L	02/14/17 12:16	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-6 **Lab ID: 60236480006** Collected: 01/19/17 14:40 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.612 ± 0.519 (0.643) C:NA T:88%**	pCi/L	02/15/17 00:45	13982-63-3	
Radium-228	EPA 904.0	**0.612 ± 0.611 (1.27) C:59% T:80%**	pCi/L	02/14/17 17:14	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-7 **Lab ID: 60236480007** Collected: 01/19/17 13:34 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.233 ± 0.355 (0.571) C:NA T:92%**	pCi/L	02/15/17 00:45	13982-63-3	
Radium-228	EPA 904.0	**0.515 ± 0.640 (1.36) C:58% T:83%**	pCi/L	02/14/17 17:14	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-B1 **Lab ID: 60236480008** Collected: 01/19/17 12:17 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.293 ± 0.408 (0.681) C:NA T:96%**	pCi/L	02/15/17 00:45	13982-63-3	
Radium-228	EPA 904.0	**0.622 ± 0.525 (1.06) C:68% T:82%**	pCi/L	02/14/17 17:14	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-B2 **Lab ID: 60236480009** Collected: 01/19/17 11:14 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.286 ± 0.398 (0.664) C:NA T:96%**	pCi/L	02/15/17 01:09	13982-63-3	
Radium-228	EPA 904.0	**0.424 ± 0.470 (0.984) C:62% T:84%**	pCi/L	02/14/17 17:11	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-DUP-1 **Lab ID: 60236480010** Collected: 01/19/17 08:00 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.302 ± 0.420 (0.701) C:NA T:92%**	pCi/L	02/15/17 01:09	13982-63-3	
Radium-228	EPA 904.0	**0.212 ± 0.461 (1.02) C:65% T:82%**	pCi/L	02/14/17 17:11	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-FB-1 **Lab ID: 60236480011** Collected: 01/19/17 13:21 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.148 ± 0.357 (0.892) C:NA T:93%**	pCi/L	02/15/17 01:09	13982-63-3	
Radium-228	EPA 904.0	**0.248 ± 0.377 (0.813) C:68% T:79%**	pCi/L	02/14/17 12:17	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-5 MS **Lab ID: 60236480012** Collected: 01/19/17 14:20 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**97.8%REC ± NA (NA)**	pCi/L	02/15/17 00:29	13982-63-3	
Radium-228	EPA 904.0	**93.2 %REC +/- NA (NA) C:NA T:NA**	pCi/L	02/14/17 13:00	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Sample: R-MW-5 MSD **Lab ID: 60236480013** Collected: 01/19/17 14:20 Received: 01/21/17 02:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**100.2%REC 2.45RPD ± NA (NA)**	pCi/L	02/15/17 00:29	13982-63-3	
Radium-228	EPA 904.0	**94.6 %REC 1.54 RPD +/- NA (NA) C:NA T:NA**	pCi/L	02/14/17 13:01	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 248441 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011, 60236480012, 60236480013

METHOD BLANK: 1222154 Matrix: Water
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011, 60236480012, 60236480013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.708 ± 0.454 (0.847) C:60% T:83%	pCi/L	02/14/17 12:07	

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

QC Batch: 248439 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011, 60236480012, 60236480013

METHOD BLANK: 1222149 Matrix: Water
Associated Lab Samples: 60236480001, 60236480002, 60236480003, 60236480004, 60236480005, 60236480006, 60236480007, 60236480008, 60236480009, 60236480010, 60236480011, 60236480012, 60236480013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.349 (0.563) C:NA T:93%	pCi/L	02/15/17 00:12	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

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

B	Analyte was detected in the associated method blank.
H6	Analysis initiated outside of the 15 minute EPA required holding time.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236480001	R-MW-1	EPA 200.7	462989	EPA 200.7	463078
60236480002	R-MW-2	EPA 200.7	462989	EPA 200.7	463078
60236480003	R-MW-3	EPA 200.7	462989	EPA 200.7	463078
60236480004	R-MW-4	EPA 200.7	462989	EPA 200.7	463078
60236480005	R-MW-5	EPA 200.7	462989	EPA 200.7	463078
60236480006	R-MW-6	EPA 200.7	462989	EPA 200.7	463078
60236480007	R-MW-7	EPA 200.7	462989	EPA 200.7	463078
60236480008	R-MW-B1	EPA 200.7	462989	EPA 200.7	463078
60236480009	R-MW-B2	EPA 200.7	462989	EPA 200.7	463078
60236480010	R-DUP-1	EPA 200.7	462989	EPA 200.7	463078
60236480011	R-FB-1	EPA 200.7	462989	EPA 200.7	463078
60236480001	R-MW-1	EPA 200.8	462990	EPA 200.8	463079
60236480002	R-MW-2	EPA 200.8	462990	EPA 200.8	463079
60236480003	R-MW-3	EPA 200.8	462990	EPA 200.8	463079
60236480004	R-MW-4	EPA 200.8	462990	EPA 200.8	463079
60236480005	R-MW-5	EPA 200.8	462990	EPA 200.8	463079
60236480006	R-MW-6	EPA 200.8	462990	EPA 200.8	463079
60236480007	R-MW-7	EPA 200.8	462990	EPA 200.8	463079
60236480008	R-MW-B1	EPA 200.8	462990	EPA 200.8	463079
60236480009	R-MW-B2	EPA 200.8	462990	EPA 200.8	463079
60236480010	R-DUP-1	EPA 200.8	462990	EPA 200.8	463079
60236480011	R-FB-1	EPA 200.8	462990	EPA 200.8	463079
60236480001	R-MW-1	EPA 7470	463895	EPA 7470	464007
60236480002	R-MW-2	EPA 7470	463895	EPA 7470	464007
60236480003	R-MW-3	EPA 7470	463895	EPA 7470	464007
60236480004	R-MW-4	EPA 7470	463895	EPA 7470	464007
60236480005	R-MW-5	EPA 7470	463895	EPA 7470	464007
60236480006	R-MW-6	EPA 7470	463895	EPA 7470	464007
60236480007	R-MW-7	EPA 7470	463895	EPA 7470	464007
60236480008	R-MW-B1	EPA 7470	463895	EPA 7470	464007
60236480009	R-MW-B2	EPA 7470	463895	EPA 7470	464007
60236480010	R-DUP-1	EPA 7470	463895	EPA 7470	464007
60236480011	R-FB-1	EPA 7470	463895	EPA 7470	464007
60236480001	R-MW-1	EPA 903.1	248439		
60236480002	R-MW-2	EPA 903.1	248439		
60236480003	R-MW-3	EPA 903.1	248439		
60236480004	R-MW-4	EPA 903.1	248439		
60236480005	R-MW-5	EPA 903.1	248439		
60236480006	R-MW-6	EPA 903.1	248439		
60236480007	R-MW-7	EPA 903.1	248439		
60236480008	R-MW-B1	EPA 903.1	248439		
60236480009	R-MW-B2	EPA 903.1	248439		
60236480010	R-DUP-1	EPA 903.1	248439		
60236480011	R-FB-1	EPA 903.1	248439		
60236480012	R-MW-5 MS	EPA 903.1	248439		
60236480013	R-MW-5 MSD	EPA 903.1	248439		
60236480001	R-MW-1	EPA 904.0	248441		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236480002	R-MW-2	EPA 904.0	248441		
60236480003	R-MW-3	EPA 904.0	248441		
60236480004	R-MW-4	EPA 904.0	248441		
60236480005	R-MW-5	EPA 904.0	248441		
60236480006	R-MW-6	EPA 904.0	248441		
60236480007	R-MW-7	EPA 904.0	248441		
60236480008	R-MW-B1	EPA 904.0	248441		
60236480009	R-MW-B2	EPA 904.0	248441		
60236480010	R-DUP-1	EPA 904.0	248441		
60236480011	R-FB-1	EPA 904.0	248441		
60236480012	R-MW-5 MS	EPA 904.0	248441		
60236480013	R-MW-5 MSD	EPA 904.0	248441		
60236480001	R-MW-1	SM 2540C	463313		
60236480002	R-MW-2	SM 2540C	463313		
60236480003	R-MW-3	SM 2540C	463313		
60236480004	R-MW-4	SM 2540C	463313		
60236480005	R-MW-5	SM 2540C	463313		
60236480006	R-MW-6	SM 2540C	463313		
60236480007	R-MW-7	SM 2540C	463313		
60236480008	R-MW-B1	SM 2540C	463313		
60236480009	R-MW-B2	SM 2540C	463313		
60236480010	R-DUP-1	SM 2540C	463313		
60236480011	R-FB-1	SM 2540C	463313		
60236480001	R-MW-1	SM 4500-H+B	464174		
60236480002	R-MW-2	SM 4500-H+B	464174		
60236480003	R-MW-3	SM 4500-H+B	464174		
60236480004	R-MW-4	SM 4500-H+B	464174		
60236480005	R-MW-5	SM 4500-H+B	464174		
60236480006	R-MW-6	SM 4500-H+B	464174		
60236480007	R-MW-7	SM 4500-H+B	464174		
60236480008	R-MW-B1	SM 4500-H+B	464174		
60236480009	R-MW-B2	SM 4500-H+B	464174		
60236480010	R-DUP-1	SM 4500-H+B	464174		
60236480011	R-FB-1	SM 4500-H+B	464174		
60236480001	R-MW-1	EPA 300.0	462961		
60236480001	R-MW-1	EPA 300.0	463224		
60236480002	R-MW-2	EPA 300.0	462961		
60236480002	R-MW-2	EPA 300.0	463224		
60236480003	R-MW-3	EPA 300.0	462961		
60236480003	R-MW-3	EPA 300.0	463224		
60236480004	R-MW-4	EPA 300.0	462961		
60236480004	R-MW-4	EPA 300.0	463224		
60236480005	R-MW-5	EPA 300.0	462961		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60236480

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60236480006	**R-MW-6**	EPA 300.0	462961		
60236480007	**R-MW-7**	EPA 300.0	462961		
60236480007	**R-MW-7**	EPA 300.0	463224		
60236480008	**R-MW-B1**	EPA 300.0	462961		
60236480008	**R-MW-B1**	EPA 300.0	463224		
60236480009	**R-MW-B2**	EPA 300.0	462961		
60236480009	**R-MW-B2**	EPA 300.0	463224		
60236480010	**R-DUP-1**	EPA 300.0	462961		
60236480010	**R-DUP-1**	EPA 300.0	463224		
60236480011	**R-FB-1**	EPA 300.0	462961		

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Sample Condition Upon Receipt

WO# : 60236480

60236480

Client Name: Golder

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

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

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

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

Thermometer Used: T-266 (CF +1.5) / T-239 (CF +0.9) **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 0.1/12.1/10.9 **Corr. Factor** CF +1.5 / CF +0.9 **Corrected** 1.4/13.6/12.4

Date and initials of person examining contents: PVI 1/21/17

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jami Check Date: 1/23/17

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A — **Required** Client Information:

Company:	Golder Associates
Address:	820 South Main Street, Suite 100
	St Charles, MO 63301
Email To:	maddock@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	**Standard**

Section B — **Required** Project Information:

Report To:	Mark Haddock (mhaddock@golder.com)
Copy To:	Jeffrey Ingram
Purchase Order No.:	
Project Name:	Ameren Rush Island Engery Center
Project Number:	153-1406.0002A

Section C — Invoice Information:

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

REGULATORY AGENCY

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

Site Location STATE: MO

Section D — **Required** Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 & 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N		60236180
1	R-MW-1	WT	G			1/9/17	0929		4	1		3							1	1	1	1	2		1BP3N 2.5° 1BP2U 2BP/N 001
2	R-MW-2	WT	G				1028		4	1		1							1	1	1	1	1		002
3	R-MW-3	WT	G				1135		4	1		1							1	1	1	1	1		003
4	R-MW-4	WT	G				1310		4	1		1							1	1	1	1	1		004
5	R-MW-5	WT	G				1420		12	3		9							3	3	3	3	6		3BP3N 20 3BP2U 6BP/N 005
6	R-MW-6	WT	G				1440		4	1		3							1	1	1	1	2		006
7	R-MW-7	WT	G				1334		4	1		1							1	1	1	1	1		007
8	R-MW-B1	WT	G				1217		4	1		1							1	1	1	1	1		008
9	R-MW-B2	WT	G				1114		4	1		1							1	1	1	1	1		009
10	R-DUP-1	WT	G				—		4	1		1							1	1	1	1	1		010
11	R-FB-1	WT	G				1321		4	1		1							1	1	1	1	1		011
12		WT	G																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl	T Goodwin/Golder	1/20/17	0900	[signature]	1/20/17	09:13				
				[signature]	1/21/17	0255	1.4	Y	Y	Y
							13.6	N		
							12.4	Y		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tommy Goodwin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 01/19/17

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

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

March 29, 2017

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

RE: Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory on March 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,

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

Enclosures

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

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

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60239078001	**R-MW-1**	Water	03/06/17 09:33	03/07/17 05:15
60239078002	**R-MW-2**	Water	03/06/17 10:31	03/07/17 05:15
60239078003	**R-MW-3**	Water	03/06/17 11:25	03/07/17 05:15
60239078004	**R-MW-4**	Water	03/06/17 12:31	03/07/17 05:15
60239078005	**R-MW-5**	Water	03/06/17 13:33	03/07/17 05:15
60239078006	**R-MW-6**	Water	03/06/17 13:15	03/07/17 05:15
60239078007	**R-MW-7**	Water	03/06/17 12:30	03/07/17 05:15
60239078008	**R-MW-B1**	Water	03/06/17 11:35	03/07/17 05:15
60239078009	**R-MW-B2**	Water	03/06/17 10:50	03/07/17 05:15
60239078010	**R-DUP-1**	Water	03/06/17 08:00	03/07/17 05:15
60239078011	**R-FB-1**	Water	03/06/17 12:20	03/07/17 05:15
60239078012	**R-MW-5 MS**	Water	03/06/17 13:33	03/07/17 05:15
60239078013	**R-MW-5 MSD**	Water	03/06/17 13:33	03/07/17 05:15

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60239078001	**R-MW-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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239078002	**R-MW-2**	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239078003	**R-MW-3**	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239078004	**R-MW-4**	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239078005	**R-MW-5**	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

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

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
60239078006	**R-MW-6**	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239078007	**R-MW-7**	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239078008	**R-MW-B1**	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239078009	**R-MW-B2**	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60239078010	**R-DUP-1**	EPA 200.7	TDS	8	PASI-K
		EPA 200.8	JGP	6	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	NDJ	1	PASI-K
		EPA 903.1	KAC	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
60239078011	**R-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	KAC	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
60239078012	**R-MW-5 MS**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60239078013	**R-MW-5 MSD**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-1 **Lab ID: 60239078001** Collected: 03/06/17 09:33 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**19.2**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 12:38	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 12:38	7440-41-7	
Boron	**1870**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 12:38	7440-42-8	
Calcium	**41500**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 12:38	7440-70-2	
Cobalt	**0.86J**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 12:38	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 12:38	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 12:38	7439-93-2	
Molybdenum	**40.0**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 12:38	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.88J**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 13:06	7440-36-0	
Arsenic	**12.8**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 13:06	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 13:06	7440-43-9	
Chromium	**2.2**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 13:06	7440-47-3	
Selenium	**3.5**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 13:06	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 13:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**385**	mg/L	5.0	5.0	1		03/07/17 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.4**	Std. Units	0.10	0.10	1		03/13/17 09:15		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**20.1**	mg/L	2.0	1.0	2		03/10/17 12:56	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.10	1		03/10/17 12:41	16984-48-8	
Sulfate	**208**	mg/L	20.0	10.0	20		03/10/17 13:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-2 **Lab ID: 60239078002** Collected: 03/06/17 10:31 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**12.0**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 12:40	7440-39-3	
Beryllium	**0.23J**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 12:40	7440-41-7	B
Boron	**5060**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 12:40	7440-42-8	
Calcium	**11500**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 12:40	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 12:40	7440-48-4	
Lead	**9.6**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 12:40	7439-92-1	
Lithium	**3.5J**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 12:40	7439-93-2	
Molybdenum	**168**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 12:40	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**4.6**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 13:24	7440-36-0	
Arsenic	**217**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 13:24	7440-38-2	
Cadmium	**0.20J**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 13:24	7440-43-9	
Chromium	**0.94J**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 13:24	7440-47-3	B
Selenium	**1.6**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 13:24	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 13:24	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**829**	mg/L	5.0	5.0	1		03/07/17 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10.4**	Std. Units	0.10	0.10	1		03/13/17 09:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**27.6**	mg/L	2.0	1.0	2		03/10/17 13:39	16887-00-6	
Fluoride	**1.3**	mg/L	0.20	0.10	1		03/10/17 13:25	16984-48-8	
Sulfate	**292**	mg/L	20.0	10.0	20		03/10/17 13:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-3 **Lab ID: 60239078003** Collected: 03/06/17 11:25 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**15.0**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 12:42	7440-39-3	
Beryllium	**0.26J**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 12:42	7440-41-7	B
Boron	**15700**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 12:42	7440-42-8	
Calcium	**5920**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 12:42	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 12:42	7440-48-4	
Lead	**4.9J**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 12:42	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 12:42	7439-93-2	
Molybdenum	**753**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 12:42	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.13J**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 13:28	7440-36-0	
Arsenic	**80.0**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 13:28	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 13:28	7440-43-9	
Chromium	**0.92J**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 13:28	7440-47-3	B
Selenium	**0.57J**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 13:28	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 13:28	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**707**	mg/L	5.0	5.0	1		03/07/17 15:42		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.6**	Std. Units	0.10	0.10	1		03/13/17 09:24		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**30.2**	mg/L	2.0	1.0	2		03/10/17 14:22	16887-00-6	
Fluoride	**0.81**	mg/L	0.20	0.10	1		03/10/17 14:08	16984-48-8	
Sulfate	**176**	mg/L	20.0	10.0	20		03/10/17 15:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-4 **Lab ID: 60239078004** Collected: 03/06/17 12:31 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**286**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 12:44	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 12:44	7440-41-7	
Boron	**4500**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 12:44	7440-42-8	
Calcium	**70200**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 12:44	7440-70-2	
Cobalt	**0.82J**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 12:44	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 12:44	7439-92-1	
Lithium	**45.7**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 12:44	7439-93-2	
Molybdenum	**103**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 12:44	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.029J**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 13:32	7440-36-0	
Arsenic	**6.8**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 13:32	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 13:32	7440-43-9	
Chromium	**1.6**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 13:32	7440-47-3	
Selenium	**0.12J**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 13:32	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 13:32	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**397**	mg/L	5.0	5.0	1		03/07/17 15:42		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.10	1		03/13/17 09:33		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.0**	mg/L	1.0	0.50	1		03/10/17 15:20	16887-00-6	
Fluoride	**0.81**	mg/L	0.20	0.10	1		03/10/17 15:20	16984-48-8	
Sulfate	**25.8**	mg/L	2.0	1.0	2		03/10/17 15:34	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-5 **Lab ID: 60239078005** Collected: 03/06/17 13:33 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**384**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 12:47	7440-39-3	
Beryllium	**0.20J**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 12:47	7440-41-7	B
Boron	**101**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 12:47	7440-42-8	
Calcium	**122000**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 12:47	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 12:47	7440-48-4	
Lead	**3.0J**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 12:47	7439-92-1	
Lithium	**5.0J**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 12:47	7439-93-2	
Molybdenum	**<1.3**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 12:47	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	03/07/17 15:20	03/09/17 13:36	7440-36-0	
Arsenic	**4.8**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 13:36	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 13:36	7440-43-9	
Chromium	**0.58J**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 13:36	7440-47-3	B
Selenium	**<0.086**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 13:36	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 13:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**376**	mg/L	5.0	5.0	1		03/07/17 15:42		
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 09:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.5**	mg/L	1.0	0.50	1		03/10/17 15:49	16887-00-6	
Fluoride	**0.14J**	mg/L	0.20	0.10	1		03/10/17 15:49	16984-48-8	
Sulfate	**4.0**	mg/L	1.0	0.50	1		03/10/17 15:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-6 **Lab ID: 60239078006** Collected: 03/06/17 13:15 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**144**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 12:53	7440-39-3	
Beryllium	**0.48J**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 12:53	7440-41-7	B
Boron	**1390**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 12:53	7440-42-8	
Calcium	**89300**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 12:53	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 12:53	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 12:53	7439-92-1	
Lithium	**5.3J**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 12:53	7439-93-2	
Molybdenum	**2.4J**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 12:53	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.050J**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 13:49	7440-36-0	
Arsenic	**0.51J**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 13:49	7440-38-2	B
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 13:49	7440-43-9	
Chromium	**0.60J**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 13:49	7440-47-3	B
Selenium	**0.25J**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 13:49	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 13:49	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:21	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**362**	mg/L	5.0	5.0	1		03/07/17 15:44		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		03/13/17 09:38		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**8.1**	mg/L	1.0	0.50	1		03/10/17 16:17	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.10	1		03/10/17 16:17	16984-48-8	
Sulfate	**26.1**	mg/L	2.0	1.0	2		03/10/17 16:32	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-7 **Lab ID: 60239078007** Collected: 03/06/17 12:30 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**308**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 12:55	7440-39-3	
Beryllium	**0.21J**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 12:55	7440-41-7	B
Boron	**2550**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 12:55	7440-42-8	
Calcium	**71200**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 12:55	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 12:55	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 12:55	7439-92-1	
Lithium	**35.5**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 12:55	7439-93-2	
Molybdenum	**196**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 12:55	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.029J**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 13:54	7440-36-0	
Arsenic	**92.3**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 13:54	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 13:54	7440-43-9	
Chromium	**4.8**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 13:54	7440-47-3	
Selenium	**<0.086**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 13:54	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 13:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**381**	mg/L	5.0	5.0	1		03/07/17 15:44		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		03/13/17 09:31		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**11.7**	mg/L	1.0	0.50	1		03/10/17 16:46	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	0.10	1		03/10/17 16:46	16984-48-8	
Sulfate	**39.4**	mg/L	5.0	2.5	5		03/10/17 17:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-B1 **Lab ID: 60239078008** Collected: 03/06/17 11:35 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**514**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 12:57	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 12:57	7440-41-7	
Boron	**125**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 12:57	7440-42-8	
Calcium	**150000**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 12:57	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 12:57	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 12:57	7439-92-1	
Lithium	**64.4**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 12:57	7439-93-2	
Molybdenum	**1.5J**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 12:57	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.028J**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 13:58	7440-36-0	
Arsenic	**23.4**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 13:58	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 13:58	7440-43-9	
Chromium	**2.0**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 13:58	7440-47-3	
Selenium	**<0.086**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 13:58	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 13:58	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**681**	mg/L	5.0	5.0	1		03/07/17 15:44		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		03/13/17 09:26		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**50.1**	mg/L	5.0	2.5	5		03/10/17 17:58	16887-00-6	
Fluoride	**0.16J**	mg/L	0.20	0.10	1		03/10/17 17:15	16984-48-8	
Sulfate	**35.9**	mg/L	5.0	2.5	5		03/10/17 17:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-B2 **Lab ID: 60239078009** Collected: 03/06/17 10:50 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**450**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 13:04	7440-39-3	
Beryllium	**0.25J**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 13:04	7440-41-7	B
Boron	**41.9J**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 13:04	7440-42-8	
Calcium	**110000**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 13:04	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 13:04	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 13:04	7439-92-1	
Lithium	**11.8**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 13:04	7439-93-2	
Molybdenum	**<1.3**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 13:04	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	03/07/17 15:20	03/09/17 14:20	7440-36-0	
Arsenic	**3.0**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 14:20	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 14:20	7440-43-9	
Chromium	**0.55J**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 14:20	7440-47-3	B
Selenium	**<0.086**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 14:20	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 14:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:28	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**434**	mg/L	5.0	5.0	1		03/07/17 15:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.10	1		03/13/17 09:23		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**34.4**	mg/L	5.0	2.5	5		03/10/17 18:27	16887-00-6	
Fluoride	**0.17J**	mg/L	0.20	0.10	1		03/10/17 18:13	16984-48-8	
Sulfate	**15.4**	mg/L	1.0	0.50	1		03/10/17 18:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-DUP-1 **Lab ID: 60239078010** Collected: 03/06/17 08:00 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**148**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 13:06	7440-39-3	
Beryllium	**0.30J**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 13:06	7440-41-7	B
Boron	**1420**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 13:06	7440-42-8	
Calcium	**89600**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 13:06	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 13:06	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 13:06	7439-92-1	
Lithium	**5.6J**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 13:06	7439-93-2	
Molybdenum	**2.0J**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 13:06	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.057J**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 14:11	7440-36-0	
Arsenic	**0.49J**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 14:11	7440-38-2	B
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 14:11	7440-43-9	
Chromium	**5.6**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 14:11	7440-47-3	
Selenium	**0.33J**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 14:11	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 14:11	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:30	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**360**	mg/L	5.0	5.0	1		03/07/17 15:45		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.8**	Std. Units	0.10	0.10	1		03/13/17 09:10		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**8.1**	mg/L	1.0	0.50	1		03/10/17 18:41	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.10	1		03/10/17 18:41	16984-48-8	
Sulfate	**25.9**	mg/L	2.0	1.0	2		03/10/17 18:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-FB-1 **Lab ID: 60239078011** Collected: 03/06/17 12:20 Received: 03/07/17 05:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**<0.91**	ug/L	5.0	0.91	1	03/07/17 15:20	03/09/17 13:08	7440-39-3	
Beryllium	**0.17J**	ug/L	1.0	0.16	1	03/07/17 15:20	03/09/17 13:08	7440-41-7	B
Boron	**4.3J**	ug/L	100	3.5	1	03/07/17 15:20	03/09/17 13:08	7440-42-8	
Calcium	**<36.0**	ug/L	100	36.0	1	03/07/17 15:20	03/09/17 13:08	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	03/07/17 15:20	03/09/17 13:08	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	03/07/17 15:20	03/09/17 13:08	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	03/07/17 15:20	03/09/17 13:08	7439-93-2	
Molybdenum	**<1.3**	ug/L	20.0	1.3	1	03/07/17 15:20	03/09/17 13:08	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.027J**	ug/L	1.0	0.026	1	03/07/17 15:20	03/09/17 14:16	7440-36-0	
Arsenic	**0.074J**	ug/L	1.0	0.052	1	03/07/17 15:20	03/09/17 14:16	7440-38-2	B
Cadmium	**<0.018**	ug/L	0.50	0.018	1	03/07/17 15:20	03/09/17 14:16	7440-43-9	
Chromium	**0.99J**	ug/L	1.0	0.054	1	03/07/17 15:20	03/09/17 14:16	7440-47-3	B
Selenium	**<0.086**	ug/L	1.0	0.086	1	03/07/17 15:20	03/09/17 14:16	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	03/07/17 15:20	03/09/17 14:16	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	03/07/17 10:00	03/07/17 14:32	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**11.0**	mg/L	5.0	5.0	1		03/07/17 15:46		
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 09:28		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		03/10/17 19:10	16887-00-6	
Fluoride	**<0.10**	mg/L	0.20	0.10	1		03/10/17 19:10	16984-48-8	
Sulfate	**<0.50**	mg/L	1.0	0.50	1		03/10/17 19:10	14808-79-8	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 467763 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

METHOD BLANK: 1914533 Matrix: Water
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.046	0.20	0.046	03/07/17 13:57	

LABORATORY CONTROL SAMPLE: 1914534

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1914535 1914536

Parameter	Units	60239078005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.046	5	5	5.3	5.2	105	103	75-125	2	20	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 467818 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

METHOD BLANK: 1914780 Matrix: Water
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	03/09/17 12:12	
Beryllium	ug/L	0.35J	1.0	0.16	03/09/17 12:12	
Boron	ug/L	<3.5	100	3.5	03/09/17 12:12	
Calcium	ug/L	<36.0	100	36.0	03/09/17 12:12	
Cobalt	ug/L	<0.73	5.0	0.73	03/09/17 12:12	
Lead	ug/L	<2.4	5.0	2.4	03/09/17 12:12	
Lithium	ug/L	<2.9	10.0	2.9	03/09/17 12:12	
Molybdenum	ug/L	<1.3	20.0	1.3	03/09/17 12:12	

LABORATORY CONTROL SAMPLE: 1914781

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1040	104	85-115	
Beryllium	ug/L	1000	1020	102	85-115	
Boron	ug/L	1000	1020	102	85-115	
Calcium	ug/L	10000	9790	98	85-115	
Cobalt	ug/L	1000	1050	105	85-115	
Lead	ug/L	1000	986	99	85-115	
Lithium	ug/L	1000	1060	106	85-115	
Molybdenum	ug/L	1000	1080	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1914782 1914783

Parameter	Units	60239003003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	303	1000	1000	1360	1350	106	105	70-130	1	20	
Beryllium	ug/L	<0.16	1000	1000	1050	1040	105	104	70-130	1	20	
Boron	ug/L	132	1000	1000	1220	1220	109	108	70-130	0	20	
Calcium	ug/L	186000	10000	10000	193000	194000	68	74	70-130	0	20	M1
Cobalt	ug/L	3.3J	1000	1000	1040	1040	104	104	70-130	0	20	
Lead	ug/L	<2.4	1000	1000	977	977	98	98	70-130	0	20	
Lithium	ug/L	54.3	1000	1000	1160	1150	111	110	70-130	1	20	
Molybdenum	ug/L	<1.3	1000	1000	1120	1120	112	112	70-130	0	20	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1914784 1914785

Parameter	Units	60239078005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	384	1000	1000	1450	1450	107	106	70-130	0	20	
Beryllium	ug/L	0.20J	1000	1000	1050	1050	105	105	70-130	0	20	
Boron	ug/L	101	1000	1000	1170	1170	107	106	70-130	0	20	
Calcium	ug/L	122000	10000	10000	133000	132000	104	98	70-130	0	20	
Cobalt	ug/L	<0.73	1000	1000	1060	1050	106	105	70-130	1	20	
Lead	ug/L	3.0J	1000	1000	995	984	99	98	70-130	1	20	
Lithium	ug/L	5.0J	1000	1000	1120	1110	111	111	70-130	0	20	
Molybdenum	ug/L	<1.3	1000	1000	1130	1120	113	112	70-130	1	20	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 467819 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

METHOD BLANK: 1914787 Matrix: Water
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	03/09/17 12:27	
Arsenic	ug/L	0.078J	1.0	0.052	03/09/17 12:27	
Cadmium	ug/L	<0.018	0.50	0.018	03/09/17 12:27	
Chromium	ug/L	0.14J	1.0	0.054	03/09/17 12:27	
Selenium	ug/L	<0.086	1.0	0.086	03/09/17 12:27	
Thallium	ug/L	<0.036	1.0	0.036	03/09/17 12:27	

LABORATORY CONTROL SAMPLE: 1914788

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.0	98	85-115	
Arsenic	ug/L	40	39.2	98	85-115	
Cadmium	ug/L	40	39.1	98	85-115	
Chromium	ug/L	40	40.2	100	85-115	
Selenium	ug/L	40	37.4	93	85-115	
Thallium	ug/L	40	37.3	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1914789 1914790

Parameter	Units	60239003003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.055J	40	40	39.8	40.2	99	100	70-130	1	20	
Arsenic	ug/L	7.5	40	40	47.5	47.8	100	101	70-130	1	20	
Cadmium	ug/L	0.048J	40	40	38.5	39.4	96	98	70-130	2	20	
Chromium	ug/L	0.59J	40	40	40.8	41.6	101	103	70-130	2	20	
Selenium	ug/L	<0.086	40	40	36.0	36.8	90	92	70-130	2	20	
Thallium	ug/L	<0.036	40	40	37.8	38.4	95	96	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1914791 1914792

Parameter	Units	60239078005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	<0.026	40	40	40.0	39.9	100	100	70-130	0	20	
Arsenic	ug/L	4.8	40	40	44.7	44.4	100	99	70-130	1	20	
Cadmium	ug/L	<0.018	40	40	39.8	39.5	100	99	70-130	1	20	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1914791 1914792

Parameter	Units	60239078005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium	ug/L	0.58J	40	40	43.7	44.2	108	109	70-130	1	20	
Selenium	ug/L	<0.086	40	40	37.2	36.3	93	91	70-130	3	20	
Thallium	ug/L	<0.036	40	40	38.5	38.1	96	95	70-130	1	20	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 467844 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

METHOD BLANK: 1914883 Matrix: Water
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/07/17 15:39	

LABORATORY CONTROL SAMPLE: 1914884

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

SAMPLE DUPLICATE: 1914885

Parameter	Units	60239078005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	376	399	6	10	

SAMPLE DUPLICATE: 1914886

Parameter	Units	60239078010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	360	353	2	10	

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 468396 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078008, 60239078009, 60239078010, 60239078011

SAMPLE DUPLICATE: 1917819

Parameter	Units	60238916002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	11.8	11.8	0	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 468398 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60239078004, 60239078005, 60239078006, 60239078007

SAMPLE DUPLICATE: 1917822

Parameter	Units	60239078005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.0	0	5	H6

SAMPLE DUPLICATE: 1917823

Parameter	Units	60239186002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.3	6.3	0	5	H6

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 467871 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

METHOD BLANK: 1914971 Matrix: Water
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078010, 60239078011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	03/10/17 08:59	
Fluoride	mg/L	<0.10	0.20	0.10	03/10/17 08:59	
Sulfate	mg/L	<0.50	1.0	0.50	03/10/17 08:59	

LABORATORY CONTROL SAMPLE: 1914972

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	105	90-110	
Fluoride	mg/L	2.5	2.7	109	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE SAMPLE: 1914973

Parameter	Units	60239078005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	3.5	5	8.9	108	80-120	
Fluoride	mg/L	0.14J	2.5	2.9	112	80-120	
Sulfate	mg/L	4.0	5	9.5	111	80-120	

MATRIX SPIKE SAMPLE: 1914974

Parameter	Units	60239003003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	71.8	25	99.7	111	80-120	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-1 **Lab ID: 60239078001** Collected: 03/06/17 09:33 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.184 ± 0.419 (0.676) C:NA T:82%**	pCi/L	03/25/17 12:59	13982-63-3	
Radium-228	EPA 904.0	**0.259 ± 0.516 (1.13) C:66% T:77%**	pCi/L	03/24/17 12:15	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-2 **Lab ID: 60239078002** Collected: 03/06/17 10:31 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.200 ± 0.458 (0.271) C:NA T:85%**	pCi/L	03/25/17 12:59	13982-63-3	
Radium-228	EPA 904.0	**0.637 ± 0.468 (0.909) C:68% T:75%**	pCi/L	03/24/17 12:19	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-3 **Lab ID: 60239078003** Collected: 03/06/17 11:25 Received: 03/07/17 05:15 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 ± 0.351 (0.566) C:NA T:95%**	pCi/L	03/25/17 12:48	13982-63-3	
Radium-228	EPA 904.0	**0.697 ± 0.475 (0.913) C:65% T:80%**	pCi/L	03/24/17 12:16	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-4 **Lab ID: 60239078004** Collected: 03/06/17 12:31 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.249 ± 0.379 (0.610) C:NA T:89%**	pCi/L	03/25/17 12:48	13982-63-3	
Radium-228	EPA 904.0	**0.276 ± 0.367 (0.782) C:67% T:84%**	pCi/L	03/24/17 12:16	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-5 **Lab ID: 60239078005** Collected: 03/06/17 13:33 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.150 ± 0.361 (0.698) C:NA T:98%**	pCi/L	03/25/17 12:48	13982-63-3	
Radium-228	EPA 904.0	**0.459 ± 0.416 (0.847) C:69% T:86%**	pCi/L	03/24/17 12:16	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-6 **Lab ID: 60239078006** Collected: 03/06/17 13:15 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.423 ± 0.389 (0.229) C:NA T:89%**	pCi/L	03/25/17 13:04	13982-63-3	
Radium-228	EPA 904.0	**0.590 ± 0.424 (0.821) C:65% T:86%**	pCi/L	03/24/17 12:16	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-7 **Lab ID: 60239078007** Collected: 03/06/17 12:30 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.332 ± 0.462 (0.772) C:NA T:92%**	pCi/L	03/25/17 13:10	13982-63-3	
Radium-228	EPA 904.0	**0.255 ± 0.383 (0.826) C:66% T:82%**	pCi/L	03/24/17 12:16	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-B1 **Lab ID: 60239078008** Collected: 03/06/17 11:35 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.084 ± 0.383 (0.904) C:NA T:88%**	pCi/L	03/25/17 13:04	13982-63-3	
Radium-228	EPA 904.0	**0.728 ± 0.457 (0.855) C:65% T:82%**	pCi/L	03/24/17 12:16	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-B2 **Lab ID: 60239078009** Collected: 03/06/17 10:50 Received: 03/07/17 05:15 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 ± 0.436 (0.615) C:NA T:92%**	pCi/L	03/25/17 13:04	13982-63-3	
Radium-228	EPA 904.0	**0.404 ± 0.414 (0.854) C:64% T:82%**	pCi/L	03/24/17 12:16	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-DUP-1 **Lab ID: 60239078010** Collected: 03/06/17 08:00 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.265 ± 0.521 (0.935) C:NA T:93%**	pCi/L	03/27/17 11:17	13982-63-3	
Radium-228	EPA 904.0	**0.104 ± 0.348 (0.783) C:72% T:91%**	pCi/L	03/24/17 12:17	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-FB-1 **Lab ID: 60239078011** Collected: 03/06/17 12:20 Received: 03/07/17 05:15 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 ± 0.327 (0.665) C:NA T:85%**	pCi/L	03/27/17 11:17	13982-63-3	
Radium-228	EPA 904.0	**0.505 ± 0.379 (0.741) C:74% T:82%**	pCi/L	03/24/17 12:17	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-5 MS **Lab ID: 60239078012** Collected: 03/06/17 13:33 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**93.20%REC ± NA (NA)**	pCi/L	03/25/17 13:04	13982-63-3	
Radium-228	EPA 904.0	**90.79 %REC ± NA (NA) C:NA T:NA**	pCi/L	03/24/17 12:17	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Sample: R-MW-5 MSD **Lab ID: 60239078013** Collected: 03/06/17 13:33 Received: 03/07/17 05:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**103.7%REC 10.70RPD ± NA (NA)**	pCi/L	03/25/17 13:04	13982-63-3	
Radium-228	EPA 904.0	**103.59 %REC 13.17 RPD ± NA (NA) C:NA T:NA**	pCi/L	03/24/17 12:17	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 252566 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078012, 60239078013

METHOD BLANK: 1242498 Matrix: Water
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078012, 60239078013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0806 ± 0.368 (0.748) C:NA T:93%	pCi/L	03/25/17 12:13	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 252577 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078012, 60239078013

METHOD BLANK: 1242514 Matrix: Water
Associated Lab Samples: 60239078001, 60239078002, 60239078003, 60239078004, 60239078005, 60239078006, 60239078007, 60239078008, 60239078009, 60239078012, 60239078013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.270 ± 0.368 (0.788) C:75% T:80%	pCi/L	03/24/17 12:14	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 252567 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60239078010, 60239078011

METHOD BLANK: 1242499 Matrix: Water
Associated Lab Samples: 60239078010, 60239078011

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.124 ± 0.283 (0.168) C:NA T:93%	pCi/L	03/27/17 11:17	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

QC Batch: 252580 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60239078010, 60239078011

METHOD BLANK: 1242515 Matrix: Water
Associated Lab Samples: 60239078010, 60239078011

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.380 ± 0.414 (0.859) C:66% T:69%	pCi/L	03/24/17 12:11	

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QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

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

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60239078001	R-MW-1	EPA 200.7	467818	EPA 200.7	467884
60239078002	R-MW-2	EPA 200.7	467818	EPA 200.7	467884
60239078003	R-MW-3	EPA 200.7	467818	EPA 200.7	467884
60239078004	R-MW-4	EPA 200.7	467818	EPA 200.7	467884
60239078005	R-MW-5	EPA 200.7	467818	EPA 200.7	467884
60239078006	R-MW-6	EPA 200.7	467818	EPA 200.7	467884
60239078007	R-MW-7	EPA 200.7	467818	EPA 200.7	467884
60239078008	R-MW-B1	EPA 200.7	467818	EPA 200.7	467884
60239078009	R-MW-B2	EPA 200.7	467818	EPA 200.7	467884
60239078010	R-DUP-1	EPA 200.7	467818	EPA 200.7	467884
60239078011	R-FB-1	EPA 200.7	467818	EPA 200.7	467884
60239078001	R-MW-1	EPA 200.8	467819	EPA 200.8	467885
60239078002	R-MW-2	EPA 200.8	467819	EPA 200.8	467885
60239078003	R-MW-3	EPA 200.8	467819	EPA 200.8	467885
60239078004	R-MW-4	EPA 200.8	467819	EPA 200.8	467885
60239078005	R-MW-5	EPA 200.8	467819	EPA 200.8	467885
60239078006	R-MW-6	EPA 200.8	467819	EPA 200.8	467885
60239078007	R-MW-7	EPA 200.8	467819	EPA 200.8	467885
60239078008	R-MW-B1	EPA 200.8	467819	EPA 200.8	467885
60239078009	R-MW-B2	EPA 200.8	467819	EPA 200.8	467885
60239078010	R-DUP-1	EPA 200.8	467819	EPA 200.8	467885
60239078011	R-FB-1	EPA 200.8	467819	EPA 200.8	467885
60239078001	R-MW-1	EPA 7470	467763	EPA 7470	467771
60239078002	R-MW-2	EPA 7470	467763	EPA 7470	467771
60239078003	R-MW-3	EPA 7470	467763	EPA 7470	467771
60239078004	R-MW-4	EPA 7470	467763	EPA 7470	467771
60239078005	R-MW-5	EPA 7470	467763	EPA 7470	467771
60239078006	R-MW-6	EPA 7470	467763	EPA 7470	467771
60239078007	R-MW-7	EPA 7470	467763	EPA 7470	467771
60239078008	R-MW-B1	EPA 7470	467763	EPA 7470	467771
60239078009	R-MW-B2	EPA 7470	467763	EPA 7470	467771
60239078010	R-DUP-1	EPA 7470	467763	EPA 7470	467771
60239078011	R-FB-1	EPA 7470	467763	EPA 7470	467771
60239078001	R-MW-1	EPA 903.1	252566		
60239078002	R-MW-2	EPA 903.1	252566		
60239078003	R-MW-3	EPA 903.1	252566		
60239078004	R-MW-4	EPA 903.1	252566		
60239078005	R-MW-5	EPA 903.1	252566		
60239078006	R-MW-6	EPA 903.1	252566		
60239078007	R-MW-7	EPA 903.1	252566		
60239078008	R-MW-B1	EPA 903.1	252566		
60239078009	R-MW-B2	EPA 903.1	252566		
60239078010	R-DUP-1	EPA 903.1	252567		
60239078011	R-FB-1	EPA 903.1	252567		
60239078012	R-MW-5 MS	EPA 903.1	252566		
60239078013	R-MW-5 MSD	EPA 903.1	252566		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60239078001	R-MW-1	EPA 904.0	252577		
60239078002	R-MW-2	EPA 904.0	252577		
60239078003	R-MW-3	EPA 904.0	252577		
60239078004	R-MW-4	EPA 904.0	252577		
60239078005	R-MW-5	EPA 904.0	252577		
60239078006	R-MW-6	EPA 904.0	252577		
60239078007	R-MW-7	EPA 904.0	252577		
60239078008	R-MW-B1	EPA 904.0	252577		
60239078009	R-MW-B2	EPA 904.0	252577		
60239078010	R-DUP-1	EPA 904.0	252580		
60239078011	R-FB-1	EPA 904.0	252580		
60239078012	R-MW-5 MS	EPA 904.0	252577		
60239078013	R-MW-5 MSD	EPA 904.0	252577		
60239078001	R-MW-1	SM 2540C	467844		
60239078002	R-MW-2	SM 2540C	467844		
60239078003	R-MW-3	SM 2540C	467844		
60239078004	R-MW-4	SM 2540C	467844		
60239078005	R-MW-5	SM 2540C	467844		
60239078006	R-MW-6	SM 2540C	467844		
60239078007	R-MW-7	SM 2540C	467844		
60239078008	R-MW-B1	SM 2540C	467844		
60239078009	R-MW-B2	SM 2540C	467844		
60239078010	R-DUP-1	SM 2540C	467844		
60239078011	R-FB-1	SM 2540C	467844		
60239078001	R-MW-1	SM 4500-H+B	468396		
60239078002	R-MW-2	SM 4500-H+B	468396		
60239078003	R-MW-3	SM 4500-H+B	468396		
60239078004	R-MW-4	SM 4500-H+B	468398		
60239078005	R-MW-5	SM 4500-H+B	468398		
60239078006	R-MW-6	SM 4500-H+B	468398		
60239078007	R-MW-7	SM 4500-H+B	468398		
60239078008	R-MW-B1	SM 4500-H+B	468396		
60239078009	R-MW-B2	SM 4500-H+B	468396		
60239078010	R-DUP-1	SM 4500-H+B	468396		
60239078011	R-FB-1	SM 4500-H+B	468396		
60239078001	R-MW-1	EPA 300.0	467871		
60239078002	R-MW-2	EPA 300.0	467871		
60239078003	R-MW-3	EPA 300.0	467871		
60239078004	R-MW-4	EPA 300.0	467871		
60239078005	R-MW-5	EPA 300.0	467871		
60239078006	R-MW-6	EPA 300.0	467871		
60239078007	R-MW-7	EPA 300.0	467871		
60239078008	R-MW-B1	EPA 300.0	467871		
60239078009	R-MW-B2	EPA 300.0	467871		
60239078010	R-DUP-1	EPA 300.0	467871		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60239078

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60239078011	**R-FB-1**	EPA 300.0	467871		

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Sample Condition Upon Receipt

WO# : 60239078

60239078

Client Name: Golder

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

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

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

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

Thermometer Used: CF +1.5 T-266 / CF +0.9 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.3/1.7/2.6 **Corr. Factor** CF +1.5 CF +0.9 **Corrected** 1.2/1.3.2/14.1

Date and initials of person examining contents: pv 3/7/17

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

JLS

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Jami Check 3/7/17

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Mark Haddock (mhaddock@golder.com)	Attention:	
Address:	820 South Main Street, Suite 100	Copy To:	Jeffrey Ingram	Company Name:	
	St Charles, MO 63301			Address:	
Email To:	maddock@golder.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	636-724-9191 Fax: 636-724-9323	Project Name:	Ameren Rush Island Engery Center	Pace Project Manager:	Jamie Church
Requested Due Date/TAT:	Standard	Project Number:	153-1406.0002A	Pace Profile #:	9285

REGULATORY AGENCY

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

Site Location STATE: MO

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

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Requested Analysis Filtered (Y/N): Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 & 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60239078
1	R-MW-1	WT	G			3/6/17	0933		4	1		3						N	1	1	1	1	2		1BP3N 2-0 1BP2U 2BP1N 001
2	R-MW-2	WT	G				1631		1	1		1						N	1	1	1	1	1		002
3	R-MW-3	WT	G				1125		1	1		1						N	1	1	1	1	1		003
4	R-MW-4	WT	G				1231		1	1		1						N	1	1	1	1	1		004
5	R-MW-5	WT	G				1333		12	3		9						N	3	3	3	3	6		005
6	R-MW-6	WT	G				1315		4	1		3						N	1	1	1	1	2		006
7	R-MW-7	WT	G				1230		1	1		1						N	1	1	1	1	1		007
8	R-MW-B1	WT	G				1135																			008
9	R-MW-B2	WT	G				1050																			009
10	R-DUP-1	WT	G				—																			010
11	R-FB-1	WT	G				1220		1	1		1						N	1	1	1	1	1		011
12		WT	G																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl	Golder	3/6/17	1615		3/6/17	1615					
		3/6/17	1700		3/7/17	0515	1-2		Y	Y	Y
							13-2		N		
							14-1		N		

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jeff Ingram

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 03/6/17

*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

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

June 30, 2017

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

RE: Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory on June 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

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

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

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SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60246227001	**R-MW-1**	Water	06/08/17 09:30	06/10/17 03:20
60246227002	**R-MW-2**	Water	06/08/17 10:27	06/10/17 03:20
60246227003	**R-MW-3**	Water	06/08/17 11:25	06/10/17 03:20
60246227004	**R-MW-4**	Water	06/08/17 12:21	06/10/17 03:20
60246227005	**R-MW-5**	Water	06/08/17 14:50	06/10/17 03:20
60246227006	**R-MW-6**	Water	06/08/17 14:25	06/10/17 03:20
60246227007	**R-MW-7**	Water	06/08/17 13:40	06/10/17 03:20
60246227008	**R-MW-B1**	Water	06/08/17 13:00	06/10/17 03:20
60246227009	**R-MW-B2**	Water	06/08/17 11:12	06/10/17 03:20
60246227010	**R-DUP-1**	Water	06/08/17 08:00	06/10/17 03:20
60246227011	**R-FB-1**	Water	06/08/17 13:33	06/10/17 03:20
60246227012	**R-MW-5 MS**	Water	06/08/17 14:50	06/10/17 03:20
60246227013	**R-MW-5 MSD**	Water	06/08/17 14:50	06/10/17 03:20

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60246227001	**R-MW-1**	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	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
60246227002	**R-MW-2**	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	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
60246227003	**R-MW-3**	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	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
60246227004	**R-MW-4**	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	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
60246227005	**R-MW-5**	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	VAL	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

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
60246227006	**R-MW-6**	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	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
60246227007	**R-MW-7**	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	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
60246227008	**R-MW-B1**	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	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
60246227009	**R-MW-B2**	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	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
60246227010	**R-DUP-1**	EPA 200.7	SMW	8	PASI-K
		EPA 200.8	JGP	6	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

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
60246227011	**R-FB-1**	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	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
60246227012	**R-MW-5 MS**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
60246227013	**R-MW-5 MSD**	EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-1 **Lab ID: 60246227001** Collected: 06/08/17 09:30 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**16.9**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:17	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:17	7440-41-7	
Boron	**1710**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:17	7440-42-8	
Calcium	**38600**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:17	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:17	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:17	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:17	7439-93-2	
Molybdenum	**36.3**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:17	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.73J**	ug/L	1.0	0.026	1	06/16/17 16:25	06/22/17 00:14	7440-36-0	
Arsenic	**8.9**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 00:14	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 00:14	7440-43-9	
Chromium	**<0.054**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 00:14	7440-47-3	
Selenium	**1.7**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 00:14	7782-49-2	
Thallium	**0.11J**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 00:14	7440-28-0	B
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.052J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:34	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**402**	mg/L	5.0	5.0	1		06/13/17 09:38		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.5**	Std. Units	0.10	0.10	1		06/12/17 14:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**20.8**	mg/L	2.0	1.0	2		06/13/17 12:04	16887-00-6	
Fluoride	**0.11J**	mg/L	0.20	0.10	1		06/13/17 11:33	16984-48-8	
Sulfate	**191**	mg/L	20.0	10.0	20		06/13/17 12:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-2 **Lab ID: 60246227002** Collected: 06/08/17 10:27 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**11.0**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:22	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:22	7440-41-7	
Boron	**5510**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:22	7440-42-8	
Calcium	**10600**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:22	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:22	7440-48-4	
Lead	**7.0**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:22	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:22	7439-93-2	
Molybdenum	**174**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:22	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**5.1**	ug/L	1.0	0.026	1	06/16/17 16:25	06/22/17 00:19	7440-36-0	
Arsenic	**242**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 00:19	7440-38-2	
Cadmium	**0.22J**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 00:19	7440-43-9	
Chromium	**0.42J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 00:19	7440-47-3	
Selenium	**1.2**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 00:19	7782-49-2	
Thallium	**0.054J**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 00:19	7440-28-0	B
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.055J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**812**	mg/L	5.0	5.0	1		06/13/17 09:39		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**10.6**	Std. Units	0.10	0.10	1		06/12/17 14:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**26.9**	mg/L	2.0	1.0	2		06/13/17 13:52	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	0.10	1		06/13/17 13:37	16984-48-8	
Sulfate	**279**	mg/L	20.0	10.0	20		06/13/17 14:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-3 **Lab ID: 60246227003** Collected: 06/08/17 11:25 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**14.5**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:24	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:24	7440-41-7	
Boron	**14900**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:24	7440-42-8	
Calcium	**5890**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:24	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:24	7440-48-4	
Lead	**3.8J**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:24	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:24	7439-93-2	
Molybdenum	**676**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:24	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.15J**	ug/L	1.0	0.026	1	06/16/17 16:25	06/22/17 00:27	7440-36-0	
Arsenic	**85.6**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 00:27	7440-38-2	
Cadmium	**0.049J**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 00:27	7440-43-9	
Chromium	**0.47J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 00:27	7440-47-3	
Selenium	**0.73J**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 00:27	7782-49-2	
Thallium	**0.097J**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 00:27	7440-28-0	B
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.054J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**719**	mg/L	5.0	5.0	1		06/13/17 09:39		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**9.7**	Std. Units	0.10	0.10	1		06/12/17 14:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**32.8**	mg/L	2.0	1.0	2		06/13/17 14:38	16887-00-6	
Fluoride	**0.80**	mg/L	0.20	0.10	1		06/13/17 14:23	16984-48-8	
Sulfate	**177**	mg/L	20.0	10.0	20		06/13/17 14:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-4 **Lab ID: 60246227004** Collected: 06/08/17 12:21 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**254**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:31	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:31	7440-41-7	
Boron	**4510**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:31	7440-42-8	
Calcium	**63700**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:31	7440-70-2	
Cobalt	**0.73J**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:31	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:31	7439-92-1	
Lithium	**44.1**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:31	7439-93-2	
Molybdenum	**133**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:31	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.034J**	ug/L	1.0	0.026	1	06/16/17 16:25	06/22/17 00:32	7440-36-0	
Arsenic	**6.0**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 00:32	7440-38-2	
Cadmium	**0.031J**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 00:32	7440-43-9	
Chromium	**0.14J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 00:32	7440-47-3	
Selenium	**0.11J**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 00:32	7782-49-2	
Thallium	**0.040J**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 00:32	7440-28-0	B
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.050J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:41	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**413**	mg/L	5.0	5.0	1		06/14/17 08:29		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.10	1		06/12/17 14:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**20.8**	mg/L	2.0	1.0	2		06/13/17 15:24	16887-00-6	
Fluoride	**0.87**	mg/L	0.20	0.10	1		06/13/17 15:09	16984-48-8	
Sulfate	**44.3**	mg/L	5.0	2.5	5		06/14/17 12:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-5 **Lab ID: 60246227005** Collected: 06/08/17 14:50 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**374**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:33	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:33	7440-41-7	
Boron	**99.7J**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:33	7440-42-8	
Calcium	**122000**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:33	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:33	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:33	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:33	7439-93-2	
Molybdenum	**1.4J**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:33	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.048J**	ug/L	1.0	0.026	1	06/16/17 16:25	06/22/17 00:36	7440-36-0	
Arsenic	**5.1**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 00:36	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 00:36	7440-43-9	
Chromium	**0.47J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 00:36	7440-47-3	
Selenium	**<0.086**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 00:36	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 00:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.054J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**382**	mg/L	5.0	5.0	1		06/14/17 08:30		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.10	1		06/12/17 15:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.7**	mg/L	1.0	0.50	1		06/13/17 15:40	16887-00-6	
Fluoride	**0.11J**	mg/L	0.20	0.10	1		06/13/17 15:40	16984-48-8	
Sulfate	**3.5**	mg/L	1.0	0.50	1		06/13/17 15:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-6 **Lab ID: 60246227006** Collected: 06/08/17 14:25 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**101**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:40	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:40	7440-41-7	
Boron	**399**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:40	7440-42-8	
Calcium	**95000**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:40	7440-70-2	
Cobalt	**0.88J**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:40	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:40	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:40	7439-93-2	
Molybdenum	**2.5J**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:40	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.16J**	ug/L	1.0	0.026	1	06/16/17 16:25	06/22/17 14:14	7440-36-0	
Arsenic	**0.61J**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 14:14	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 14:14	7440-43-9	
Chromium	**0.19J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 14:14	7440-47-3	
Selenium	**0.72J**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 14:14	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 14:14	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**353**	mg/L	5.0	5.0	1		06/14/17 08:30		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		06/12/17 15:37		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.8**	mg/L	1.0	0.50	1		06/13/17 16:57	16887-00-6	
Fluoride	**0.16J**	mg/L	0.20	0.10	1		06/13/17 16:57	16984-48-8	
Sulfate	**37.7**	mg/L	2.0	1.0	2		06/13/17 17:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-7 **Lab ID: 60246227007** Collected: 06/08/17 13:40 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**289**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:42	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:42	7440-41-7	
Boron	**2310**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:42	7440-42-8	
Calcium	**68200**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:42	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:42	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:42	7439-92-1	
Lithium	**28.9**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:42	7439-93-2	
Molybdenum	**152**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:42	7439-98-7	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Antimony	**0.086J**	ug/L	1.0	0.026	1	06/16/17 16:25	06/22/17 14:18	7440-36-0	
Arsenic	**105**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 14:18	7440-38-2	
Cadmium	**0.024J**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 14:18	7440-43-9	
Chromium	**0.14J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 14:18	7440-47-3	
Selenium	**0.097J**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 14:18	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 14:18	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.046**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**368**	mg/L	5.0	5.0	1		06/14/17 08:31		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.10	1		06/12/17 15:35		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**11.3**	mg/L	1.0	0.50	1		06/13/17 17:28	16887-00-6	
Fluoride	**0.28**	mg/L	0.20	0.10	1		06/13/17 17:28	16984-48-8	
Sulfate	**28.6**	mg/L	5.0	2.5	5		06/13/17 17:43	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-B1 **Lab ID: 60246227008** Collected: 06/08/17 13:00 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**477**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:44	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:44	7440-41-7	
Boron	**116**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:44	7440-42-8	
Calcium	**143000**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:44	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:44	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:44	7439-92-1	
Lithium	**55.6**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:44	7439-93-2	
Molybdenum	**1.9J**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:44	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	06/16/17 16:25	06/22/17 14:23	7440-36-0	
Arsenic	**29.5**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 14:23	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 14:23	7440-43-9	
Chromium	**0.060J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 14:23	7440-47-3	
Selenium	**<0.086**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 14:23	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 14:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.051J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 09:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**664**	mg/L	5.0	5.0	1		06/14/17 08:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.7**	Std. Units	0.10	0.10	1		06/12/17 15:31		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**47.0**	mg/L	5.0	2.5	5		06/13/17 18:14	16887-00-6	
Fluoride	**0.11J**	mg/L	0.20	0.10	1		06/13/17 17:58	16984-48-8	
Sulfate	**44.4**	mg/L	5.0	2.5	5		06/13/17 18:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-B2 **Lab ID: 60246227009** Collected: 06/08/17 11:12 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**435**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:47	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:47	7440-41-7	
Boron	**43.4J**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:47	7440-42-8	
Calcium	**106000**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:47	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:47	7440-48-4	
Lead	**2.8J**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:47	7439-92-1	
Lithium	**7.1J**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:47	7439-93-2	
Molybdenum	**<1.3**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:47	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	06/16/17 16:25	06/22/17 14:27	7440-36-0	
Arsenic	**3.2**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 14:27	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 14:27	7440-43-9	
Chromium	**0.15J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 14:27	7440-47-3	
Selenium	**<0.086**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 14:27	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 14:27	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.050J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 10:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**417**	mg/L	5.0	5.0	1		06/14/17 08:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.1**	Std. Units	0.10	0.10	1		06/12/17 14:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**34.4**	mg/L	5.0	2.5	5		06/13/17 18:45	16887-00-6	
Fluoride	**0.15J**	mg/L	0.20	0.10	1		06/13/17 18:29	16984-48-8	
Sulfate	**15.5**	mg/L	1.0	0.50	1		06/13/17 18:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-DUP-1 **Lab ID: 60246227010** Collected: 06/08/17 08:00 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**251**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:49	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:49	7440-41-7	
Boron	**4500**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:49	7440-42-8	
Calcium	**62600**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:49	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:49	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:49	7439-92-1	
Lithium	**44.4**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:49	7439-93-2	
Molybdenum	**131**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:49	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	06/16/17 16:25	06/22/17 14:31	7440-36-0	
Arsenic	**6.7**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 14:31	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 14:31	7440-43-9	
Chromium	**0.15J**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 14:31	7440-47-3	
Selenium	**0.19J**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 14:31	7782-49-2	
Thallium	**<0.036**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 14:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.050J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 10:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**399**	mg/L	5.0	5.0	1		06/14/17 08:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.10	1		06/12/17 14:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**20.5**	mg/L	5.0	2.5	5		06/13/17 19:46	16887-00-6	
Fluoride	**0.87**	mg/L	0.20	0.10	1		06/13/17 19:31	16984-48-8	
Sulfate	**43.6**	mg/L	5.0	2.5	5		06/13/17 19:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-FB-1 **Lab ID: 60246227011** Collected: 06/08/17 13:33 Received: 06/10/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Barium	**<0.91**	ug/L	5.0	0.91	1	06/16/17 16:25	06/21/17 16:51	7440-39-3	
Beryllium	**<0.16**	ug/L	1.0	0.16	1	06/16/17 16:25	06/21/17 16:51	7440-41-7	
Boron	**8.1J**	ug/L	100	3.5	1	06/16/17 16:25	06/21/17 16:51	7440-42-8	
Calcium	**<36.0**	ug/L	100	36.0	1	06/16/17 16:25	06/21/17 16:51	7440-70-2	
Cobalt	**<0.73**	ug/L	5.0	0.73	1	06/16/17 16:25	06/21/17 16:51	7440-48-4	
Lead	**<2.4**	ug/L	5.0	2.4	1	06/16/17 16:25	06/21/17 16:51	7439-92-1	
Lithium	**<2.9**	ug/L	10.0	2.9	1	06/16/17 16:25	06/21/17 16:51	7439-93-2	
Molybdenum	**<1.3**	ug/L	20.0	1.3	1	06/16/17 16:25	06/21/17 16:51	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	06/16/17 16:25	06/22/17 14:09	7440-36-0	
Arsenic	**<0.052**	ug/L	1.0	0.052	1	06/16/17 16:25	06/22/17 14:09	7440-38-2	
Cadmium	**<0.018**	ug/L	0.50	0.018	1	06/16/17 16:25	06/22/17 14:09	7440-43-9	
Chromium	**<0.054**	ug/L	1.0	0.054	1	06/16/17 16:25	06/22/17 14:09	7440-47-3	
Selenium	**<0.086**	ug/L	1.0	0.086	1	06/16/17 16:25	06/22/17 14:09	7782-49-2	
Thallium	**0.043J**	ug/L	1.0	0.036	1	06/16/17 16:25	06/22/17 14:09	7440-28-0	B
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**0.049J**	ug/L	0.20	0.046	1	06/22/17 16:50	06/23/17 10:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		06/14/17 08:33		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.10	1		06/12/17 15:33		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		06/13/17 20:17	16887-00-6	
Fluoride	**<0.10**	mg/L	0.20	0.10	1		06/13/17 20:17	16984-48-8	
Sulfate	**<0.50**	mg/L	1.0	0.50	1		06/13/17 20:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 482248 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

METHOD BLANK: 1975364 Matrix: Water
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.046	0.20	0.046	06/23/17 09:08	

LABORATORY CONTROL SAMPLE: 1975365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.6	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1975366 1975367

Parameter	Units	60245851003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.046	5	5	4.8	4.4	95	87	75-125	9	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1975368 1975369

Parameter	Units	60246227005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	0.054J	5	5	4.6	4.3	90	85	75-125	6	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 481364 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

METHOD BLANK: 1971837 Matrix: Water
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Barium	ug/L	<0.91	5.0	0.91	06/21/17 16:15	
Beryllium	ug/L	<0.16	1.0	0.16	06/21/17 16:15	
Boron	ug/L	<3.5	100	3.5	06/21/17 16:15	
Calcium	ug/L	<36.0	100	36.0	06/21/17 16:15	
Cobalt	ug/L	<0.73	5.0	0.73	06/21/17 16:15	
Lead	ug/L	<2.4	5.0	2.4	06/21/17 16:15	
Lithium	ug/L	<2.9	10.0	2.9	06/21/17 16:15	
Molybdenum	ug/L	<1.3	20.0	1.3	06/21/17 16:15	

LABORATORY CONTROL SAMPLE: 1971838

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1030	103	85-115	
Beryllium	ug/L	1000	1030	103	85-115	
Boron	ug/L	1000	985	98	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Cobalt	ug/L	1000	1040	104	85-115	
Lead	ug/L	1000	1030	103	85-115	
Lithium	ug/L	1000	1020	102	85-115	
Molybdenum	ug/L	1000	1060	106	85-115	

MATRIX SPIKE SAMPLE: 1971839

Parameter	Units	60246227001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	16.9	1000	1040	102	70-130	
Beryllium	ug/L	<0.16	1000	1020	102	70-130	
Boron	ug/L	1710	1000	2700	99	70-130	
Calcium	ug/L	38600	10000	47800	92	70-130	
Cobalt	ug/L	<0.73	1000	1030	103	70-130	
Lead	ug/L	<2.4	1000	1000	100	70-130	
Lithium	ug/L	<2.9	1000	1050	105	70-130	
Molybdenum	ug/L	36.3	1000	1090	106	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1971840 1971841

Parameter	Units	60246227005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	374	1000	1000	1390	1390	101	101	70-130	0	20	
Beryllium	ug/L	<0.16	1000	1000	1020	1030	102	103	70-130	0	20	
Boron	ug/L	99.7J	1000	1000	1090	1100	99	100	70-130	1	20	
Calcium	ug/L	122000	10000	10000	131000	130000	93	80	70-130	1	20	
Cobalt	ug/L	<0.73	1000	1000	1010	1020	101	101	70-130	0	20	
Lead	ug/L	<2.4	1000	1000	1000	1000	100	100	70-130	0	20	
Lithium	ug/L	<2.9	1000	1000	1050	1050	105	105	70-130	0	20	
Molybdenum	ug/L	1.4J	1000	1000	1050	1050	105	105	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 481367 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

METHOD BLANK: 1971843 Matrix: Water
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.026	1.0	0.026	06/22/17 00:06	
Arsenic	ug/L	<0.052	1.0	0.052	06/22/17 00:06	
Cadmium	ug/L	<0.018	0.50	0.018	06/22/17 00:06	
Chromium	ug/L	<0.054	1.0	0.054	06/22/17 00:06	
Selenium	ug/L	<0.086	1.0	0.086	06/22/17 00:06	
Thallium	ug/L	0.073J	1.0	0.036	06/22/17 00:06	

LABORATORY CONTROL SAMPLE: 1971844

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	41.4	104	85-115	
Arsenic	ug/L	40	39.8	100	85-115	
Cadmium	ug/L	40	39.4	98	85-115	
Chromium	ug/L	40	41.0	102	85-115	
Selenium	ug/L	40	38.8	97	85-115	
Thallium	ug/L	40	38.2	95	85-115	

MATRIX SPIKE SAMPLE: 1971845

Parameter	Units	60246227001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	0.73J	40	42.0	103	70-130	
Arsenic	ug/L	8.9	40	48.0	98	70-130	
Cadmium	ug/L	<0.018	40	38.5	96	70-130	
Chromium	ug/L	<0.054	40	39.5	99	70-130	
Selenium	ug/L	1.7	40	37.8	90	70-130	
Thallium	ug/L	0.11J	40	39.5	99	70-130	

MATRIX SPIKE SAMPLE: 1971846

Parameter	Units	60246227005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	0.048J	40	40.8	102	70-130	
Arsenic	ug/L	5.1	40	44.7	99	70-130	
Cadmium	ug/L	<0.018	40	38.6	96	70-130	
Chromium	ug/L	0.47J	40	40.3	100	70-130	
Selenium	ug/L	<0.086	40	36.4	91	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

MATRIX SPIKE SAMPLE: 1971846

Parameter	Units	60246227005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Thallium	ug/L	<0.036	40	39.7	99	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 480719 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60246227001, 60246227002, 60246227003

METHOD BLANK: 1969196 Matrix: Water
Associated Lab Samples: 60246227001, 60246227002, 60246227003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	06/13/17 09:30	

LABORATORY CONTROL SAMPLE: 1969197

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

SAMPLE DUPLICATE: 1969198

Parameter	Units	60246023002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1220	1210	1	10	

SAMPLE DUPLICATE: 1969199

Parameter	Units	60246063001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2420	2500	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 480914 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

METHOD BLANK: 1969866 Matrix: Water
Associated Lab Samples: 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	06/14/17 08:28	

LABORATORY CONTROL SAMPLE: 1969867

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

SAMPLE DUPLICATE: 1969868

Parameter	Units	60246227005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	382	396	4	10	

SAMPLE DUPLICATE: 1969869

Parameter	Units	60246186001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	473	436	8	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 480678 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

SAMPLE DUPLICATE: 1969105

Parameter	Units	60246016005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.9	7.0	0	5	H6

SAMPLE DUPLICATE: 1969106

Parameter	Units	60246227005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.1	2	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 480762 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

METHOD BLANK: 1969319 Matrix: Water
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	06/13/17 09:14	
Fluoride	mg/L	<0.10	0.20	0.10	06/13/17 09:14	
Sulfate	mg/L	<0.50	1.0	0.50	06/13/17 09:14	

LABORATORY CONTROL SAMPLE: 1969320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Fluoride	mg/L	2.5	2.6	106	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE SAMPLE: 1969321

Parameter	Units	60246227001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20.8	10	32.2	114	80-120	
Fluoride	mg/L	0.11J	2.5	2.6	99	80-120	
Sulfate	mg/L	191	100	294	103	80-120	

MATRIX SPIKE SAMPLE: 1969322

Parameter	Units	60246227005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	3.7	5	8.8	103	80-120	
Fluoride	mg/L	0.11J	2.5	2.7	102	80-120	
Sulfate	mg/L	3.5	5	8.5	100	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 480974
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60246227004

METHOD BLANK: 1970083 Matrix: Water
Associated Lab Samples: 60246227004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	<0.50	1.0	0.50	06/14/17 08:51	

LABORATORY CONTROL SAMPLE: 1970084

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.7	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1970085 1970086

Parameter	Units	60246374001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	ND	1000	1000	1020	1030	95	96	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-1 **Lab ID: 60246227001** Collected: 06/08/17 09:30 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.404 ± 0.327 (0.183) C:NA T:90%**	pCi/L	06/21/17 23:01	13982-63-3	
Radium-228	EPA 904.0	**0.393 ± 0.389 (0.803) C:75% T:83%**	pCi/L	06/24/17 19:09	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-2 **Lab ID: 60246227002** Collected: 06/08/17 10:27 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.182 ± 0.278 (0.447) C:NA T:98%**	pCi/L	06/21/17 23:01	13982-63-3	
Radium-228	EPA 904.0	**0.625 ± 1.13 (2.46) C:53% T:38%**	pCi/L	06/24/17 19:09	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-3 **Lab ID: 60246227003** Collected: 06/08/17 11:25 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.315 ± 0.329 (0.464) C:NA T:104%**	pCi/L	06/21/17 23:01	13982-63-3	
Radium-228	EPA 904.0	**0.0648 ± 0.545 (1.26) C:64% T:53%**	pCi/L	06/24/17 19:10	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-4 **Lab ID: 60246227004** Collected: 06/08/17 12:21 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.456 ± 0.529 (0.854) C:NA T:94%**	pCi/L	06/21/17 23:01	13982-63-3	
Radium-228	EPA 904.0	**1.10 ± 0.418 (0.591) C:74% T:87%**	pCi/L	06/24/17 19:10	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-5 **Lab ID: 60246227005** Collected: 06/08/17 14:50 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.573 ± 0.455 (0.591) C:NA T:96%**	pCi/L	06/21/17 23:01	13982-63-3	
Radium-228	EPA 904.0	**1.05 ± 0.438 (0.688) C:76% T:88%**	pCi/L	06/24/17 19:10	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-6 **Lab ID: 60246227006** Collected: 06/08/17 14:25 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.495 ± 0.463 (0.657) C:NA T:96%**	pCi/L	06/21/17 23:18	13982-63-3	
Radium-228	EPA 904.0	**1.02 ± 0.448 (0.732) C:75% T:86%**	pCi/L	06/24/17 19:10	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-7 **Lab ID: 60246227007** Collected: 06/08/17 13:40 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.118 ± 0.283 (0.547) C:NA T:101%**	pCi/L	06/21/17 23:18	13982-63-3	
Radium-228	EPA 904.0	**0.684 ± 0.368 (0.646) C:79% T:85%**	pCi/L	06/24/17 19:10	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-B1 **Lab ID: 60246227008** Collected: 06/08/17 13:00 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.793 ± 0.581 (0.800) C:NA T:97%**	pCi/L	06/21/17 23:18	13982-63-3	
Radium-228	EPA 904.0	**1.45 ± 0.456 (0.515) C:80% T:86%**	pCi/L	06/24/17 19:10	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-B2 **Lab ID: 60246227009** Collected: 06/08/17 11:12 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.729 ± 0.565 (0.797) C:NA T:99%**	pCi/L	06/21/17 23:18	13982-63-3	
Radium-228	EPA 904.0	**0.960 ± 0.410 (0.644) C:78% T:85%**	pCi/L	06/24/17 19:10	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-DUP-1 **Lab ID: 60246227010** Collected: 06/08/17 08:00 Received: 06/10/17 03:20 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 ± 0.433 (0.900) C:NA T:95%**	pCi/L	06/21/17 23:18	13982-63-3	
Radium-228	EPA 904.0	**1.26 ± 0.437 (0.592) C:78% T:91%**	pCi/L	06/24/17 19:11	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-FB-1 **Lab ID: 60246227011** Collected: 06/08/17 13:33 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.570 ± 0.417 (0.466) C:NA T:96%**	pCi/L	06/21/17 23:18	13982-63-3	
Radium-228	EPA 904.0	**0.727 ± 0.410 (0.747) C:78% T:83%**	pCi/L	06/24/17 19:11	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-5 MS **Lab ID: 60246227012** Collected: 06/08/17 14:50 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**85.2 %REC +/- NA (NA) C:NA T:NA**	pCi/L	06/21/17 23:31	13982-63-3	
Radium-228	EPA 904.0	**91.2 %REC +/- NA (NA) C:NA T:NA**	pCi/L	06/24/17 19:08	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Sample: R-MW-5 MSD **Lab ID: 60246227013** Collected: 06/08/17 14:50 Received: 06/10/17 03:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**75.1 %REC 12.7 RPD +/- NA (NA) C:NA T:NA**	pCi/L	06/21/17 23:31	13982-63-3	
Radium-228	EPA 904.0	**92.8 %REC 1.73 RPD +/- NA (NA) C:NA T:NA**	pCi/L	06/24/17 19:08	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 261823 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011, 60246227012, 60246227013

METHOD BLANK: 1289181 Matrix: Water
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011, 60246227012, 60246227013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.587 ± 0.340 (0.613) C:78% T:82%	pCi/L	06/24/17 19:09	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

QC Batch: 261819 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011, 60246227012, 60246227013

METHOD BLANK: 1289173 Matrix: Water
Associated Lab Samples: 60246227001, 60246227002, 60246227003, 60246227004, 60246227005, 60246227006, 60246227007, 60246227008, 60246227009, 60246227010, 60246227011, 60246227012, 60246227013

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.137 ± 0.313 (0.738) C:NA T:92%	pCi/L	06/21/17 22:29	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

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

B	Analyte was detected in the associated method blank.
H6	Analysis initiated outside of the 15 minute EPA required holding time.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60246227001	R-MW-1	EPA 200.7	481364	EPA 200.7	481517
60246227002	R-MW-2	EPA 200.7	481364	EPA 200.7	481517
60246227003	R-MW-3	EPA 200.7	481364	EPA 200.7	481517
60246227004	R-MW-4	EPA 200.7	481364	EPA 200.7	481517
60246227005	R-MW-5	EPA 200.7	481364	EPA 200.7	481517
60246227006	R-MW-6	EPA 200.7	481364	EPA 200.7	481517
60246227007	R-MW-7	EPA 200.7	481364	EPA 200.7	481517
60246227008	R-MW-B1	EPA 200.7	481364	EPA 200.7	481517
60246227009	R-MW-B2	EPA 200.7	481364	EPA 200.7	481517
60246227010	R-DUP-1	EPA 200.7	481364	EPA 200.7	481517
60246227011	R-FB-1	EPA 200.7	481364	EPA 200.7	481517
60246227001	R-MW-1	EPA 200.8	481367	EPA 200.8	481518
60246227002	R-MW-2	EPA 200.8	481367	EPA 200.8	481518
60246227003	R-MW-3	EPA 200.8	481367	EPA 200.8	481518
60246227004	R-MW-4	EPA 200.8	481367	EPA 200.8	481518
60246227005	R-MW-5	EPA 200.8	481367	EPA 200.8	481518
60246227006	R-MW-6	EPA 200.8	481367	EPA 200.8	481518
60246227007	R-MW-7	EPA 200.8	481367	EPA 200.8	481518
60246227008	R-MW-B1	EPA 200.8	481367	EPA 200.8	481518
60246227009	R-MW-B2	EPA 200.8	481367	EPA 200.8	481518
60246227010	R-DUP-1	EPA 200.8	481367	EPA 200.8	481518
60246227011	R-FB-1	EPA 200.8	481367	EPA 200.8	481518
60246227001	R-MW-1	EPA 7470	482248	EPA 7470	482262
60246227002	R-MW-2	EPA 7470	482248	EPA 7470	482262
60246227003	R-MW-3	EPA 7470	482248	EPA 7470	482262
60246227004	R-MW-4	EPA 7470	482248	EPA 7470	482262
60246227005	R-MW-5	EPA 7470	482248	EPA 7470	482262
60246227006	R-MW-6	EPA 7470	482248	EPA 7470	482262
60246227007	R-MW-7	EPA 7470	482248	EPA 7470	482262
60246227008	R-MW-B1	EPA 7470	482248	EPA 7470	482262
60246227009	R-MW-B2	EPA 7470	482248	EPA 7470	482262
60246227010	R-DUP-1	EPA 7470	482248	EPA 7470	482262
60246227011	R-FB-1	EPA 7470	482248	EPA 7470	482262
60246227001	R-MW-1	EPA 903.1	261819		
60246227002	R-MW-2	EPA 903.1	261819		
60246227003	R-MW-3	EPA 903.1	261819		
60246227004	R-MW-4	EPA 903.1	261819		
60246227005	R-MW-5	EPA 903.1	261819		
60246227006	R-MW-6	EPA 903.1	261819		
60246227007	R-MW-7	EPA 903.1	261819		
60246227008	R-MW-B1	EPA 903.1	261819		
60246227009	R-MW-B2	EPA 903.1	261819		
60246227010	R-DUP-1	EPA 903.1	261819		
60246227011	R-FB-1	EPA 903.1	261819		
60246227012	R-MW-5 MS	EPA 903.1	261819		
60246227013	R-MW-5 MSD	EPA 903.1	261819		
60246227001	R-MW-1	EPA 904.0	261823		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60246227002	R-MW-2	EPA 904.0	261823		
60246227003	R-MW-3	EPA 904.0	261823		
60246227004	R-MW-4	EPA 904.0	261823		
60246227005	R-MW-5	EPA 904.0	261823		
60246227006	R-MW-6	EPA 904.0	261823		
60246227007	R-MW-7	EPA 904.0	261823		
60246227008	R-MW-B1	EPA 904.0	261823		
60246227009	R-MW-B2	EPA 904.0	261823		
60246227010	R-DUP-1	EPA 904.0	261823		
60246227011	R-FB-1	EPA 904.0	261823		
60246227012	R-MW-5 MS	EPA 904.0	261823		
60246227013	R-MW-5 MSD	EPA 904.0	261823		
60246227001	R-MW-1	SM 2540C	480719		
60246227002	R-MW-2	SM 2540C	480719		
60246227003	R-MW-3	SM 2540C	480719		
60246227004	R-MW-4	SM 2540C	480914		
60246227005	R-MW-5	SM 2540C	480914		
60246227006	R-MW-6	SM 2540C	480914		
60246227007	R-MW-7	SM 2540C	480914		
60246227008	R-MW-B1	SM 2540C	480914		
60246227009	R-MW-B2	SM 2540C	480914		
60246227010	R-DUP-1	SM 2540C	480914		
60246227011	R-FB-1	SM 2540C	480914		
60246227001	R-MW-1	SM 4500-H+B	480678		
60246227002	R-MW-2	SM 4500-H+B	480678		
60246227003	R-MW-3	SM 4500-H+B	480678		
60246227004	R-MW-4	SM 4500-H+B	480678		
60246227005	R-MW-5	SM 4500-H+B	480678		
60246227006	R-MW-6	SM 4500-H+B	480678		
60246227007	R-MW-7	SM 4500-H+B	480678		
60246227008	R-MW-B1	SM 4500-H+B	480678		
60246227009	R-MW-B2	SM 4500-H+B	480678		
60246227010	R-DUP-1	SM 4500-H+B	480678		
60246227011	R-FB-1	SM 4500-H+B	480678		
60246227001	R-MW-1	EPA 300.0	480762		
60246227002	R-MW-2	EPA 300.0	480762		
60246227003	R-MW-3	EPA 300.0	480762		
60246227004	R-MW-4	EPA 300.0	480762		
60246227004	R-MW-4	EPA 300.0	480974		
60246227005	R-MW-5	EPA 300.0	480762		
60246227006	R-MW-6	EPA 300.0	480762		
60246227007	R-MW-7	EPA 300.0	480762		
60246227008	R-MW-B1	EPA 300.0	480762		
60246227009	R-MW-B2	EPA 300.0	480762		
60246227010	R-DUP-1	EPA 300.0	480762		
60246227011	R-FB-1	EPA 300.0	480762		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CENT
Pace Project No.: 60246227

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch

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Sample Condition Upon Receipt

WO# : 60246227

60246227

Client Name: Golder

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

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

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

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

Thermometer Used: CF +2.9 T-266 / CF +0.2 T-239 **Type of Ice:** (Wet) Blue (None)

RB 6/10/15

Cooler Temperature (°C): **As-read** 3.2/M.0/13.4 **Corr. Factor** CF +2.9 / CF +0.2 **Corrected** 3.4/14.2/13.6

Date and initials of person examining contents:

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	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	- All hand written info on COC is printed 1 line below actual pre-printed ID line of mis-aligned but all info is correct.
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	MS/MSD is on R-MW-5.
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐N/A ☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☑No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Jami Check 6/12/17

Project Manager Review: _____ Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical®
www.pacelabs.com

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Mark Haddock (mhaddock@golder.com)	Attention:	
Address:	820 South Main Street, Suite 100	Copy To:	Jeffrey Ingram	Company Name:	
	St Charles, MO 63301			Address:	
Email To:	maddock@golder.com	Purchase Order No.:		Pace Quote Reference:	
Phone: 636-724-9191	Fax: 636-724-9323	Project Name:	Ameren Rush Island Engery Center	Pace Project Manager:	Jamie Church
Requested Due Date/TAT:	Standard	Project Number:	153-1406.0002A	Pace Profile #:	9285

Page: of

REGULATORY AGENCY

- [ ] NPDES
- [ ] GROUND WATER
- [ ] DRINKING WATER
- [ ] UST
- [x] RCRA
- [ ] OTHER

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N): Metals* N; Chloride/Fluoride/Sulfate N; TDS N; pH N; Radium 226 & 228 N

Pace Project No./ Lab I.D.: 60246227

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Metals*	Chloride/Fluoride/Sulfate	TDS	pH	Radium 226 & 228			Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	R-MW-1	WT	G			6/8/17	930		4	1		3							1	1	1	1	2	BP3N	2.0 BP2U		2BPIN 001
2	R-MW-2	WT	G				1027																				002
3	R-MW-3	WT	G				1120																				003
4	R-MW-4	WT	G				1221																				004
5	R-MW-5	WT	G				1330		12	3		9							3	3	3	3	6	3BP3N	3BP2U		6BPIN 005
6	R-MW-6	WT	G				1425		4	1		3							1	1	1	1	2	BP3N	BP2U		2BPIN 006
7	R-MW-7	WT	G				1340																				007
8	R-MW-B1	WT	G				1300																				008
9	R-MW-B2	WT	G				1112																				009
10	R-DUP-1	WT	G				—																				010
11	R-FB-1	WT	G				1333																				011
12		WT	G																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: Ba, Be, B, Ca, Co, Pb, Li, Mo + EPA 7470A Hg EPA 200.8: Sb, As, Cd, Cr, Se, Tl										
	Jeff Ingram / Golder	6/9/17	1500	[illegible]	6/9	11:00				
	Richard [illegible]	6/9/17	1700	[illegible]	6/10/17	0320	3.4	Y	Y	Y
							14.2/13.6	N	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jeff Ingram

SIGNATURE of SAMPLER: [illegible]

DATE Signed (MM/DD/YY): 6/8/17

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

November 28, 2017

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

RE: Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Dear Mark Haddock:
Enclosed are the analytical results for sample(s) received by the laboratory on November 11, 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

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
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SAMPLE SUMMARY

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60257950001	**R-MW-1**	Water	11/09/17 16:13	11/11/17 03:20
60257950002	**R-MW-2**	Water	11/09/17 14:58	11/11/17 03:20
60257950003	**R-MW-3**	Water	11/09/17 13:46	11/11/17 03:20
60257950004	**R-MW-4**	Water	11/10/17 12:55	11/11/17 03:20
60257950005	**R-MW-5**	Water	11/10/17 10:25	11/11/17 03:20
60257950006	**R-MW-6**	Water	11/09/17 12:13	11/11/17 03:20
60257950007	**R-MW-7**	Water	11/09/17 15:35	11/11/17 03:20
60257950008	**R-MW-B1**	Water	11/09/17 14:25	11/11/17 03:20
60257950009	**R-MW-B2**	Water	11/09/17 12:25	11/11/17 03:20
60257950010	**R-DUP-1**	Water	11/10/17 08:00	11/11/17 03:20
60257950011	**R-FB-1**	Water	11/09/17 16:20	11/11/17 03:20

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60257950001	**R-MW-1**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950002	**R-MW-2**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950003	**R-MW-3**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950004	**R-MW-4**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950005	**R-MW-5**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950006	**R-MW-6**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950007	**R-MW-7**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950008	**R-MW-B1**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950009	**R-MW-B2**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950010	**R-DUP-1**	EPA 200.7	TDS	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60257950011	**R-FB-1**	EPA 200.7	TDS	7	PASI-K
		SM 2320B	JSS	1	PASI-K
		SM 2540C	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-1 **Lab ID: 60257950001** Collected: 11/09/17 16:13 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**1480**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 15:51	7440-42-8	
Calcium	**68800**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 15:51	7440-70-2	
Iron	**<12.4**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 15:51	7439-89-6	
Magnesium	**105**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 15:51	7439-95-4	
Manganese	**<1.8**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 15:51	7439-96-5	
Potassium	**7710**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 15:51	7440-09-7	
Sodium	**112000**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 15:51	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**36.5**	mg/L	20.0	4.9	1		11/16/17 14:19		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**585**	mg/L	5.0	5.0	1		11/16/17 18:29		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**18.9**	mg/L	2.0	1.0	2		11/26/17 12:01	16887-00-6	
Fluoride	**0.20J**	mg/L	0.20	0.10	1		11/25/17 12:08	16984-48-8	
Sulfate	**382**	mg/L	50.0	25.0	50		11/26/17 12:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-2 **Lab ID: 60257950002** Collected: 11/09/17 14:58 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**5650**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 15:53	7440-42-8	
Calcium	**9440**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 15:53	7440-70-2	
Iron	**94.3**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 15:53	7439-89-6	
Magnesium	**17.8J**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 15:53	7439-95-4	
Manganese	**3.7J**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 15:53	7439-96-5	
Potassium	**2970**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 15:53	7440-09-7	
Sodium	**227000**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 15:53	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**213**	mg/L	20.0	4.9	1		11/16/17 14:24		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**792**	mg/L	5.0	5.0	1		11/16/17 18:30		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**27.6**	mg/L	2.0	1.0	2		11/26/17 12:30	16887-00-6	
Fluoride	**0.87**	mg/L	0.20	0.10	1		11/25/17 12:22	16984-48-8	
Sulfate	**294**	mg/L	20.0	10.0	20		11/26/17 12:44	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-3 **Lab ID: 60257950003** Collected: 11/09/17 13:46 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**15400**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 15:56	7440-42-8	
Calcium	**5790**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 15:56	7440-70-2	
Iron	**217**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 15:56	7439-89-6	
Magnesium	**119**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 15:56	7439-95-4	
Manganese	**6.6**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 15:56	7439-96-5	
Potassium	**1950**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 15:56	7440-09-7	
Sodium	**218000**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 15:56	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**293**	mg/L	20.0	4.9	1		11/16/17 14:28		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**697**	mg/L	5.0	5.0	1		11/16/17 18:30		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**31.3**	mg/L	2.0	1.0	2		11/26/17 12:59	16887-00-6	
Fluoride	**0.90**	mg/L	0.20	0.10	1		11/25/17 12:37	16984-48-8	
Sulfate	**175**	mg/L	20.0	10.0	20		11/26/17 13:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-4 **Lab ID: 60257950004** Collected: 11/10/17 12:55 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**4260**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 15:58	7440-42-8	
Calcium	**66900**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 15:58	7440-70-2	
Iron	**4820**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 15:58	7439-89-6	
Magnesium	**13000**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 15:58	7439-95-4	
Manganese	**260**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 15:58	7439-96-5	
Potassium	**4550**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 15:58	7440-09-7	
Sodium	**58000**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 15:58	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**266**	mg/L	20.0	4.9	1		11/17/17 12:42		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**417**	mg/L	5.0	5.0	1		11/16/17 18:33		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.8**	mg/L	2.0	1.0	2		11/26/17 13:28	16887-00-6	
Fluoride	**0.88**	mg/L	0.20	0.10	1		11/25/17 13:25	16984-48-8	
Sulfate	**44.6**	mg/L	5.0	2.5	5		11/26/17 13:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-5 **Lab ID: 60257950005** Collected: 11/10/17 10:25 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**132**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 16:00	7440-42-8	B
Calcium	**124000**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 16:00	7440-70-2	
Iron	**11500**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 16:00	7439-89-6	
Magnesium	**17000**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 16:00	7439-95-4	
Manganese	**458**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 16:00	7439-96-5	
Potassium	**2070**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 16:00	7440-09-7	
Sodium	**4220**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 16:00	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**368**	mg/L	20.0	4.9	1		11/17/17 12:47		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**407**	mg/L	5.0	5.0	1		11/16/17 18:36		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.8**	mg/L	1.0	0.50	1		11/25/17 13:39	16887-00-6	
Fluoride	**0.17J**	mg/L	0.20	0.10	1		11/25/17 13:39	16984-48-8	
Sulfate	**2.0**	mg/L	1.0	0.50	1		11/25/17 13:39	14808-79-8	

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

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-6 **Lab ID: 60257950006** Collected: 11/09/17 12:13 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**747**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 16:03	7440-42-8	
Calcium	**98200**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 16:03	7440-70-2	
Iron	**940**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 16:03	7439-89-6	
Magnesium	**14000**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 16:03	7439-95-4	
Manganese	**48.8**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 16:03	7439-96-5	
Potassium	**1040**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 16:03	7440-09-7	
Sodium	**11000**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 16:03	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**275**	mg/L	20.0	4.9	1		11/16/17 14:33		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**366**	mg/L	5.0	5.0	1		11/16/17 18:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**5.4**	mg/L	1.0	0.50	1		11/25/17 13:53	16887-00-6	
Fluoride	**0.19J**	mg/L	0.20	0.10	1		11/25/17 13:53	16984-48-8	
Sulfate	**33.0**	mg/L	2.0	1.0	2		11/26/17 13:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-7 **Lab ID: 60257950007** Collected: 11/09/17 15:35 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**2370**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 16:14	7440-42-8	
Calcium	**73000**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 16:14	7440-70-2	
Iron	**15600**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 16:14	7439-89-6	
Magnesium	**19600**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 16:14	7439-95-4	
Manganese	**322**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 16:14	7439-96-5	
Potassium	**5170**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 16:14	7440-09-7	
Sodium	**27000**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 16:14	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**261**	mg/L	20.0	4.9	1		11/16/17 14:53		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**388**	mg/L	5.0	5.0	1		11/16/17 18:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.6**	mg/L	1.0	0.50	1		11/25/17 14:51	16887-00-6	
Fluoride	**0.33**	mg/L	0.20	0.10	1		11/25/17 14:51	16984-48-8	
Sulfate	**46.8**	mg/L	5.0	2.5	5		11/26/17 15:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-B1 **Lab ID: 60257950008** Collected: 11/09/17 14:25 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**133**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 16:16	7440-42-8	B
Calcium	**155000**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 16:16	7440-70-2	
Iron	**27600**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 16:16	7439-89-6	
Magnesium	**50500**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 16:16	7439-95-4	
Manganese	**1310**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 16:16	7439-96-5	
Potassium	**8700**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 16:16	7440-09-7	
Sodium	**23100**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 16:16	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**528**	mg/L	20.0	4.9	1		11/16/17 15:00		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**685**	mg/L	5.0	5.0	1		11/16/17 18:32		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**45.4**	mg/L	5.0	2.5	5		11/26/17 15:23	16887-00-6	
Fluoride	**0.16J**	mg/L	0.20	0.10	1		11/25/17 15:05	16984-48-8	
Sulfate	**38.2**	mg/L	5.0	2.5	5		11/26/17 15:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-MW-B2 **Lab ID: 60257950009** Collected: 11/09/17 12:25 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**57.3J**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 16:18	7440-42-8	B
Calcium	**112000**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 16:18	7440-70-2	
Iron	**9770**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 16:18	7439-89-6	
Magnesium	**19900**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 16:18	7439-95-4	
Manganese	**267**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 16:18	7439-96-5	
Potassium	**2010**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 16:18	7440-09-7	
Sodium	**20200**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 16:18	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**340**	mg/L	20.0	4.9	1		11/16/17 15:05		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**437**	mg/L	5.0	5.0	1		11/16/17 18:32		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**37.1**	mg/L	5.0	2.5	5		11/26/17 15:37	16887-00-6	
Fluoride	**0.18J**	mg/L	0.20	0.10	1		11/25/17 15:20	16984-48-8	
Sulfate	**12.5**	mg/L	1.0	0.50	1		11/25/17 15:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-DUP-1 **Lab ID: 60257950010** Collected: 11/10/17 08:00 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**99.7J**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 16:20	7440-42-8	B
Calcium	**126000**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 16:20	7440-70-2	
Iron	**11700**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 16:20	7439-89-6	
Magnesium	**17400**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 16:20	7439-95-4	
Manganese	**463**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 16:20	7439-96-5	
Potassium	**2030**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 16:20	7440-09-7	
Sodium	**4210**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 16:20	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**379**	mg/L	20.0	4.9	1		11/17/17 12:56		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**402**	mg/L	5.0	5.0	1		11/16/17 18:44		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.8**	mg/L	1.0	0.50	1		11/25/17 15:34	16887-00-6	
Fluoride	**0.16J**	mg/L	0.20	0.10	1		11/25/17 15:34	16984-48-8	
Sulfate	**2.0**	mg/L	1.0	0.50	1		11/25/17 15:34	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Sample: R-FB-1 **Lab ID: 60257950011** Collected: 11/09/17 16:20 Received: 11/11/17 03:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Boron	**13.4J**	ug/L	100	3.5	1	11/18/17 12:30	11/25/17 16:23	7440-42-8	B
Calcium	**<36.0**	ug/L	100	36.0	1	11/18/17 12:30	11/25/17 16:23	7440-70-2	
Iron	**<12.4**	ug/L	50.0	12.4	1	11/18/17 12:30	11/25/17 16:23	7439-89-6	
Magnesium	**<15.4**	ug/L	50.0	15.4	1	11/18/17 12:30	11/25/17 16:23	7439-95-4	
Manganese	**<1.8**	ug/L	5.0	1.8	1	11/18/17 12:30	11/25/17 16:23	7439-96-5	
Potassium	**<52.3**	ug/L	500	52.3	1	11/18/17 12:30	11/25/17 16:23	7440-09-7	
Sodium	**<28.4**	ug/L	500	28.4	1	11/18/17 12:30	11/25/17 16:23	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**7.8J**	mg/L	20.0	4.9	1		11/16/17 15:09		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**6.5**	mg/L	5.0	5.0	1		11/16/17 18:32		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	1.0	0.50	1		11/25/17 15:49	16887-00-6	
Fluoride	**<0.10**	mg/L	0.20	0.10	1		11/25/17 15:49	16984-48-8	
Sulfate	**<0.50**	mg/L	1.0	0.50	1		11/25/17 15:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

QC Batch: 503848 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950004, 60257950005, 60257950006, 60257950007, 60257950008, 60257950009, 60257950010, 60257950011

METHOD BLANK: 2063334 Matrix: Water
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950004, 60257950005, 60257950006, 60257950007, 60257950008, 60257950009, 60257950010, 60257950011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	19.9J	100	3.5	11/25/17 15:49	
Calcium	ug/L	<36.0	100	36.0	11/25/17 15:49	
Iron	ug/L	<12.4	50.0	12.4	11/25/17 15:49	
Magnesium	ug/L	<15.4	50.0	15.4	11/25/17 15:49	
Manganese	ug/L	<1.8	5.0	1.8	11/25/17 15:49	
Potassium	ug/L	<52.3	500	52.3	11/25/17 15:49	
Sodium	ug/L	<28.4	500	28.4	11/25/17 15:49	

LABORATORY CONTROL SAMPLE: 2063335

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1030	103	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	10300	103	85-115	
Magnesium	ug/L	10000	10300	103	85-115	
Manganese	ug/L	1000	1030	103	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	9720	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2063336 2063337

Parameter	Units	60257950006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	747	1000	1000	1760	1760	101	102	70-130	1	20	
Calcium	ug/L	98200	10000	10000	109000	110000	105	114	70-130	1	20	
Iron	ug/L	940	10000	10000	11200	11200	103	103	70-130	0	20	
Magnesium	ug/L	14000	10000	10000	23800	24000	98	100	70-130	1	20	
Manganese	ug/L	48.8	1000	1000	1070	1080	103	103	70-130	1	20	
Potassium	ug/L	1040	10000	10000	11200	11200	101	102	70-130	0	20	
Sodium	ug/L	11000	10000	10000	21000	21000	100	100	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2063338 2063339

Parameter	Units	60258156006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	100	1000	1000	1120	1120	102	102	70-130	0	20	
Calcium	ug/L	129000	10000	10000	141000	140000	117	109	70-130	1	20	
Iron	ug/L	18.8J	10000	10000	10300	10100	103	101	70-130	1	20	
Magnesium	ug/L	42800	10000	10000	53800	54000	110	111	70-130	0	20	
Manganese	ug/L	736	1000	1000	1790	1780	106	104	70-130	1	20	
Potassium	ug/L	7460	10000	10000	17800	17600	103	102	70-130	1	20	
Sodium	ug/L	19900	10000	10000	30200	30000	104	101	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

QC Batch: 503536 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950006, 60257950007, 60257950008, 60257950009, 60257950011

METHOD BLANK: 2061447 Matrix: Water
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950006, 60257950007, 60257950008, 60257950009, 60257950011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.9	20.0	4.9	11/16/17 12:55	

LABORATORY CONTROL SAMPLE: 2061448

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	504	101	90-110	

SAMPLE DUPLICATE: 2061449

Parameter	Units	60257954015 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.9	<4.9		10	

SAMPLE DUPLICATE: 2061451

Parameter	Units	60257950006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	275	271	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

QC Batch: 503728 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60257950004, 60257950005, 60257950010

METHOD BLANK: 2062350 Matrix: Water
Associated Lab Samples: 60257950004, 60257950005, 60257950010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.9	20.0	4.9	11/17/17 11:36	

LABORATORY CONTROL SAMPLE: 2062351

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	510	102	90-110	

SAMPLE DUPLICATE: 2062352

Parameter	Units	60257763002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	96.3	102	6	10	

SAMPLE DUPLICATE: 2062353

Parameter	Units	60257722007 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	242	242	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

QC Batch: 503429 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950004, 60257950005, 60257950006, 60257950007, 60257950008, 60257950009, 60257950010, 60257950011

METHOD BLANK: 2060984 Matrix: Water
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950004, 60257950005, 60257950006, 60257950007, 60257950008, 60257950009, 60257950010, 60257950011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/16/17 18:25	

LABORATORY CONTROL SAMPLE: 2060985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	989	99	80-120	

SAMPLE DUPLICATE: 2060986

Parameter	Units	60257864021 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	645	649	1	10	

SAMPLE DUPLICATE: 2060987

Parameter	Units	60257950006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	366	358	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

QC Batch: 504546 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950004, 60257950005, 60257950006, 60257950007, 60257950008, 60257950009, 60257950010, 60257950011

METHOD BLANK: 2067013 Matrix: Water
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950004, 60257950005, 60257950006, 60257950007, 60257950008, 60257950009, 60257950010, 60257950011

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	11/25/17 07:43	
Fluoride	mg/L	<0.10	0.20	0.10	11/25/17 07:43	
Sulfate	mg/L	<0.50	1.0	0.50	11/25/17 07:43	

LABORATORY CONTROL SAMPLE: 2067014

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	91	90-110	
Fluoride	mg/L	2.5	2.4	94	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2067015 2067016

Parameter	Units	60258458001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.9	5	5	7.7	7.8	96	97	80-120	1	15	
Fluoride	mg/L	0.37	2.5	2.5	2.8	2.9	97	100	80-120	3	15	

MATRIX SPIKE SAMPLE: 2067017

Parameter	Units	60257950006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5.4	5	10.3	98	80-120	
Fluoride	mg/L	0.19J	2.5	2.6	95	80-120	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

QC Batch: 504564 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950004, 60257950006, 60257950007, 60257950008, 60257950009

METHOD BLANK: 2067306 Matrix: Water
Associated Lab Samples: 60257950001, 60257950002, 60257950003, 60257950004, 60257950006, 60257950007, 60257950008, 60257950009

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	0.50	11/26/17 07:43	
Sulfate	mg/L	<0.50	1.0	0.50	11/26/17 07:43	

LABORATORY CONTROL SAMPLE: 2067307

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2067308 2067309

Parameter	Units	60257950006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	33.0	10	10	42.8	42.8	98	99	80-120	0	15	

MATRIX SPIKE SAMPLE: 2067310

Parameter	Units	60257953001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	83.3	50	133	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.

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

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

B	Analyte was detected in the associated method blank.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60257950001	R-MW-1	EPA 200.7	503848	EPA 200.7	503868
60257950002	R-MW-2	EPA 200.7	503848	EPA 200.7	503868
60257950003	R-MW-3	EPA 200.7	503848	EPA 200.7	503868
60257950004	R-MW-4	EPA 200.7	503848	EPA 200.7	503868
60257950005	R-MW-5	EPA 200.7	503848	EPA 200.7	503868
60257950006	R-MW-6	EPA 200.7	503848	EPA 200.7	503868
60257950007	R-MW-7	EPA 200.7	503848	EPA 200.7	503868
60257950008	R-MW-B1	EPA 200.7	503848	EPA 200.7	503868
60257950009	R-MW-B2	EPA 200.7	503848	EPA 200.7	503868
60257950010	R-DUP-1	EPA 200.7	503848	EPA 200.7	503868
60257950011	R-FB-1	EPA 200.7	503848	EPA 200.7	503868
60257950001	R-MW-1	SM 2320B	503536		
60257950002	R-MW-2	SM 2320B	503536		
60257950003	R-MW-3	SM 2320B	503536		
60257950004	R-MW-4	SM 2320B	503728		
60257950005	R-MW-5	SM 2320B	503728		
60257950006	R-MW-6	SM 2320B	503536		
60257950007	R-MW-7	SM 2320B	503536		
60257950008	R-MW-B1	SM 2320B	503536		
60257950009	R-MW-B2	SM 2320B	503536		
60257950010	R-DUP-1	SM 2320B	503728		
60257950011	R-FB-1	SM 2320B	503536		
60257950001	R-MW-1	SM 2540C	503429		
60257950002	R-MW-2	SM 2540C	503429		
60257950003	R-MW-3	SM 2540C	503429		
60257950004	R-MW-4	SM 2540C	503429		
60257950005	R-MW-5	SM 2540C	503429		
60257950006	R-MW-6	SM 2540C	503429		
60257950007	R-MW-7	SM 2540C	503429		
60257950008	R-MW-B1	SM 2540C	503429		
60257950009	R-MW-B2	SM 2540C	503429		
60257950010	R-DUP-1	SM 2540C	503429		
60257950011	R-FB-1	SM 2540C	503429		
60257950001	R-MW-1	EPA 300.0	504546		
60257950001	R-MW-1	EPA 300.0	504564		
60257950002	R-MW-2	EPA 300.0	504546		
60257950002	R-MW-2	EPA 300.0	504564		
60257950003	R-MW-3	EPA 300.0	504546		
60257950003	R-MW-3	EPA 300.0	504564		
60257950004	R-MW-4	EPA 300.0	504546		
60257950004	R-MW-4	EPA 300.0	504564		

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN RUSH ISLAND ENERGY CTR
Pace Project No.: 60257950

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60257950005	**R-MW-5**	EPA 300.0	504546		
60257950006	**R-MW-6**	EPA 300.0	504546		
60257950006	**R-MW-6**	EPA 300.0	504564		
60257950007	**R-MW-7**	EPA 300.0	504546		
60257950007	**R-MW-7**	EPA 300.0	504564		
60257950008	**R-MW-B1**	EPA 300.0	504546		
60257950008	**R-MW-B1**	EPA 300.0	504564		
60257950009	**R-MW-B2**	EPA 300.0	504546		
60257950009	**R-MW-B2**	EPA 300.0	504564		
60257950010	**R-DUP-1**	EPA 300.0	504546		
60257950011	**R-FB-1**	EPA 300.0	504546		

Pace Analytical®
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60257950

60257950

Client Name: Golder Associates

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

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

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

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

Thermometer Used: (CF 0.0) T-266 / (CF +0.2) T-239 **Type of Ice:** (Wet) Blue None

RH 11/10/17
Date and initials of person examining contents:

Cooler Temperature (°C): **As-read** 0.6/1.3 **Corr. Factor** (CF 0.0) (CF +0.2) **Corrected** 0.6/1.3

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	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☑No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	
Cyanide water sample checks: ☑N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jann Check 11/14/17 Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
www.pacelabs.com

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Mark Haddock (mhaddock@golder.com)	Attention:	
Address:	820 South Main Street, Suite 100	Copy To:	Jeffrey Ingram	Company Name:	
	St Charles, MO 63301			Address:	
Email To:	maddock@golder.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	636-724-9191 Fax: 636-724-9323	Project Name:	Ameren Rush Island Engery Center	Pace Project Manager:	Jamie Church
Requested Due Date/TAT:	Standard	Project Number:	153-1406.0002E	Pace Profile #:	9285

REGULATORY AGENCY

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

Site Location STATE: MO

Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Metals*	Cl/F/SO4/Alkalinity	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N		60257950
1	R-MW-1	WT	G			11/08/17	1613		2	1		1							1	1	1		BP1U, BP3N 01
2	R-MW-2	WT	G			"	1458																02
3	R-MW-3	WT	G			"	1346																03
4	R-MW-4	WT	G			11/10/17	1255																04
5	R-MW-5	WT	G			"	1025																05
6	R-MW-6	WT	G			11/09/17	1213		6	3		3							3	3	3		3(BP1U) 3(BP3N) 06
7	R-MW-7	WT	G			"	1535		2	1		1							1	1	1		BP1U BP3N 07
8	R-MW-B1	WT	G			"	1425																08
9	R-MW-B2	WT	G			"	1225																09
10	R-DUP-1	WT	G			11/10/17	—																10
11	R-FB-1	WT	G			11/08/17	1620		1	1		1							1	1	1		11
12		WT	G																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: B,Ca,Mg,K,Na,Fe,Mn	Golder	11-10-17	1520		11/10/17	1520				
		11/10/17	1700		11/11/17	0320	1.3	Y	Y	Y
							0.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ryan Feldmann

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 11-10-17

*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

MEMORANDUM

Date:	April 26, 2017	**Project No.:**	1531406
To:	Project File	**Project:**	Ameren
From:	Tommy Goodwin		
cc:	Amanda Derhake, Jeff Ingram	**Email:**	
RE:	**DATA VALIDATION SUMMARY, RUSH ISLAND ENERGY CENTER – 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.
- Selenium exceeded the recovery criteria 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 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).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Name: Ameren-Rush Island - CCR
Reviewer: T Goodwin

Project Manager: J Ingram
Project Number: 1531406.0002A
Validation Date: 4/26/17

Laboratory: Pace Analytical
SDG #: 60214801
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 R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2 R-DUP-1, R-DUP-2, R-MW-3MS, R-MW-3 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 (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☑	☐	☐	Rad Cooler Temp High (13.4°C)

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?	☐	☒	☐	pH
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
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)?	☑	☐	☐	0.60 Ba
b) Were analytes detected in the field blank(s)?	☑	☐	☐	Ca, Cr 0.4
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	17.1
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☑	☐	☐	Dup-1@ MW-1 FB-1@ MW-6
b) Were field dup. precision criteria met (note RPD)?	☑	☐	☐	
c) Were lab duplicates analyzed (note original and duplicate samples)?	☑	☐	☐	TDS, pH
d) Were lab dup. precision criteria met (note RPD)?	☑	☐	☐	(0-1)

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

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☐	☑	☐	Se (54)
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:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-MW-1	Chloride	22.7	D	Result had a Dilution Factor of 2
"	Sulfate	341	D	" 20
R-MW-2	Chloride	24.3	D	" 2
"	Sulfate	266	D	" 25
R-MW-3	Chloride	31.1	D	" 2
"	Sulfate	167	D	" 20
R-MW-B1	Chloride	60.3	D	" 5
"	Sulfate	45.9	D	" 5
R-MW-7	Sulfate	37.7	D	" 5
R-DUP-1	Chloride	22.7	D	" 2
"	Sulfate	341	D	" 25
R-MW-4	Chloride	19.9	D	" 2
"	Sulfate	38.5	D	" 2
R-~~B1~~ MW-B2	Chloride	32.0	D	" 2
R-MW-6	Sulfate	30.2	D	" 2
"	Cr	1.0	U	Detected in Field Blank, PQL > Result > MDL

Signature: Tommy J Goode Jr Date: 4/26/2017

MEMORANDUM

Date:	April 26, 2017	**Project No.:**	1531406
To:	Project File	**Project:**	Ameren
From:	Tommy Goodwin		
cc:	Amanda Derhake, Jeff Ingram	**Email:**	
RE:	**DATA VALIDATION SUMMARY, RUSH ISLAND ENERGY CENTER – 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.
- Selenium and Mercury 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). If the sample results were greater than the PQL, but less than 5 times the blank detection result, the detections were recorded at the result value and qualified as non-detects (U).
- When a duplicate (i.e. field, sample) RPD was not met, associated samples were qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Manager: J Ingram
Project Name: Ameren-Rush Island - E2
Project Number: 1531406.0002A
Reviewer: T Goodwin
Validation Date: 4/26/17

Laboratory: Pace Analytical
SDG #: 60218426
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 R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2 R-DUP-1, R-DUP-2, R-MW-3MS, R-MW-3MSD

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 (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☐	☒	☐	pH
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
f) Were any sample dilutions noted?	☑	☐	☐	Chloride, Sulfate
g) Were any matrix problems noted?	☑	☐	☐	Hg, Se

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☑	☐	☐	Ca, Pb
b) Were analytes detected in the field blank(s)?	☑	☐	☐	Ca, Cr, TDS
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?				Dup-1@ MW-1
	☑	☐	☐	FB-1@ MW-6
b) Were field dup. precision criteria met (note RPD)?	☑	☐	☐	
c) Were lab duplicates analyzed (note original and duplicate samples)?				
	☑	☐	☐	TDS, pH
d) Were lab dup. precision criteria met (note RPD)?	☐	☑	☐	TDS (15)

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

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

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-MW-1	Chloride	22.6	D	Result had a dilution factor (DF) of 2
"	Sulfate	234		20
R-MW-2	Chloride	23.0		2
	Sulfate	242		20
	Lead (Pb)	8.8	U	Detected in method blank (MB), 5x MB > Result > PQL
R-MW-3	Pb	6.2	U	" "
	TDS	806	J	RPD exceeded limit; Result > MDL
	Chloride	30.9	D	DF of 2
	Sulfate	158		20
R-MW-4	Chloride	19.4		2
	Sulfate	40.6		5
	Pb	5.0	U	Detected in MB; PQL > Result > MDL
R-MW-6	Chromium (Cr)	1.0	U	" Field Blank (FB); "
"	Sulfate	36.8	D	DF of 5
R-MW-7	Sulfate	43.1		5
R-MW-B1	Chloride	58.7		5
"	Sulfate	46.9		5
R-MW-B2	Chloride	30.1		2
"	Pb	5.0	U	Detected in MB; PQL > Result > MDL
R-DUP-1	Chloride	22.0	D	DF of 2
"	Sulfate	248	D	" 20
R-FB-1	Calcium (Ca)	100	U	Detected in MB; PQL > Result > MDL
				(TG)

Signature: Tommy J. Goodwin Date: 4/26/17

MEMORANDUM

Date:	April 26, 2017	**Project No.:**	1531406
To:	Project File	**Project:**	Ameren
From:	Tommy Goodwin		
cc:	Amanda Derhake, Jeff Ingram	**Email:**	
RE:	**DATA VALIDATION SUMMARY, RUSH ISLAND ENERGY CENTER – 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.
- Selenium and Mercury exceeded the recovery criteria for MS. Boron 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).
- When a duplicate (i.e. field, sample) RPD was not met, associated samples were qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Name: Ameren-Rush Island - E3
Reviewer: T Goodwin

Project Manager: J Ingram
Project Number: 1531406.0002A
Validation Date: 4/26/17

Laboratory: Pace Analytical
SDG #: 60224349
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 R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2 R-DUP-1, R-DUP-2, R-MW-3MS, R-MW-3MSD

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 (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☐	☒	☐	pH
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
f) Were any sample dilutions noted?	☑	☐	☐	Chloride, Sulfate
g) Were any matrix problems noted?	☑	☐	☐	Hg, B, Se

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?				Dup-1@ MW-1
	☑	☐	☐	FB-1@ MW-6
b) Were field dup. precision criteria met (note RPD)?	☐	☐	☐	
c) Were lab duplicates analyzed (note original and duplicate samples)?				
	☑	☐	☐	TDS, pH
d) Were lab dup. precision criteria met (note RPD)?	☑	☐	☐	

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

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☐	☑	☐	Hg (59), B(46), Se (51, 64)
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☑	
b) Was MSD accuracy criteria met?	☐	☑	☐	B(32)
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☑	
c) Were MS/MSD precision criteria met?	☑	☐	☐	

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-MW-1	Cr	1.4	J	RPD not met, Result > ~~MDL~~ MDL
"	Chloride	19.5	D	Dilution factor of 2
"	Sulfate	228	"	20
R-MW-2	Chloride	25.0	"	2
"	Sulfate	310	"	20
R-MW-3	Chloride	28.3	"	2
"	Sulfate	174	"	20
R-MW-4	Chloride	19.2	"	2
"	Sulfate	40.7	"	5
R-MW-6	"	35.7	"	2
"	Mo	20.0	U	Detected in M.B., PQL > Result > MDL
R-MW-5	Mo	20.0	U	"
R-MW-7	Sulfate	42.8	D	DF of 5
R-DUP-1	Chloride	19.5	"	2
"	Sulfate	228	"	20
R-MW-B1	Chloride	55.7	"	5
"	Sulfate	40.1	"	5
"	Mo	20.0	U	Detected in MB, PQL > Result > MDL
R-MW-B2	Mo	20.0	U	"
"	Chloride	29.5	D	DF of 2

Signature: Tommy J. Goodwin Jr Date: 4/26/17

MEMORANDUM

Date:	April 26, 2017	**Project No.:**	1531406
To:	Project File	**Project:**	Ameren
From:	Tommy Goodwin		
cc:	Amanda Derhake, Jeff Ingram	**Email:**	
RE:	**DATA VALIDATION SUMMARY, RUSH ISLAND ENERGY CENTER – 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.
- Selenium exceeded the recovery criteria 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 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 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).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Name: Ameren-Rush Island ~~E2~~ JSF E4
Reviewer: T Goodwin

Project Manager: J Ingram
Project Number: 1531406.0002A
Validation Date: 4/26/17

Laboratory: Pace Analytical
SDG #: 6022 7171
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 R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2 R-DUP-1, R-DUP-2, R-MW-4 MS, R-MW-4 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 (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☐	☒	☐	pH
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
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)?	☑	☐	☐	Cd
b) Were analytes detected in the field blank(s)?	☑	☐	☐	Ca, Cd, Cr, TDS
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?				Dup-1@ MW-5
	☑	☐	☐	FB-1@ MW-7
b) Were field dup. precision criteria met (note RPD)?	☐	☑	☐	Mo (51.4), Cd (24.2), Cr (78.6),
c) Were lab duplicates analyzed (note original and duplicate samples)?				
	☑	☐	☐	
d) Were lab dup. precision criteria met (note RPD)?	☑	☐	☐	

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

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

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
All Samples	Cd	0.50	U	Detected in Method Blank; PQL > Result > MDL
R-MW-1	Chloride	23.2	D	Dilution Factor of 2
	Sulfate	211		20
R-MW-2	Chloride	26.5		2
	Sulfate	324		20
R-MW-3	Chloride	29.3		2
	Sulfate	195		20
R-MW-4	Chloride	19.7		2
	Sulfate	43.9		5
R-MW-6	Sulfate	37.3		5
R-MW-B1	Chloride	56.1		5
	Sulfate	46.0		5
R-MW-7	Sulfate	50.0		5
	Cr	2.1	U	Detected in Field Blank; ~~Result~~ TM 5x FB > Result > PQL
R-MW-5	Cr	1.4	J	RPD not met, Result > ~~PQL~~ TM MDL
R-DUP-1	Mo	0.52	UJ	RPD not met, Result < MDL

Signature: Tommy J Goodwin Jr Date: 4/26/17

MEMORANDUM

Date:	May 30, 2017	**Project No.:**	1531406
To:	Project File	**Project:**	Ameren
From:	Tommy Goodwin		
cc:	Amanda Derhake, Jeff Ingram	**Email:**	
RE:	**DATA VALIDATION SUMMARY, RUSH ISLAND ENERGY CENTER – 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.
- Chloride exceeded the recovery criteria for MS and MSD. Sulfate exceeded the recovery criteria 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 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 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).
- When a sample exceeded the calibration range and was rerun outside of the holding time for that compound the sample result within the holding time was used only when the result was within the historical value range.

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Name: Ameren-Rush Island - ES
Reviewer: T Goodwin

Project Manager: J Ingram
Project Number: 1531406.0002A
Validation Date: 5/30/2017

Laboratory: Pace Analytical
SDG #: 60232589
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 R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2 R-DUP-1, R-DUP-2, R-MW-4MS, R-MW-4MSD

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 (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☐	☒	☐	pH
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
f) Were any sample dilutions noted?	☑	☐	☐	Chloride, Sulfate
g) Were any matrix problems noted?	☑	☐	☐	Chloride, Sulfate

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	**YES**	**NO**	**NA**	**COMMENTS**
a) Were analytes detected in the method blank(s)?	☑	☐	☐	Hg, Sb, Ca, Mo
b) Were analytes detected in the field blank(s)?	☑	☐	☐	Sb, As, Cd, Hg
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	**YES**	**NO**	**NA**	**COMMENTS**
a) Were field duplicates collected (note original and duplicate sample names)?	☑	☐	☐	Dup-1@R-MW-1 FB-1@R-MW-7
b) Were field dup. precision criteria met (note RPD)?	☐	☑	☐	(16) ~~Fl~~, Cr; detected in ~~blank OR~~ DUP sample (16)
c) Were lab duplicates analyzed (note original and duplicate samples)?	☑	☐	☐	TDS, pH
d) Were lab dup. precision criteria met (note RPD)?	☑	☐	☐	TDS(3)

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

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	**YES**	**NO**	**NA**	**COMMENTS**
a) Was MS accuracy criteria met?	☐	☑	☐	Chloride (121), Sulfate (130)
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☑	
b) Was MSD accuracy criteria met?	☐	☑	☐	Chloride (127)
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☑	
c) Were MS/MSD precision criteria met?	☑	☐	☐	

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-MW-1	Sb (Antimony)	1.0	U	Detected in M. Blank, PQL > Result > MDL
	Cd (Cadmium)	0.50	U	
	Hg (Mercury)	0.20	U	
	Chloride	21.2	D	Result had a dilution factor (DF) of 2
	Sulfate	223	D	" 20
	Cr (Chromium)	0.34	UJ	RPD not met, Result < MDL
R-DUP-1	Cd	~~0.34~~ 0.50 (TB)	U	Detected in M. Blank, PQL > Result > MDL
	Sb	1.0	U	Detected in M. Blank, PQL > Result > MDL
	Hg	0.20	U	" "
	Chloride	20.4	D	Result had a DF of 2
	Sulfate	216	D	" 20
R-MW-2	Cd	0.50	U	Detected in M. Blank, PQL > Result > MDL
	Hg	0.20	U	" "
	Chloride	23.5	D	Result had a DF of 2
	Sulfate	288	D	" 20
R-MW-3	Chloride	28.3	D	2
	Sulfate	156	D	20
	Sb	1.0	U	Detected in M. Blank, PQL > Result > MDL
	Hg	0.20	U	" "
R-MW-4	Sb	1.0	U	
	Cd	0.50	U	
	Hg	0.20	U	
	Chloride	19.0	D	Result had a DF of 2
	Sulfate	41.2	D	" 2
R-MW-5	Mo (Molybdenum)	20.0	U	Detected in M. Blank, PQL > Result > MDL
"	Sb	1.0	U	" "

Signature: Tommy J. Gooden Jr. Date: 5/30/17

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-MW-5	Cd	0.50	U	Detected in M.Blank, PQL > Result > MDL
"	Hg	0.20	U	
R-MW-6	Mo	20.0	U	
	Sb	1.0	U	
	Cd	0.50	U	
	Hg	0.20	U	
R-MW-7	Sb	1.0	U	
	Cd	0.50	U	
	Hg	0.20	U	
	Sulfate	36.8	D	Result had a DF of 2
R-MW-B1	Sb	1.0	U	Detected in M.Blank, PQL > Result > MDL
	Cd	0.50	U	
	Hg	0.20	U	
	Chloride	60.6	D	Result had a DF of 5
	Sulfate	36.6	D	" 2
R-MW-B2	Mo	20.0	U	Detected in M.Blank, PQL > Result > MDL
	Sb	1.0	U	
	Cd	0.50	U	
	Hg	0.20	U	
	Chloride	34.7	D	Result had a DF of 2
R-FB-1	Sb	1.0	U	Detected in M.Blank, PQL > Result > MDL
	Cd	0.50	U	
	Hg	0.20	U	

Signature: Tommy J. Woodard Jr. Date: 5/30/17

MEMORANDUM

Date:	May 30, 2017	**Project No.:**	1531406
To:	Project File	**Project:**	Ameren
From:	Tommy Goodwin		
cc:	Amanda Derhake, Jeff Ingram	**Email:**	
RE:	**DATA VALIDATION SUMMARY, RUSH ISLAND ENERGY CENTER – 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.
- 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).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Name: Ameren-Rush Island - EC
Reviewer: T Goodwin

Project Manager: J Ingram
Project Number: 1531406.0002A
Validation Date: 5/30/17

Laboratory: Pace Analytical
SDG #: 60236480
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 R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2 R-DUP-1, R-DUP-2, R-MW-5MS, R-MW-5MSD

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 (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☐	☒	☐	pH
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
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)?	☑	☐	☐	Be, B, Mo, Sb, Cr, Tl
b) Were analytes detected in the field blank(s)?	☑	☐	☐	Ca, Sb, Cr
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?				Dup-1@ R-MW-4
	☑	☐	☐	FB-1@ R-MW-7
b) Were field dup. precision criteria met (note RPD)?	☑	☐	☐	
c) Were lab duplicates analyzed (note original and duplicate samples)?				
	☑	☐	☐	TDS, pH
d) Were lab dup. precision criteria met (note RPD)?	☑	☐	☐	TDS(2)

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

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

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
All wells	Chromium (Cr)	1.0	U	Detected in M. Blank, PQL > Result > MDL
All wells except R-MW-2	Antimony (Sb)	1.0	U	
wells → (R-MW-5, MW-6, MW-B1, MW-B2)	Molybdenum (Mo)	20.0	U	
R-FB-1	Calcium (Ca)	100.	U	
~~R-MW-1~~ R-MW-1	Chloride	19.9	D	Result had a dilution factor of 2
"	Sulfate	213	D	20
R-MW-2	Chloride	27.7		2
"	Sulfate	321		20
R-MW-3	Chloride	30.2		2
"	Sulfate	205		20
R-MW-4	Chloride	18.5		2
"	Sulfate	29.7		2
R-MW-~~3~~	Sulfate	42.8		5
R-MW-B1	Chloride	43.0		5
"	Sulfate	40.6		5
R-MW-B2	Chloride	33.5		5
R-DUP-1	Chloride	18.5		2
"	Sulfate	29.5		2

Signature: _____ Date: 5/30/17

MEMORANDUM

Date:	May 30, 2017	**Project No.:**	1531406
To:	Project File	**Project:**	Ameren
From:	Tommy Goodwin		
cc:	Amanda Derhake, Jeff Ingram	**Email:**	
RE:	**DATA VALIDATION SUMMARY, RUSH ISLAND ENERGY CENTER – 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.
- 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 result value and qualified as non-detects (U).
- When a duplicate (i.e. field, sample) RPD was not met, associated samples were qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Name: Ameren-Rush Island - ET
Reviewer: T Goodwin

Project Manager: J Ingram
Project Number: 1531406.0002A
Validation Date: 5/30/17

Laboratory: Pace Analytical
SDG #: 60239078
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 R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2 R-DUP-1, R-DUP-2, R-MW-5 MS, R-MW-5 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 (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☐	☒	☐	pH
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
f) Were any sample dilutions noted?	☑	☐	☐	Chloride, Sulfate
g) Were any matrix problems noted?	☑	☐	☐	Calcium

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	**YES**	**NO**	**NA**	**COMMENTS**
a) Were analytes detected in the method blank(s)?	☑	☐	☐	Be, As, Cr
b) Were analytes detected in the field blank(s)?	☑	☐	☐	Be, B, Sb, As, Cr,
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	**YES**	**NO**	**NA**	**COMMENTS**
a) Were field duplicates collected (note original and duplicate sample names)?				Dup-1@ R-MW-6
	☑	☐	☐	FB-1@ R-MW-7
b) Were field dup. precision criteria met (note RPD)?	☐	☑	☐	Cr (161), Se (28), Be (46.2)
c) Were lab duplicates analyzed (note original and duplicate samples)?				
	☑	☐	☐	TDS, pH
d) Were lab dup. precision criteria met (note RPD)?	☑	☐	☐	TDS (6)

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

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	**YES**	**NO**	**NA**	**COMMENTS**
a) Was MS accuracy criteria met?	☐	☑	☐	Ca (68)
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:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-MW-1	Chloride	20.1	D	Result had a dilution factor (DF) of 2
"	Sulfate	208	D	20
R-MW-2	Chloride	27.6	D	2
	Sulfate	292	D	20
	Beryllium (Be)	1.0	U	Detected in method blank (MB), PQL > Result > MDL
	Chromium (Cr)	1.0	U	
R-MW-3	Be	1.0	U	
	Cr	1.0	U	
	Chloride	30.2	D	Result had a DF of 2
	Sulfate	176	D	20
R-MW-4	Sulfate	25.8	D	2
R-MW-5	Be	1.0	U	Detected in MB, PQL > Result > MDL
"	Cr	1.0	U	
R-MW-6	Be	1.0	U	
	As (Arsenic)	1.0	U	
	Cr	1.0	U	
	Sulfate	26.1	D	Result had a DF of 2
R-MW-7	Sulfate	39.4	D	" 5
	Be	1.0	U	Detected in MB, PQL > Result > MDL
	Antimony (Sb)	1.0	U	Detected in Field Blank, PQL > Result > MDL
	Chromium (Cr)	4.8	U	Detected in Field Blank, 5x FB > Result > PQL
R-MW-B1	Chloride	50.1	D	Result had a DF of 5
"	Sulfate	35.9	D	" 5
R-MW-B2	Chloride	34.4	D	5
	Be	1.0	U	Detected in MB, PQL > Result > MDL
	Cr	1.0	U	"

Signature: Tommy J. Goode Jr Date: 5/30/17

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-DUP-1	Be	1.0	U	Detected in MB, PQL > Result > MDL
	As	1.0	U	"
	Cr	5.6	J	RPD not met, Result > PQL
	Sulfate	25.9	D	Result had a DF of 2
R-FB-1	Be	1.0	U	Detected in MB, PQL > Result > MDL
	As	1.0	U	
	Cr	1.0	U	

Signature: Tommy J Goode Jr Date: 5/30/17

MEMORANDUM

Date:	July 6, 2017	**Project No.:**	1531406
To:	Project File	**Project:**	Ameren
From:	Tommy Goodwin		
cc:	Amanda Derhake, Jeff Ingram	**Email:**	
RE:	**DATA VALIDATION SUMMARY, RUSH ISLAND ENERGY CENTER – 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). 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).
- 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).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Name: Ameren-Rush Island- ES
Reviewer: T Goodwin

Project Manager: J Ingram
Project Number: 1531406.0002A
Validation Date: 7/6/17

Laboratory: Pace Analytical
SDG #: 60246227
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 R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2, R-DUP-1, R-FB-1, R-MW- 5 MS, R-MW- 6 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 (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☐	☒	☐	pH
c) Were the correct preservatives used?	☒	☐	☐	
d) Was the correct method used?	☒	☐	☐	
e) Were appropriate reporting limits achieved?	☒	☐	☐	
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)?	☑	☐	☐	Tl(0.073),
b) Were analytes detected in the field blank(s)?	☑	☐	☐	B(8.1), Tl(0.043), Hg(0.049)
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?				Dup-1@ MW-4
	☒	☐	☐	FB-1@ MW-7
b) Were field dup. precision criteria met (note RPD)?	☐	☑	☐	Co(200), Sb(200), Cl(209), Se(53), Tl(200)
c) Were lab duplicates analyzed (note original and duplicate samples)?				
	☒	☐	☐	
d) Were lab dup. precision criteria met (note RPD)?	☑	☐	☐	TDS(5)

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

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

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-MW-1	Thallium (Tl)	1.0	U	Detected in Method Blank (MB); Result < PQL
↓	Chloride	20.8	D	Result had a Dilution Factor (DF) of 2
↓	Sulfate	191	D	20
R-MW-2	Chloride	26.9	D	2
↓	Sulfate	279	D	20
↓	Tl	1.0	U	Detected in MB; Result < PQL
R-MW-3	Tl	1.0	U	" "
↓	Chloride	32.8	D	DF of 2
↓	Sulfate	177	D	20
R-MW-4	Chloride	20.8	D	2
↓	Sulfate	44.3	D	5
↓	Tl	1.0	U	Detected in MB; Result < PQL
R-MW-6	Sulfate	37.7	D	DF of 2
R-MW-7	Sulfate	28.6	D	5
R-MW-B1	Chloride	47.0	D	5
"	Sulfate	44.4	D	5
R-MW-B2	Chloride	34.4	D	5
R-DUP-1	Chloride	20.5	D	5
↓	Sulfate	43.6	D	5
~~R-FB-1~~ (R)	Cobalt (Co)	0.73	UJ	RPD outside limits; Result < MDL
↓	Antimony (Sb)	0.026	UJ	↓ ↓
↓	Cadmium (Cd)	0.018	UJ	
R-FB-1	Tl	1.0	U	Detected in MB; Result < PQL
		(Tl)		

Signature: Tommy J. Woodcock Date: 7/6/17

MEMORANDUM

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, RUSH ISLAND ENERGY CENTER – 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).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Manager: J Ingram
Project Name: Ameren-Rush Island -D.M. Nov 2017
Project Number: 1531406.0002A
Reviewer: T Goodwin
Validation Date: 12/22/2017

Laboratory: Pace Analytical
SDG #: 60257950
Analytical Method (type and no.): Metals 200.7~~&200.8, Hg 7470,~~ TDS 2540C, ~~pH 4500H+B,~~ Anions 300.0, ~~Rads 903.1&904.0~~, SM2320B
Matrix: ☐ Air ☐ Soil/Sed. ☒ Water ☐ Waste ☐
Sample Names R-MW-1, R-MW-2, R-MW-3, R-MW-4, R-MW-5, R-MW-6, R-MW-7, R-MW-B1, R-MW-B2 R-DUP-1, R-FB-1

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	☒	☐	☐	
b) Sampling team indicated?	☒	☐	☐	
c) Sample location noted?	☒	☐	☐	
d) Sample depth indicated (Soils)?	☐	☐	☒	
e) Sample type indicated (grab/composite)?	☒	☐	☐	Grab
f) Field QC noted?	☒	☐	☐	
g) Field parameters collected (note types)?	☒	☐	☐	pH, Cond, Turb, Temp, DO, ORP, Flow, DTW
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?	☑	☐	☐	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(19.9)
b) Were analytes detected in the field blank(s)?	☐	☐	☐	B(13.4), Alk(7.8), TDS(6.5)
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?				Dup-1@ R-MW-5
	☑	☐	☐	FB-1@ R-MW-1
b) Were field dup. precision criteria met (note RPD)?	☐	☑	☐	B(27.9)
c) Were lab duplicates analyzed (note original and duplicate samples)?				
	☑	☐	☐	Alk, TDS
d) Were lab dup. precision criteria met (note RPD)?	☑	☐	☐	

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

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

Comments/Notes:

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
R-MW-1	Alkalinity ($CaCO_3$)	36.5	U	Detected in Field Blank (FB); Result < 10x FB, but > PQL
⊥	Fluoride	0.20	J	Result between MDL + PQL
⊥	Chloride	18.9	D	Result had a dilution factor (DF) of 2
⊥	Sulfate	382	⊥	50
R-MW-2	Chloride	27.6	⊥	2
⊥	Sulfate	294	⊥	20
⊥	Magnesium (Mg)	17.8	J	PQL > Result > MDL
⊥	Manganese (Mn)	3.7	⊥	⊥
R-MW-3	Chloride	31.3	D	DF of 2
⊥	Sulfate	175	⊥	20
R-MW-4	Chloride	19.8	⊥	2
⊥	Sulfate	44.6	⊥	5
R-MW-5	Fluoride	0.17	J	PQL > Result > MDL
⊥	Boron (B)	132	U	Detected in Method Blank (MB); Result < 10x MB + Result > PQL
R-MW-6	Fluoride	0.19	J	PQL > Result > MDL
⊥	Sulfate	33.0	D	DF of 2
R-MW-7	⊥	46.8	⊥	5
R-MW-8I	⊥	38.2	⊥	5
⊥	Chloride	45.4	⊥	5
⊥	Fluoride	0.16	J	PQL > Result > MDL
⊥	B	133	U	MB; Result < 10x MB + Result > PQL
R-MW-82	Fluoride	0.18	J	PQL > Result > MDL
⊥	Chloride	37.1	D	DF of 5
⊥	B	100	U	MB; MDL < Result < PQL
R-DUP-1	B	100	U	⊥ ⊥
⊥	Fluoride	0.16	J	PQL > Result > MDL
R-FB-1	B	100	U	MB; PQL > Result > MDL
⊥	$CaCO_3$	7.8	J	PQL > Result > MDL

TJA

Signature: Tommy Arnold

Date: 12/22/17

TJA

APPENDIX C – POTENTIOMETRIC SURFACE MAPS

LEGEND

- Rush Island Energy Center Property Boundary
- RCPA Surface Impoundment

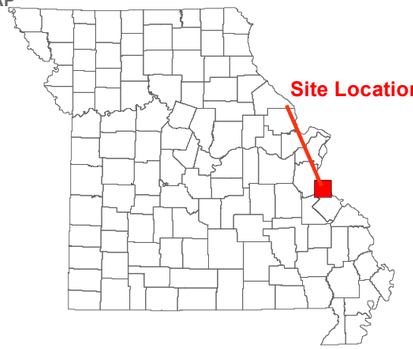
Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- Groundwater Monitoring Well
- Mississippi River Gauge
- RCPA Pond Gauge
- Groundwater Flow Direction

KEY MAP



NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER MONITORING WELLS SURVEYED BY ZAHNER AND ASSOCIATES, INC. ON DECEMBER 1, 2015.
3.) GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
5.) MISSISSIPPI RIVER LEVEL PROVIDED BY AMEREN.
6.) POND LEVEL OBTAINED ONSITE BY GOLDER.

REFERENCES

1.) AMEREN MISSOURI RUSH ISLAND ENERGY CENTER, RUSH ISLAND PROPERTY CONTROL MAP, JANUARY 2012.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
BACKGROUND EVENT 1 - MARCH 10, 2016

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-03-10
PREPARED	JSI
DESIGN	JSI
REVIEW	JS
APPROVED	MNH

PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0002A	0.0	**P1**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 11in 0

Path: G:\Projects\153\Projects\1531406 - Ameren GW Monitoring Program - MO\Phase 0002 - Rush Island Energy\800 - FIGURES-DRAWINGS\PRODUCTION\GMP Figures\Potentiometric Surface Maps\Updated Pot Maps\RCPA-E1.mxd

MW-B2
380.94

MW-B1
381.84

Mississippi River Gauge
382.23

RUSH ISLAND
ENERGY CENTER

MISSISSIPPI RIVER

MW-1
383.29

MW-7
382.02

MW-2
383.41

RCPA

MW-6
383.66

MW-3
383.41

Pond Gauge
396.5

MW-5
383.15

MW-4
382.98

381

382

383

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LEGEND

Rush Island Energy Center Property Boundary

RCPA Surface Impoundment

Groundwater Elevation Contour (FT MSL)

Groundwater Elevation Contour (FT MSL)

Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

Groundwater Monitoring Well

Mississippi River Gauge

RCPA Pond Gauge

Groundwater Flow Direction

KEY MAP

NOTES

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REFERENCES

1.) AMEREN MISSOURI RUSH ISLAND ENERGY CENTER, RUSH ISLAND PROPERTY CONTROL MAP, JANUARY 2012.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
BACKGROUND EVENT 2 - MAY 2, 2016

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-05-24
PREPARED	JSI
DESIGN	JSI
REVIEW	JS
APPROVED	MNH

PROJECT No. 153-1406 | PHASE 0002A | Rev. 0.0 | FIGURE **P2**

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

Path: G:\Projects\153\Projects\1531406 - Ameren GW Monitoring Program - MO\Phase 0002 - Rush Island Energy\800 - FIGURES-DRAWINGS\PRODUCTION\GMP Figures\Potentiometric Surface Maps\Updated Pot Maps\RCPA-E2.mxd

LEGEND

- Rush Island Energy Center Property Boundary
- RCPA Surface Impoundment

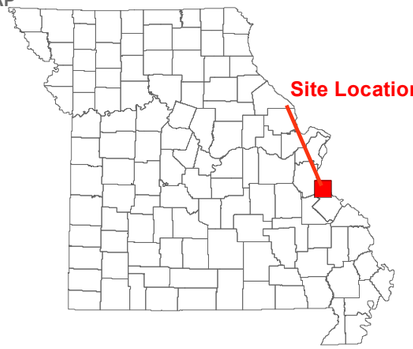
Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- Groundwater Monitoring Well
- Mississippi River Gauge
- RCPA Pond Gauge
- Groundwater Flow Direction

KEY MAP



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REFERENCES

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2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
BACKGROUND EVENT 3 - JULY 14, 2016

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-08-16
PREPARED	JS
DESIGN	JSI
REVIEW	JSI
APPROVED	MNH

PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0002A	0.0	**P3**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 11in 0

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LEGEND

- Rush Island Energy Center Property Boundary
- RCPA Surface Impoundment

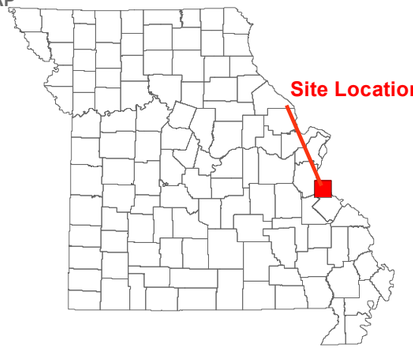
Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- Groundwater Monitoring Well
- Mississippi River Gauge
- RCPA Pond Gauge
- Groundwater Flow Direction

KEY MAP



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2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
BACKGROUND EVENT 4 - SEPTEMBER 6, 2016

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-09-27
PREPARED	JSI
DESIGN	JSI
REVIEW	JS
APPROVED	MNH

PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0002A	0.0	**P4**

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

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LEGEND

- Rush Island Energy Center Property Boundary
- RCPA Surface Impoundment

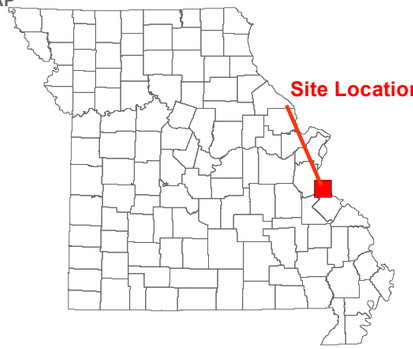
Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- Groundwater Monitoring Well
- Mississippi River Gauge
- RCPA Pond Gauge
- Groundwater Flow Direction

KEY MAP



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REFERENCES

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2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
BACKGROUND EVENT 5 - NOVEMBER 15, 2016

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-11-15
PREPARED	JSI
DESIGN	JSI
REVIEW	MSG
APPROVED	MNH

PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0002A	0.0	**P5**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 11in 0

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LEGEND

- Rush Island Energy Center Property Boundary
- RCPA Surface Impoundment

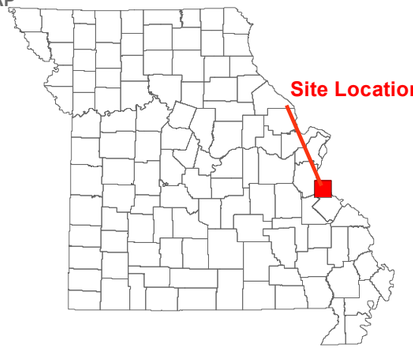
Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- Groundwater Monitoring Well
- Mississippi River Gauge
- RCPA Pond Gauge
- Groundwater Flow Direction

KEY MAP



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REFERENCES

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2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
BACKGROUND EVENT 6 - JANUARY 19, 2016

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-01-23
PREPARED	JS
DESIGN	JSI
REVIEW	BEF
APPROVED	MNH

PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0002A	0.0	**P6**

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

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LEGEND

- Rush Island Energy Center Property Boundary
- RCPA Surface Impoundment

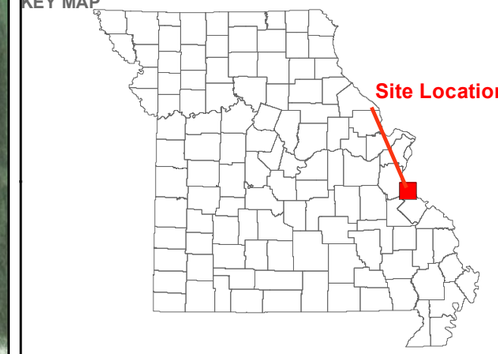
Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- Groundwater Monitoring Well
- Mississippi River Gauge
- RCPA Pond Gauge
- Groundwater Flow Direction

KEY MAP



NOTES

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2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
BACKGROUND EVENT 7 - MARCH 6, 2017

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-03-14
PREPARED	JSI
DESIGN	JSI
REVIEW	JS
APPROVED	MNH

PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0002A	0.0	**P7**

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

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MW-B2
387.40

MW-B1
387.27

Mississippi River Gauge
386.60

387

RUSH ISLAND
ENERGY CENTER

MISSISSIPPI RIVER

MW-1
387.04

MW-7
387.62

MW-2
386.74

RCPA

MW-6
387.00

MW-3
386.51

Pond Gauge
399.20

MW-5
386.84

MW-4
386.59

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LEGEND

Rush Island Energy Center Property Boundary

RCPA Surface Impoundment

Groundwater Elevation Contour (FT MSL)

Groundwater Elevation Contour (FT MSL)

Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

Groundwater Monitoring Well

Mississippi River Gauge

RCPA Pond Gauge

Groundwater Flow Direction

KEY MAP

NOTES

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2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
BACKGROUND EVENT 8 - JUNE 8, 2017

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-06-20
PREPARED	JSI
DESIGN	JSI
REVIEW	RJF
APPROVED	MNH

PROJECT No. 153-1406 | PHASE 0002A | Rev. 0.0 | FIGURE **P8**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 11in 0

Path: G:\Projects\153\Projects\1531406 - Ameren GW Monitoring Program - MO\Phase 0002 - Rush Island Energy\800 - FIGURES-DRAWINGS\PRODUCTION\GMP Figures\Potentiometric Surface Maps\Updated Pot Maps\RCPA-EB.mxd

LEGEND

- Rush Island Energy Center Property Boundary
- RCPA Surface Impoundment

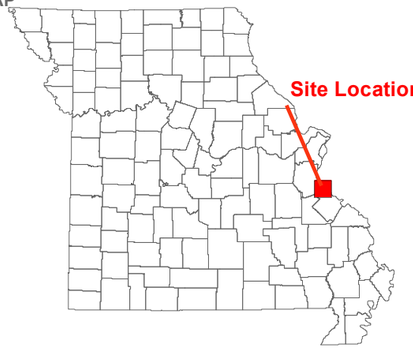
Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- Groundwater Monitoring Well
- Mississippi River Gauge
- RCPA Pond Gauge
- Groundwater Flow Direction

KEY MAP



NOTES

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2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2401 FEET.

0 500 1,000 2,000
Feet

CLIENT
AMEREN MISSOURI
RUSH ISLAND ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
RCPA - POTENTIOMETRIC SURFACE MAP
DETECTION MONITORING, NOVEMBER 9, 2017

CONSULTANT
Golder Associates

YYYY-MM-DD	2017-11-17
PREPARED	RJF
DESIGN	JSI
REVIEW	JSI
APPROVED	XXX

PROJECT No.	PHASE	Rev.	FIGURE
153-1406	0002A	0.0	**P9**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 11in 0

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