



# 2019 Annual Groundwater Monitoring and Corrective Action Report

*LCPB Surface Impoundment, Labadie Energy Center, Franklin County, Missouri, USA*

Submitted to:

**Ameren Missouri**

1901 Chouteau Avenue, St. Louis, Missouri 63103

Submitted by:

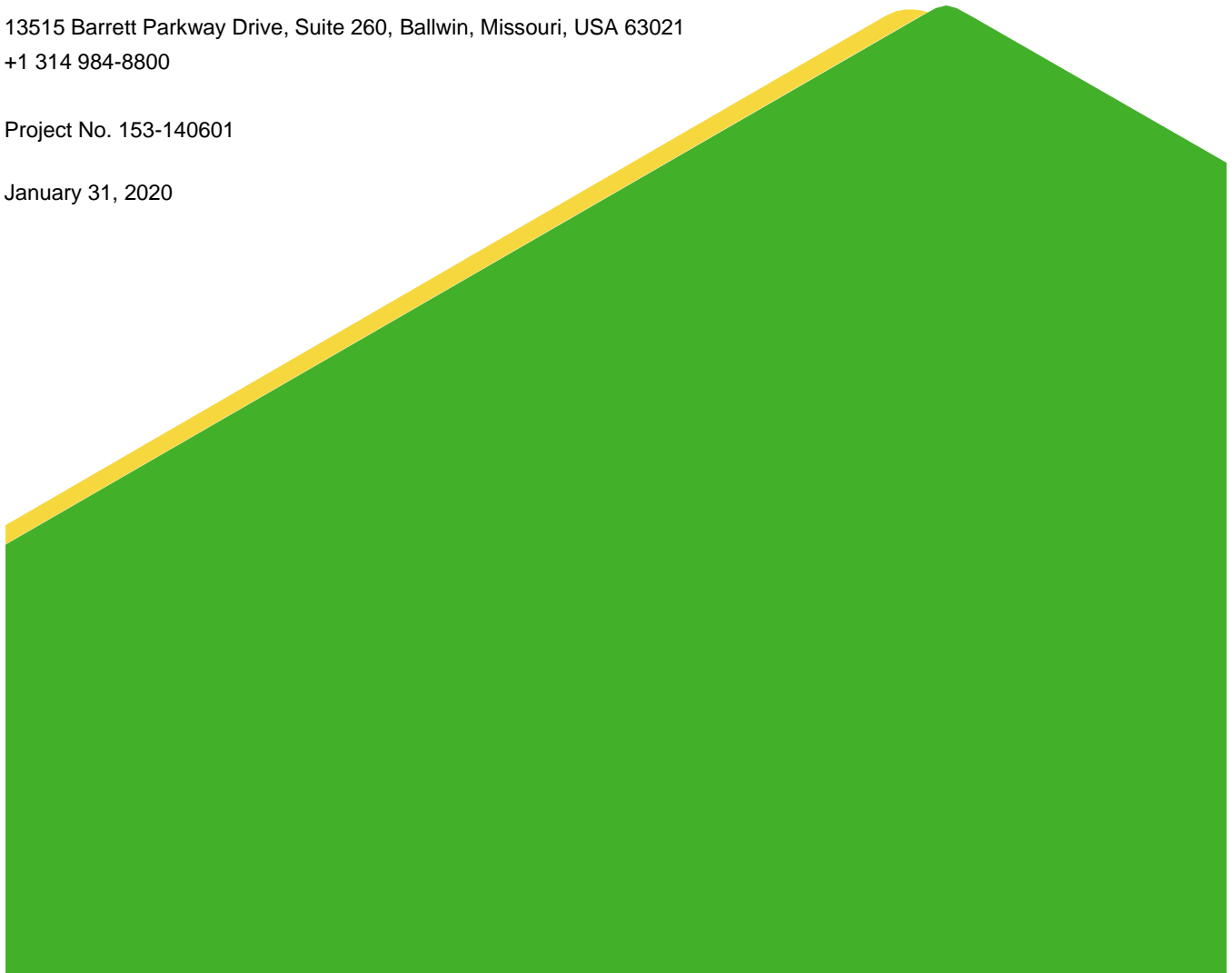
**Golder Associates Inc.**

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Project No. 153-140601

January 31, 2020



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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 LCPB Coal Combustion Residuals (CCR) Surface Impoundment at the Labadie Energy Center (LEC) is subject to the requirements of the CCR Rule. This Annual Report for the LCPB describes CCR Rule groundwater monitoring activities from January 1, 2019 through December 31, 2019.

## 2.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the LCPB. The groundwater monitoring system consists of ten (10) groundwater monitoring wells screened in the uppermost aquifer and is displayed in **Figure 1**. No new monitoring wells were installed or decommissioned in 2019 as a part of the CCR Rule monitoring program for the LCPB. For more information on the groundwater monitoring network, details are provided in the 2017 and 2018 Annual Groundwater Monitoring Reports for the LCPB.

## 3.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections review the sampling events completed for the LCPB CCR Unit in 2019. **Table 1** below provides a summary of the groundwater samples collected in 2019 including the number of samples, the date of sample collection, and the monitoring program.

**Table 1 – Summary of Groundwater Sampling Dates**

Sampling Event	Groundwater Monitoring Wells										Monitoring Program
	BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S	
	Date of Sample Collection										
January 2019 Verification Sampling	-	-	1/3/2019	-	1/3/2019	-	-	-	1/2/2019	-	Detection
April-May 2019 Detection Monitoring	5/1/2019	5/1/2019	5/1/2019	4/30/2019	5/2/2019	5/1/2019	5/1/2019	5/8/2019	5/8/2019	5/2/2019	Detection
August-October 2019 Verification Sampling	-	-	-	-	-	8/21/2019	10/4/2019	8/21/2019	-	-	Detection
November 2019 Detection Monitoring	11/5/2019	11/5/2019	11/7/2019	11/7/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	Detection
Total Number of Samples	2	2	3	2	3	3	3	3	3	2	NA

**Notes:**

- 1.) Detection Monitoring Events tested for Appendix III Parameters.
- 2.) Verification Sampling Events tested for Appendix III Parameters with initial exceedances that have not already been verified.
- 3.) "-" No sample collected.
- 4.) NA - Not applicable.

### 3.1 Detection Monitoring Program

A Detection Monitoring event was completed November 7-8, 2018. Verification Sampling and the Statistical Analysis to evaluate for Statistically Significant Increases (SSI) for the November 2018 event were not completed until 2019 and are, therefore, included in this report. Detections of Appendix III analytes triggered a verification sampling event, which was completed on January 2-3, 2019 and verified SSIs. **Table 2** summarizes the results of the statistical analysis of the November 2018 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

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

A Detection Monitoring event was completed April 30 to May 8, 2019, and testing was completed for all Appendix III analytes. Statistical analysis of the data determined that there were SSIs. **Table 3** summarizes the results of the statistical analysis of the April-May 2019 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**. As with the November 2018 sampling event, SSIs in the monitoring well network are not caused by the LCPB CCR Unit and an ASD for this is provided in **Appendix C**.

As outlined in the Statistical Analysis Plan for this site, updates to the statistical limits are completed once four (4) to eight (8) new sample results are available. During the statistical analysis of the April-May 2019 sampling event, the statistical limits used to determine an SSI were updated according to the Statistical Analysis Plan.

A Detection Monitoring event was completed November 5-7, 2019, and testing was performed for all Appendix III analytes. Statistical analyses to evaluate for SSIs in the November 2019 data were not completed in 2019 and the results will be provided in the 2020 annual report. **Table 4** summarizes the results of the November 2019 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

### 3.2 Groundwater Elevation, Flow Rate and Direction

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

Groundwater elevations were used to generate potentiometric surface maps provided in **Appendix D**. As shown on the potentiometric surface maps, groundwater flow direction within the uppermost aquifer is dynamic and influenced by seasonal changes in the water level in the adjacent Missouri River. Water flows into and out of the alluvial aquifer because of fluctuating river water levels that produce “bank recharge” and “bank discharge” conditions. Overall, based on potentiometric surface maps, a general flow direction from the south/southwest (bluffs area) to the north/northeast (Missouri River) is observed under normal river conditions. However, during periods of high river levels, groundwater flow can temporarily reverse. During these times of high river stage and temporary flow direction changes, horizontal groundwater gradients generally decrease, and little net movement of groundwater occurs.

Groundwater flow direction and hydraulic gradient were estimated for the alluvial aquifer wells at the LEC using commercially available software. Results from this assessment indicate that while groundwater flow direction is

variable, the overall net groundwater flow in the alluvial aquifer at the LEC is from the bluffs toward the river. Horizontal gradients calculated by the program range from 0.0001 to 0.0007 feet/foot with an estimated net annual groundwater velocity of approximately 17 feet per year.

## **4.0 STATUS OF THE GROUNDWATER MONITORING PROGRAM**

The LCPB remains in Detection Monitoring. Section 5.0 provides a discussion of the activities planned for 2020.

### **4.1 Sampling Issues**

From approximately May to August 2019, some of the monitoring wells at the LEC were under water due to the flooding of the Missouri River. This caused a delay in the planned sampling dates of some of the monitoring wells. On July 19, July 26 and August 12, 2019, Golder performed post-flood monitoring well inspections at the LEC and found that only BMW-1S had been impacted by the flood. This monitoring well was re-developed to remove floodwater impacts to the well prior to any future groundwater elevation measurements or groundwater samples being collected. After successful re-development, BMW-1S was returned to service. No other notable sampling issues were encountered in 2019.

## **5.0 ACTIVITIES PLANNED FOR 2020**

Detection Monitoring is scheduled to continue on a semi-annual basis in the second and fourth quarters of 2020. Statistical analysis of the November 2019 Detection Monitoring data will be completed in 2020 and included in the 2020 Annual Report.

## Tables

**Table 2**  
**November 2018 Detection Monitoring Results**  
**LCPB Surface Impoundment**  
**Labadie Energy Center, Franklin County, MO**

ANALYTE	UNITS	PREDICTION LIMITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
			BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
<b>November 2018 Detection Monitoring Event</b>												
DATE	NA	NA	11/7/2018	11/7/2018	11/7/2018	11/8/2018	11/7/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018
pH	SU	6.072-7.483	6.83	7.12	7.22	9.82	7.52	7.46	7.48	7.28	7.40	7.48
BORON, TOTAL	µg/L	122	151	84.8 J	13,900	4,210	3,840	9,450	97.2 J	3,760	6,620	6,970
CALCIUM, TOTAL	µg/L	219,000	201,000	128,000	301,000	55,100	58,200	132,000	153,000	182,000	149,000	167,000
CHLORIDE, TOTAL	mg/L	13.75	5.6	1.3 J	16.4	22.8	20.9	23.8	4.0	12.2	19.3	19.5 J
FLUORIDE, TOTAL	mg/L	0.2507	ND	ND	ND	0.23	0.46	0.23	ND	0.20	0.20	0.35 J
SULFATE, TOTAL	mg/L	65.3	36.7	28.4	982	222	263	270	12.1	122	257	334 J
TOTAL DISSOLVED SOLIDS	mg/L	780	751	958 J	1,580	420	496	757	473	740	734	867
<b>January 2019 Verification Sampling</b>												
DATE	NA	NA			1/3/2019		1/3/2019				1/2/2019	
pH	SU	6.072-7.483			6.96		7.63				6.91	
BORON, TOTAL	µg/L	122										
CALCIUM, TOTAL	µg/L	219,000			305,000							
CHLORIDE, TOTAL	mg/L	13.75			14.6						18.3	
FLUORIDE, TOTAL	mg/L	0.2507										
SULFATE, TOTAL	mg/L	65.3										
TOTAL DISSOLVED SOLIDS	mg/L	780			1470							

**NOTES:**

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

Prepared By: JSI  
Checked By: RJF  
Reviewed By: CMR

**Table 3**  
**April-May 2019 Detection Monitoring Results**  
**LCPB Surface Impoundment**  
**Labadie Energy Center, Franklin County, MO**

ANALYTE	UNITS	PREDICTION LIMITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
			BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
<b>April-May 2019 Detection Monitoring Event</b>												
DATE	NA	NA	5/1/2019	5/1/2019	5/1/2019	4/30/2019	5/2/2019	5/1/2019	5/1/2019	5/8/2019	5/8/2019	5/2/2019
pH	SU	6.132-7.436	6.53	6.18	6.70	9.54	7.33	6.15	5.96	6.67	7.08	6.92
BORON, TOTAL	µg/L	156.1	111	61.3 J	8,840	3,770	4,080	8,770	73.9 J	5,660	7,790	8,340
CALCIUM, TOTAL	µg/L	219,000	196,000	126,000	261,000	51,300	64,300	121,000	133,000	164,000	139,000	187,000
CHLORIDE, TOTAL	mg/L	8.317	4.4	1.4	9.5	22.3	20.2	23.7	2.9	16.2	20.2	17.3
FLUORIDE, TOTAL	mg/L	0.2535	0.22	0.21	0.20 J	0.24	0.45	0.31	0.18 J	0.090 J	0.17 J	0.17 J
SULFATE, TOTAL	mg/L	70.05	39.2	29.4	451	195	237	234	9.0	130	242	460
TOTAL DISSOLVED SOLIDS	mg/L	784	740	459	1,130	395	561	749	417	738	873	1,050
<b>August-October 2019 Verification Sampling Event</b>												
DATE	NA	NA						8/21/2019	10/4/2019	8/21/2019		
pH	SU	6.132-7.436						6.21	6.58	6.63		
BORON, TOTAL	µg/L	156.1										
CALCIUM, TOTAL	µg/L	219,000										
CHLORIDE, TOTAL	mg/L	8.317								21.5		
FLUORIDE, TOTAL	mg/L	0.2535						0.25				
SULFATE, TOTAL	mg/L	70.05										
TOTAL DISSOLVED SOLIDS	mg/L	784										

**NOTES:**

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

Prepared By: JSI  
Checked By: AMM  
Reviewed By: CMR



**Table 4**  
**November 2019 Detection Monitoring Results**  
**LCPB Surface Impoundment**  
**Labadie Energy Center, Franklin County, MO**

ANALYTE	UNITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
		BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
<b>November 2019 Detection Monitoring Event</b>											
DATE	NA	11/5/2019	11/5/2019	11/7/2019	11/7/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019
pH	SU	6.83	7.08	6.87	9.80	7.41	7.00	6.76	6.94	6.89	7.11
BORON, TOTAL	µg/L	122	61.2 J	11,100	3,380	3,700	8,730	498	429	10,500	7,750
CALCIUM, TOTAL	µg/L	194,000	125,000	291,000 J	49,500	144,000	136,000	192,000	146,000	136,000	212,000
CHLORIDE, TOTAL	mg/L	4.8	3.3	16.8	20.1	42.8	25.2	8.8	20.9	22.9	19.5
FLUORIDE, TOTAL	mg/L	ND	0.12 J	0.23	0.22	0.24	0.17 J	ND	0.28	0.24	0.31
SULFATE, TOTAL	mg/L	29.9	28.5	938	206	151	261	55.9	155	278	773
TOTAL DISSOLVED SOLIDS	mg/L	700	425	1,820	396	763	804	648	691	815	1,300

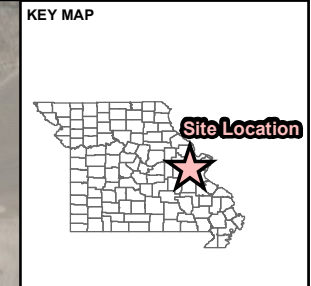
NOTES:

1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. 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: RJF  
Checked By: EMS  
Reviewed By: CMR

## Figures

720000



- LEGEND**
- Approximate Property Boundary
  - LCPB - Fly Ash Surface Impoundment
  - Groundwater Monitoring Wells Used for LCPB CCR Rule Monitoring**
  - LCPB - Fly Ash Surface Impoundment Monitoring Well
  - Background Monitoring Well

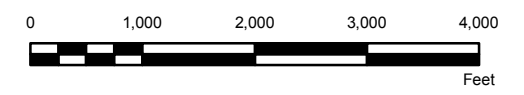
Missouri River

Labadie Energy Center

LMW-4S LMW-5S  
 LMW-3S LMW-6S  
 LMW-2S LMW-7S  
 LMW-8S  
 LMW-1S

BMW-1S

BMW-2S



**NOTE(S)**  
 1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.

**REFERENCE(S)**  
 1.) ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.  
 2.) COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT  
**AMEREN MISSOURI**  
**LABADIE ENERGY CENTER**

PROJECT  
**GROUNDWATER MONITORING PROGRAM**



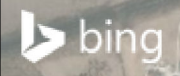
TITLE  
**SITE LOCATION AERIAL MAP AND MONITORING WELL LOCATIONS**

CONSULTANT	YYYY-MM-DD	2019-12-31
DESIGNED	JSI	
PREPARED	JSI	
REVIEWED	RJF	
APPROVED	CMR	



PROJECT NO. 153140601 CONTROL 1240 REV. 0.0 FIGURE 1

PATH: G:\Project\150 Projects\1531406 - Ameren GW Monitoring Program - MCDPhase 0001 - Labadie Energy\800 - FIGURES\DRAWINGS\PRODUCT\CON\2019 Annual Report\2020-01-08\_LCPBE1V1.mxd PRINTED ON: 2020-01-08 AT 9:24:47 AM



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

**APPENDIX A**

**Laboratory Analytical Data**

January 09, 2019

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

RE: Project: LCPB AMEREN GW  
Pace Project No.: 60291081

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on January 04, 2019. 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  
Eric Schneider, Golder Associates



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: LCPB AMEREN GW

Pace Project No.: 60291081

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### **Kansas Certification IDs**

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Certification Number: 10090

Arkansas Drinking Water

WY STR Certification #: 2456.01

Arkansas Certification #: 18-016-0

Arkansas Drinking Water

Illinois Certification #: 004455

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116 / E10426

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Texas Certification #: T104704407-18-11

Utah Certification #: KS000212018-8

Kansas Field Laboratory Accreditation: # E-92587

Missouri Certification: 10070

Missouri Certification Number: 10090

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: LCPB AMEREN GW

Pace Project No.: 60291081

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60291081001	L-LMW-1S	Water	01/03/19 15:17	01/04/19 03:25
60291081002	L-LCPB-DUP-1	Water	01/03/19 00:00	01/04/19 03:25
60291081003	L-LCPB-FB-1	Water	01/03/19 15:25	01/04/19 03:25
60291081004	L-LMW-7S	Water	01/02/19 13:52	01/04/19 03:25

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: LCPB AMEREN GW

Pace Project No.: 60291081

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60291081001	L-LMW-1S	EPA 200.7	EMR	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60291081002	L-LCPB-DUP-1	EPA 200.7	EMR	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60291081003	L-LCPB-FB-1	EPA 200.7	EMR	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60291081004	L-LMW-7S	EPA 300.0	MGS	1	PASI-K

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LCPB AMEREN GW

Pace Project No.: 60291081

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**Sample: L-LMW-1S**      **Lab ID: 60291081001**    Collected: 01/03/19 15:17    Received: 01/04/19 03:25    Matrix: Water

---

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>14300</b>	ug/L	100	12.5	1	01/07/19 11:57	01/08/19 14:07	7440-42-8	
Calcium	<b>305000</b>	ug/L	200	53.5	1	01/07/19 11:57	01/08/19 14:07	7440-70-2	M1
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>1470</b>	mg/L	5.0	5.0	1		01/08/19 08:39		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>14.6</b>	mg/L	1.0	0.29	1		01/07/19 16:33	16887-00-6	
Fluoride	<b>&lt;0.19</b>	mg/L	0.20	0.19	1		01/07/19 16:33	16984-48-8	
Sulfate	<b>823</b>	mg/L	50.0	12.0	50		01/07/19 17:03	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LCPB AMEREN GW

Pace Project No.: 60291081

---

**Sample: L-LCPB-DUP-1**      **Lab ID: 60291081002**      Collected: 01/03/19 00:00      Received: 01/04/19 03:25      Matrix: Water

---

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>14300</b>	ug/L	100	12.5	1	01/07/19 11:57	01/08/19 14:13	7440-42-8	
Calcium	<b>303000</b>	ug/L	200	53.5	1	01/07/19 11:57	01/08/19 14:13	7440-70-2	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>1600</b>	mg/L	5.0	5.0	1		01/08/19 08:39		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>14.6</b>	mg/L	1.0	0.29	1		01/07/19 17:19	16887-00-6	
Fluoride	<b>&lt;0.19</b>	mg/L	0.20	0.19	1		01/07/19 17:19	16984-48-8	
Sulfate	<b>840</b>	mg/L	50.0	12.0	50		01/07/19 18:23	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LCPB AMEREN GW

Pace Project No.: 60291081

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**Sample: L-LCPB-FB-1**      **Lab ID: 60291081003**      Collected: 01/03/19 15:25      Received: 01/04/19 03:25      Matrix: Water

---

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>39.9J</b>	ug/L	100	12.5	1	01/07/19 11:57	01/08/19 12:09	7440-42-8	
Calcium	<b>&lt;53.5</b>	ug/L	200	53.5	1	01/07/19 11:57	01/08/19 12:09	7440-70-2	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>7.5</b>	mg/L	5.0	5.0	1		01/08/19 08:39		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>&lt;0.29</b>	mg/L	1.0	0.29	1		01/07/19 18:39	16887-00-6	
Fluoride	<b>&lt;0.19</b>	mg/L	0.20	0.19	1		01/07/19 18:39	16984-48-8	
Sulfate	<b>&lt;0.24</b>	mg/L	1.0	0.24	1		01/07/19 18:39	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: LCPB AMEREN GW

Pace Project No.: 60291081

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**Sample: L-LMW-7S**      **Lab ID: 60291081004**    Collected: 01/02/19 13:52    Received: 01/04/19 03:25    Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>300.0 IC Anions 28 Days</b>									
Analytical Method: EPA 300.0									
Chloride	<b>18.3</b>	mg/L	1.0	0.29	1		01/07/19 19:27	16887-00-6	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LCPB AMEREN GW

Pace Project No.: 60291081

QC Batch: 563441

Analysis Method: EPA 200.7

QC Batch Method: EPA 200.7

Analysis Description: 200.7 Metals, Total

Associated Lab Samples: 60291081001, 60291081002, 60291081003

METHOD BLANK: 2311906

Matrix: Water

Associated Lab Samples: 60291081001, 60291081002, 60291081003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	01/08/19 14:04	
Calcium	ug/L	<53.5	200	53.5	01/08/19 14:04	

LABORATORY CONTROL SAMPLE: 2311907

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	956	96	85-115	
Calcium	ug/L	10000	9130	91	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2311908 2311909

Parameter	Units	60291081001		2311908		2311909		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MS Result	MS Spike Conc.	MSD Result	MSD Spike Conc.				
Boron	ug/L	14300	1000	1000	15400	15300	111	106	70-130	0	20
Calcium	ug/L	305000	10000	10000	311000	311000	68	63	70-130	0	20 M1

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LCPB AMEREN GW

Pace Project No.: 60291081

QC Batch: 563588

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60291081001, 60291081002, 60291081003

METHOD BLANK: 2312355

Matrix: Water

Associated Lab Samples: 60291081001, 60291081002, 60291081003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	01/08/19 08:39	

LABORATORY CONTROL SAMPLE: 2312356

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

SAMPLE DUPLICATE: 2312358

Parameter	Units	60291119003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	531	528	1	10	

SAMPLE DUPLICATE: 2312359

Parameter	Units	60291121002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	670	669	0	10	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: LCPB AMEREN GW  
Pace Project No.: 60291081

QC Batch: 563456 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 60291081001, 60291081002, 60291081003, 60291081004

METHOD BLANK: 2311949 Matrix: Water  
Associated Lab Samples: 60291081001, 60291081002, 60291081003, 60291081004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	01/07/19 15:03	
Fluoride	mg/L	<0.19	0.20	0.19	01/07/19 15:03	
Sulfate	mg/L	<0.24	1.0	0.24	01/07/19 15:03	

LABORATORY CONTROL SAMPLE: 2311950

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2311951 2311952

Parameter	Units	60290661001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	188000	100000	100000	308000	304000	120	116	90-110	1	15	M1

MATRIX SPIKE SAMPLE: 2311953

Parameter	Units	60290913001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	239	100	351	112	90-110	M1
Fluoride	mg/L	0.97	2.5	3.2	88	90-110	M1
Sulfate	mg/L	846	500	1310	93	90-110	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: LCPB AMEREN GW

Pace Project No.: 60291081

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City

### ANALYTE QUALIFIERS

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: LCPB AMEREN GW

Pace Project No.: 60291081

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60291081001	L-LMW-1S	EPA 200.7	563441	EPA 200.7	563487
60291081002	L-LCPB-DUP-1	EPA 200.7	563441	EPA 200.7	563487
60291081003	L-LCPB-FB-1	EPA 200.7	563441	EPA 200.7	563487
60291081001	L-LMW-1S	SM 2540C	563588		
60291081002	L-LCPB-DUP-1	SM 2540C	563588		
60291081003	L-LCPB-FB-1	SM 2540C	563588		
60291081001	L-LMW-1S	EPA 300.0	563456		
60291081002	L-LCPB-DUP-1	EPA 300.0	563456		
60291081003	L-LCPB-FB-1	EPA 300.0	563456		
60291081004	L-LMW-7S	EPA 300.0	563456		

### REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

JLS

WO#: 60291081
Barcode
60291081

Client Name: Golden Associates

Courier: FedEx [ ] UPS [ ] VIA [ ] Clay [ ] PEX [ ] ECI [ ] Pace [ ] Xroads [x] Client [ ] Other [ ]

Tracking #: Pace Shipping Label Used? Yes [ ] No [x]

Custody Seal on Cooler/Box Present: Yes [x] No [ ] Seals intact: Yes [x] No [ ]

Packing Material: Bubble Wrap [ ] Bubble Bags [x] Foam [ ] None [ ] Other [ ]

Thermometer Used: T-301 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 1.4, 0.5 Corr. Factor 0.0 Corrected 1.4, 0.5

Date and initials of person examining contents: 2/4/19 AC

Temperature should be above freezing to 6°C

Table with 2 columns: Question/Requirement and Yes/No/NIA checkboxes. Rows include Chain of Custody, Short Hold Time, Rush Turn Around Time, Sufficient volume, Containers used, Containers intact, Unpreserved soils, Filtered volume, Sample labels, Multiple phases, pH preservation, Cyanide checks, Trip Blank, Headspace, USDA Regulated Area, and Additional labels.

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: [Signature] Date: 1/7/19



**MEMORANDUM****DATE** January 10, 2019**Project No.** 1531406**TO** Project File  
Golder Associates**CC****FROM** Tommy Goodwin**EMAIL** [tgoodwin@golder.com](mailto:tgoodwin@golder.com)**DATA VALIDATION SUMMARY: AMEREN – LABADIE ENERGY CENTER – VERIFICATION SAMPLING – DATA PACKAGE 60291081**

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

- When analytes exceeded the recovery criteria for MS/MSD of a sample, the sample result was not qualified on MS/MSD data alone.
- 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).

## QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates  
 Project Name: Ameren - LCPB-VS- Jan 2019  
 Reviewer: T Goodwin

Project Manager: J Ingram  
 Project Number: 1531406  
 Validation Date: 1/10/19

Laboratory: Pace Analytical (72) (D) (D) SDG #: 60291081 (72)  
 Analytical Method (type and no.): Metals (200.78206.8), Hg (7470), Alk (SM 2320B), TDS (SM 2540C), Fe (SM 3500-Fe B#4), Anions (300.0), P (305.4), Ra (903.1&904.0)  
 Matrix:  Air  Soil/Sed.  Water  Waste   
 Sample Names: L-LMW-1S, L-LMW-7S, L-LMW-3S, L-LMW-FB-1, L-LMW-DUP-1

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>1/3/19</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated (grab/composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Grab</u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Cond, Turb, Temp, DO, ORP, Q, DTW</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				
_____				
_____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

## QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FB-1: B(39.9), TDS(7.5)
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dup-1@ LMW-1S
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FB-1@ LMW-1S
b) Were field dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ca, Cl <sup>-</sup> , F <sup>-</sup>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was MSD accuracy criteria met?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ca, Cl <sup>-</sup>
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were MS/MSD precision criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

**Comments/Notes:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



August 15, 2019

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

RE: Project: AMEREN LABADIE ENERGY CTR  
Pace Project No.: 60301568

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between May 02, 2019 and May 10, 2019. 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  
Mark Haddock, Golder Associates  
Eric Schneider, Golder Associates



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

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### **Kansas Certification IDs**

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 19-016-0

Arkansas Drinking Water

Illinois Certification #: 004455

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212018-1

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-18-11

Utah Certification #: KS000212018-8

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60301568001	L-LMW-1S	Water	05/01/19 15:05	05/02/19 04:13
60301568002	L-LMW-2S	Water	04/30/19 15:25	05/02/19 04:13
60301568003	L-LMW-5S	Water	05/01/19 14:05	05/02/19 04:13
60301568004	L-BMW-1S	Water	05/01/19 11:35	05/02/19 04:13
60301568005	L-BMW-2S	Water	05/01/19 10:50	05/02/19 04:13
60301568006	L-LMW-DUP-1	Water	04/30/19 15:25	05/02/19 04:13
60301568007	L-LMW-4S	Water	05/01/19 16:00	05/02/19 04:13
60301803001	L-LMW-3S	Water	05/02/19 10:05	05/04/19 04:35
60301803002	L-LMW-8S	Water	05/02/19 14:05	05/04/19 04:35
60301803003	L-LMW-FB-1	Water	05/02/19 10:35	05/04/19 04:35
60302537001	L-LMW-6S	Water	05/08/19 12:35	05/10/19 03:45
60302537002	L-LMW-7S	Water	05/08/19 14:05	05/10/19 03:45

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60301568001	L-LMW-1S	EPA 200.7	EMR	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	JDS	3	PASI-K
60301568002	L-LMW-2S	EPA 200.7	EMR	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	JDS	3	PASI-K
60301568003	L-LMW-5S	EPA 200.7	EMR	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	JDS	3	PASI-K
60301568004	L-BMW-1S	EPA 200.7	EMR	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	JDS	3	PASI-K
60301568005	L-BMW-2S	EPA 200.7	EMR	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	JDS	3	PASI-K
60301568006	L-LMW-DUP-1	EPA 200.7	EMR	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	JDS	3	PASI-K
60301568007	L-LMW-4S	EPA 200.7	EMR	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	JDS	3	PASI-K
60301803001	L-LMW-3S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60301803002	L-LMW-8S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	JDS, MGS	3	PASI-K
60301803003	L-LMW-FB-1	EPA 200.7	HKC	7	PASI-K

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60302537001	L-LMW-6S	SM 2320B	AJS2	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
		EPA 200.7	EMR	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	LDF	1	PASI-K
60302537002	L-LMW-7S	EPA 300.0	JDS	3	PASI-K
		EPA 200.7	EMR	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 300.0	JDS, MGS	3	PASI-K

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-1S**      **Lab ID: 60301568001**      Collected: 05/01/19 15:05      Received: 05/02/19 04:13      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>8840</b>	ug/L	100	10.7	1	05/10/19 15:30	05/13/19 12:28	7440-42-8	
Calcium	<b>261000</b>	ug/L	200	50.0	1	05/10/19 15:30	05/13/19 12:28	7440-70-2	
Iron	<b>17300</b>	ug/L	50.0	14.0	1	05/10/19 15:30	05/13/19 12:28	7439-89-6	
Magnesium	<b>47800</b>	ug/L	50.0	13.0	1	05/10/19 15:30	05/13/19 12:28	7439-95-4	
Manganese	<b>2840</b>	ug/L	5.0	2.1	1	05/10/19 15:30	05/13/19 12:28	7439-96-5	
Potassium	<b>6590</b>	ug/L	500	79.0	1	05/10/19 15:30	05/13/19 12:28	7440-09-7	
Sodium	<b>24300</b>	ug/L	500	144	1	05/10/19 15:30	05/13/19 12:28	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>427</b>	mg/L	20.0	6.5	1		05/13/19 13:05		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>1130</b>	mg/L	13.3	13.3	1		05/07/19 11:30		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>9.5</b>	mg/L	1.0	0.22	1		05/15/19 15:21	16887-00-6	
Fluoride	<b>0.20J</b>	mg/L	0.20	0.085	1		05/15/19 15:21	16984-48-8	M1
Sulfate	<b>451</b>	mg/L	50.0	11.5	50		05/16/19 11:31	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-2S**      **Lab ID: 60301568002**      Collected: 04/30/19 15:25      Received: 05/02/19 04:13      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>3770</b>	ug/L	100	10.7	1	05/10/19 15:30	05/13/19 12:50	7440-42-8	
Calcium	<b>51300</b>	ug/L	200	50.0	1	05/10/19 15:30	05/13/19 12:50	7440-70-2	
Iron	<b>&lt;14.0</b>	ug/L	50.0	14.0	1	05/10/19 15:30	05/13/19 12:50	7439-89-6	
Magnesium	<b>89.0</b>	ug/L	50.0	13.0	1	05/10/19 15:30	05/13/19 12:50	7439-95-4	
Manganese	<b>&lt;2.1</b>	ug/L	5.0	2.1	1	05/10/19 15:30	05/13/19 12:50	7439-96-5	
Potassium	<b>8500</b>	ug/L	500	79.0	1	05/10/19 15:30	05/13/19 12:50	7440-09-7	
Sodium	<b>58800</b>	ug/L	500	144	1	05/10/19 15:30	05/13/19 12:50	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>30.8</b>	mg/L	20.0	6.5	1		05/13/19 12:43		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>395</b>	mg/L	10.0	10.0	1		05/07/19 10:01		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>22.3</b>	mg/L	2.0	0.44	2		05/16/19 12:19	16887-00-6	
Fluoride	<b>0.24</b>	mg/L	0.20	0.085	1		05/15/19 16:29	16984-48-8	
Sulfate	<b>195</b>	mg/L	20.0	4.6	20		05/15/19 17:19	14808-79-8	

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### ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-5S**      **Lab ID: 60301568003**      Collected: 05/01/19 14:05      Received: 05/02/19 04:13      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>73.9J</b>	ug/L	100	10.7	1	05/10/19 15:30	05/13/19 12:52	7440-42-8	
Calcium	<b>133000</b>	ug/L	200	50.0	1	05/10/19 15:30	05/13/19 12:52	7440-70-2	
Iron	<b>45.7J</b>	ug/L	50.0	14.0	1	05/10/19 15:30	05/13/19 12:52	7439-89-6	
Magnesium	<b>14400</b>	ug/L	50.0	13.0	1	05/10/19 15:30	05/13/19 12:52	7439-95-4	
Manganese	<b>11.6</b>	ug/L	5.0	2.1	1	05/10/19 15:30	05/13/19 12:52	7439-96-5	
Potassium	<b>2740</b>	ug/L	500	79.0	1	05/10/19 15:30	05/13/19 12:52	7440-09-7	
Sodium	<b>5770</b>	ug/L	500	144	1	05/10/19 15:30	05/13/19 12:52	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>392</b>	mg/L	20.0	6.5	1		05/13/19 13:27		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>417</b>	mg/L	10.0	10.0	1		05/07/19 11:31		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>2.9</b>	mg/L	1.0	0.22	1		05/15/19 17:36	16887-00-6	
Fluoride	<b>0.18J</b>	mg/L	0.20	0.085	1		05/15/19 17:36	16984-48-8	
Sulfate	<b>9.0</b>	mg/L	1.0	0.23	1		05/15/19 17:36	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-BMW-1S**      **Lab ID: 60301568004**      Collected: 05/01/19 11:35      Received: 05/02/19 04:13      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	111	ug/L	100	10.7	1	05/10/19 15:30	05/13/19 12:54	7440-42-8	
Calcium	196000	ug/L	200	50.0	1	05/10/19 15:30	05/13/19 12:54	7440-70-2	
Iron	30000	ug/L	50.0	14.0	1	05/10/19 15:30	05/13/19 12:54	7439-89-6	
Magnesium	47000	ug/L	50.0	13.0	1	05/10/19 15:30	05/13/19 12:54	7439-95-4	
Manganese	2810	ug/L	5.0	2.1	1	05/10/19 15:30	05/13/19 12:54	7439-96-5	
Potassium	5760	ug/L	500	79.0	1	05/10/19 15:30	05/13/19 12:54	7440-09-7	
Sodium	19100	ug/L	500	144	1	05/10/19 15:30	05/13/19 12:54	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	694	mg/L	20.0	6.5	1		05/13/19 13:35		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	740	mg/L	10.0	10.0	1		05/07/19 11:31		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	4.4	mg/L	1.0	0.22	1		05/15/19 17:53	16887-00-6	
Fluoride	0.22	mg/L	0.20	0.085	1		05/15/19 17:53	16984-48-8	
Sulfate	39.2	mg/L	5.0	1.2	5		05/15/19 18:10	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-BMW-2S**      **Lab ID: 60301568005**      Collected: 05/01/19 10:50      Received: 05/02/19 04:13      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>61.3J</b>	ug/L	100	10.7	1	05/10/19 15:30	05/13/19 12:57	7440-42-8	
Calcium	<b>126000</b>	ug/L	200	50.0	1	05/10/19 15:30	05/13/19 12:57	7440-70-2	
Iron	<b>21.5J</b>	ug/L	50.0	14.0	1	05/10/19 15:30	05/13/19 12:57	7439-89-6	
Magnesium	<b>20900</b>	ug/L	50.0	13.0	1	05/10/19 15:30	05/13/19 12:57	7439-95-4	
Manganese	<b>&lt;2.1</b>	ug/L	5.0	2.1	1	05/10/19 15:30	05/13/19 12:57	7439-96-5	
Potassium	<b>6860</b>	ug/L	500	79.0	1	05/10/19 15:30	05/13/19 12:57	7440-09-7	
Sodium	<b>9440</b>	ug/L	500	144	1	05/10/19 15:30	05/13/19 12:57	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>392</b>	mg/L	20.0	6.5	1		05/13/19 13:40		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>459</b>	mg/L	10.0	10.0	1		05/07/19 11:31		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>1.4</b>	mg/L	1.0	0.22	1		05/15/19 18:27	16887-00-6	
Fluoride	<b>0.21</b>	mg/L	0.20	0.085	1		05/15/19 18:27	16984-48-8	
Sulfate	<b>29.4</b>	mg/L	5.0	1.2	5		05/15/19 18:43	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-DUP-1**      **Lab ID: 60301568006**      Collected: 04/30/19 15:25      Received: 05/02/19 04:13      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>3830</b>	ug/L	100	10.7	1	05/10/19 15:30	05/13/19 12:59	7440-42-8	
Calcium	<b>52400</b>	ug/L	200	50.0	1	05/10/19 15:30	05/13/19 12:59	7440-70-2	
Iron	<b>&lt;14.0</b>	ug/L	50.0	14.0	1	05/10/19 15:30	05/13/19 12:59	7439-89-6	
Magnesium	<b>91.2</b>	ug/L	50.0	13.0	1	05/10/19 15:30	05/13/19 12:59	7439-95-4	
Manganese	<b>&lt;2.1</b>	ug/L	5.0	2.1	1	05/10/19 15:30	05/13/19 12:59	7439-96-5	
Potassium	<b>8410</b>	ug/L	500	79.0	1	05/10/19 15:30	05/13/19 12:59	7440-09-7	
Sodium	<b>59500</b>	ug/L	500	144	1	05/10/19 15:30	05/13/19 12:59	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>29.2</b>	mg/L	20.0	6.5	1		05/13/19 12:48		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>401</b>	mg/L	5.0	5.0	1		05/07/19 10:01		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>26.0</b>	mg/L	20.0	4.4	20		05/15/19 19:17	16887-00-6	
Fluoride	<b>0.25</b>	mg/L	0.20	0.085	1		05/15/19 19:00	16984-48-8	
Sulfate	<b>201</b>	mg/L	20.0	4.6	20		05/15/19 19:17	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-4S**      **Lab ID: 60301568007**      Collected: 05/01/19 16:00      Received: 05/02/19 04:13      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>8770</b>	ug/L	100	10.7	1	05/10/19 15:30	05/13/19 13:01	7440-42-8	
Calcium	<b>121000</b>	ug/L	200	50.0	1	05/10/19 15:30	05/13/19 13:01	7440-70-2	
Iron	<b>6680</b>	ug/L	50.0	14.0	1	05/10/19 15:30	05/13/19 13:01	7439-89-6	
Magnesium	<b>24400</b>	ug/L	50.0	13.0	1	05/10/19 15:30	05/13/19 13:01	7439-95-4	
Manganese	<b>1470</b>	ug/L	5.0	2.1	1	05/10/19 15:30	05/13/19 13:01	7439-96-5	
Potassium	<b>6720</b>	ug/L	500	79.0	1	05/10/19 15:30	05/13/19 13:01	7440-09-7	
Sodium	<b>85300</b>	ug/L	500	144	1	05/10/19 15:30	05/13/19 13:01	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<b>317</b>	mg/L	20.0	6.5	1		05/13/19 13:51		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>749</b>	mg/L	10.0	10.0	1		05/07/19 11:32		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>23.7</b>	mg/L	2.0	0.44	2		05/15/19 19:51	16887-00-6	
Fluoride	<b>0.31</b>	mg/L	0.20	0.085	1		05/15/19 19:34	16984-48-8	
Sulfate	<b>234</b>	mg/L	20.0	4.6	20		05/15/19 20:42	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-3S**      **Lab ID: 60301803001**      Collected: 05/02/19 10:05      Received: 05/04/19 04:35      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>4080</b>	ug/L	100	10.7	1	05/15/19 08:55	05/16/19 11:37	7440-42-8	
Calcium	<b>64300</b>	ug/L	200	50.0	1	05/15/19 08:55	05/16/19 11:37	7440-70-2	
Iron	<b>3700</b>	ug/L	50.0	14.0	1	05/15/19 08:55	05/16/19 11:37	7439-89-6	
Magnesium	<b>5280</b>	ug/L	50.0	13.0	1	05/15/19 08:55	05/16/19 11:37	7439-95-4	
Manganese	<b>391</b>	ug/L	5.0	2.1	1	05/15/19 08:55	05/16/19 11:37	7439-96-5	
Potassium	<b>7310</b>	ug/L	500	79.0	1	05/15/19 08:55	05/16/19 11:37	7440-09-7	
Sodium	<b>99100</b>	ug/L	500	144	1	05/15/19 08:55	05/16/19 11:37	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>133</b>	mg/L	20.0	6.5	1		05/16/19 10:45		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>561</b>	mg/L	10.0	10.0	1		05/09/19 14:01		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>20.2</b>	mg/L	2.0	0.44	2		05/16/19 20:12	16887-00-6	
Fluoride	<b>0.45</b>	mg/L	0.20	0.085	1		05/16/19 19:55	16984-48-8	
Sulfate	<b>237</b>	mg/L	20.0	4.6	20		05/16/19 19:05	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-8S**      **Lab ID: 60301803002**      Collected: 05/02/19 14:05      Received: 05/04/19 04:35      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>8340</b>	ug/L	100	10.7	1	05/15/19 08:55	05/16/19 11:39	7440-42-8	
Calcium	<b>187000</b>	ug/L	200	50.0	1	05/15/19 08:55	05/16/19 11:39	7440-70-2	
Iron	<b>12200</b>	ug/L	50.0	14.0	1	05/15/19 08:55	05/16/19 11:39	7439-89-6	
Magnesium	<b>35500</b>	ug/L	50.0	13.0	1	05/15/19 08:55	05/16/19 11:39	7439-95-4	
Manganese	<b>2590</b>	ug/L	5.0	2.1	1	05/15/19 08:55	05/16/19 11:39	7439-96-5	
Potassium	<b>7750</b>	ug/L	500	79.0	1	05/15/19 08:55	05/16/19 11:39	7440-09-7	
Sodium	<b>83400</b>	ug/L	500	144	1	05/15/19 08:55	05/16/19 11:39	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>325</b>	mg/L	20.0	6.5	1		05/16/19 10:50		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>1050</b>	mg/L	13.3	13.3	1		05/09/19 14:01		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>17.3</b>	mg/L	1.0	0.22	1		05/16/19 20:29	16887-00-6	
Fluoride	<b>0.17J</b>	mg/L	0.20	0.085	1		05/16/19 20:29	16984-48-8	
Sulfate	<b>460</b>	mg/L	50.0	11.5	50		05/22/19 23:28	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-FB-1**      **Lab ID: 60301803003**      Collected: 05/02/19 10:35      Received: 05/04/19 04:35      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>14.8J</b>	ug/L	100	10.7	1	05/15/19 08:55	05/16/19 11:41	7440-42-8	
Calcium	<b>81.1J</b>	ug/L	200	50.0	1	05/15/19 08:55	05/16/19 11:41	7440-70-2	
Iron	<b>19.9J</b>	ug/L	50.0	14.0	1	05/15/19 08:55	05/16/19 11:41	7439-89-6	
Magnesium	<b>25.8J</b>	ug/L	50.0	13.0	1	05/15/19 08:55	05/16/19 11:41	7439-95-4	B
Manganese	<b>&lt;2.1</b>	ug/L	5.0	2.1	1	05/15/19 08:55	05/16/19 11:41	7439-96-5	
Potassium	<b>&lt;79.0</b>	ug/L	500	79.0	1	05/15/19 08:55	05/16/19 11:41	7440-09-7	
Sodium	<b>146J</b>	ug/L	500	144	1	05/15/19 08:55	05/16/19 11:41	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>&lt;6.5</b>	mg/L	20.0	6.5	1		05/16/19 10:55		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>&lt;5.0</b>	mg/L	5.0	5.0	1		05/09/19 14:01		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>&lt;0.22</b>	mg/L	1.0	0.22	1		05/16/19 21:20	16887-00-6	
Fluoride	<b>&lt;0.085</b>	mg/L	0.20	0.085	1		05/16/19 21:20	16984-48-8	
Sulfate	<b>&lt;0.23</b>	mg/L	1.0	0.23	1		05/16/19 21:20	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-6S**      **Lab ID: 60302537001**      Collected: 05/08/19 12:35      Received: 05/10/19 03:45      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>5660</b>	ug/L	100	10.7	1	05/20/19 14:55	05/21/19 12:22	7440-42-8	
Calcium	<b>164000</b>	ug/L	200	50.0	1	05/20/19 14:55	05/21/19 12:22	7440-70-2	
Iron	<b>13700</b>	ug/L	50.0	14.0	1	05/20/19 14:55	05/21/19 12:22	7439-89-6	
Magnesium	<b>32100</b>	ug/L	50.0	13.0	1	05/20/19 14:55	05/21/19 12:22	7439-95-4	
Manganese	<b>2210</b>	ug/L	5.0	2.1	1	05/20/19 14:55	05/21/19 12:22	7439-96-5	
Potassium	<b>6350</b>	ug/L	500	79.0	1	05/20/19 14:55	05/21/19 12:22	7440-09-7	
Sodium	<b>26800</b>	ug/L	500	144	1	05/20/19 14:55	05/21/19 12:22	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>442</b>	mg/L	20.0	6.5	1		05/17/19 13:16		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>738</b>	mg/L	10.0	10.0	1		05/15/19 16:13		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>16.2</b>	mg/L	1.0	0.22	1		05/31/19 03:52	16887-00-6	
Fluoride	<b>0.090J</b>	mg/L	0.20	0.085	1		05/31/19 03:52	16984-48-8	
Sulfate	<b>130</b>	mg/L	10.0	2.3	10		05/31/19 04:08	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

**Sample: L-LMW-7S**      **Lab ID: 60302537002**      Collected: 05/08/19 14:05      Received: 05/10/19 03:45      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>7790</b>	ug/L	100	10.7	1	05/20/19 14:55	05/21/19 12:24	7440-42-8	
Calcium	<b>139000</b>	ug/L	200	50.0	1	05/20/19 14:55	05/21/19 12:24	7440-70-2	
Iron	<b>5750</b>	ug/L	50.0	14.0	1	05/20/19 14:55	05/21/19 12:24	7439-89-6	
Magnesium	<b>35000</b>	ug/L	50.0	13.0	1	05/20/19 14:55	05/21/19 12:24	7439-95-4	
Manganese	<b>1450</b>	ug/L	5.0	2.1	1	05/20/19 14:55	05/21/19 12:24	7439-96-5	
Potassium	<b>7210</b>	ug/L	500	79.0	1	05/20/19 14:55	05/21/19 12:24	7440-09-7	
Sodium	<b>58500</b>	ug/L	500	144	1	05/20/19 14:55	05/21/19 12:24	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>341</b>	mg/L	20.0	6.5	1		05/17/19 13:32		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>873</b>	mg/L	10.0	10.0	1		05/15/19 16:13		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>20.2</b>	mg/L	2.0	0.44	2		05/31/19 15:41	16887-00-6	
Fluoride	<b>0.17J</b>	mg/L	0.20	0.085	1		05/31/19 04:23	16984-48-8	
Sulfate	<b>242</b>	mg/L	50.0	11.5	50		05/31/19 15:58	14808-79-8	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch:	583885	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
Associated Lab Samples:	60301568001, 60301568002, 60301568003, 60301568004, 60301568005, 60301568006, 60301568007		

METHOD BLANK:	2395795	Matrix:	Water
Associated Lab Samples:	60301568001, 60301568002, 60301568003, 60301568004, 60301568005, 60301568006, 60301568007		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<10.7	100	10.7	05/13/19 12:26	
Calcium	ug/L	<50.0	200	50.0	05/13/19 12:26	
Iron	ug/L	<14.0	50.0	14.0	05/13/19 12:26	
Magnesium	ug/L	<13.0	50.0	13.0	05/13/19 12:26	
Manganese	ug/L	<2.1	5.0	2.1	05/13/19 12:26	
Potassium	ug/L	<79.0	500	79.0	05/13/19 12:26	
Sodium	ug/L	146J	500	144	05/13/19 12:26	

LABORATORY CONTROL SAMPLE: 2395796

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	970	97	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Manganese	ug/L	1000	1000	100	85-115	
Potassium	ug/L	10000	9680	97	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2395797 2395798

Parameter	Units	60301568001		2395798		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Boron	ug/L	8840	1000	9770	9690	93	85	70-130	1	20	
Calcium	ug/L	261000	10000	272000	271000	113	97	70-130	1	20	
Iron	ug/L	17300	10000	27200	27100	99	98	70-130	0	20	
Magnesium	ug/L	47800	10000	57900	57700	101	99	70-130	0	20	
Manganese	ug/L	2840	1000	3800	3780	96	94	70-130	1	20	
Potassium	ug/L	6590	10000	16800	16700	102	101	70-130	0	20	
Sodium	ug/L	24300	10000	34500	34200	102	99	70-130	1	20	

MATRIX SPIKE SAMPLE: 2395799

Parameter	Units	60301646001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	163	1000	1120	96	70-130	
Calcium	ug/L	63400	10000	72400	90	70-130	
Iron	ug/L	325	10000	10000	97	70-130	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

MATRIX SPIKE SAMPLE:		2395799					
Parameter	Units	60301646001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Magnesium	ug/L	9420	10000	18700	92	70-130	
Manganese	ug/L	679	1000	1630	95	70-130	
Potassium	ug/L	302000	10000	309000	67	70-130	M1
Sodium	ug/L	279000	10000	286000	77	70-130	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 584623 Analysis Method: EPA 200.7  
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total  
 Associated Lab Samples: 60301803001, 60301803002, 60301803003

METHOD BLANK: 2398909 Matrix: Water

Associated Lab Samples: 60301803001, 60301803002, 60301803003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<10.7	100	10.7	05/16/19 11:33	
Calcium	ug/L	<50.0	200	50.0	05/16/19 11:33	
Iron	ug/L	<14.0	50.0	14.0	05/16/19 11:33	
Magnesium	ug/L	15.8J	50.0	13.0	05/16/19 11:33	
Manganese	ug/L	<2.1	5.0	2.1	05/16/19 11:33	
Potassium	ug/L	<79.0	500	79.0	05/16/19 11:33	
Sodium	ug/L	<144	500	144	05/16/19 11:33	

LABORATORY CONTROL SAMPLE: 2398910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	974	97	85-115	
Calcium	ug/L	10000	9980	100	85-115	
Iron	ug/L	10000	9790	98	85-115	
Magnesium	ug/L	10000	9900	99	85-115	
Manganese	ug/L	1000	980	98	85-115	
Potassium	ug/L	10000	9900	99	85-115	
Sodium	ug/L	10000	10100	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2398911 2398912

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60301804001 Result	Spike Conc.	Spike Conc.	MS Result						
Boron	ug/L	109	1000	1000	1120	1120	101	101	70-130	0	20
Calcium	ug/L	164000	10000	10000	178000	177000	140	134	70-130	0	20 M1
Iron	ug/L	286	10000	10000	10200	10100	99	98	70-130	1	20
Magnesium	ug/L	44200	10000	10000	55200	55100	110	108	70-130	0	20
Manganese	ug/L	4600	1000	1000	5710	5680	112	108	70-130	1	20
Potassium	ug/L	5510	10000	10000	15800	15700	103	102	70-130	1	20
Sodium	ug/L	11200	10000	10000	21700	21700	105	104	70-130	0	20

MATRIX SPIKE SAMPLE: 2398913

Parameter	Units	60301923002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	ND	1000	1010	96	70-130	
Calcium	ug/L	26300	10000	34600	83	70-130	
Iron	ug/L	150	10000	9420	93	70-130	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

MATRIX SPIKE SAMPLE:		2398913					
Parameter	Units	60301923002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Magnesium	ug/L	7480	10000	16700	92	70-130	
Manganese	ug/L	13.1	1000	956	94	70-130	
Potassium	ug/L	2990	10000	12600	96	70-130	
Sodium	ug/L	54000	10000	60800	68	70-130	M1

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 585659 Analysis Method: EPA 200.7  
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total  
 Associated Lab Samples: 60302537001, 60302537002

METHOD BLANK: 2403215 Matrix: Water

Associated Lab Samples: 60302537001, 60302537002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<10.7	100	10.7	05/21/19 12:05	
Calcium	ug/L	<50.0	200	50.0	05/21/19 12:05	
Iron	ug/L	<14.0	50.0	14.0	05/21/19 12:05	
Magnesium	ug/L	<13.0	50.0	13.0	05/21/19 12:05	
Manganese	ug/L	<2.1	5.0	2.1	05/21/19 12:05	
Potassium	ug/L	<79.0	500	79.0	05/21/19 12:05	
Sodium	ug/L	<144	500	144	05/21/19 12:05	

LABORATORY CONTROL SAMPLE: 2403216

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1020	102	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	9980	100	85-115	
Magnesium	ug/L	10000	10600	106	85-115	
Manganese	ug/L	1000	1060	106	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2403217 2403218

Parameter	Units	60302656002		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	% Rec					
Boron	ug/L	239	1000	1000	1260	1270	103	104	70-130	1	20		
Calcium	ug/L	113000	10000	10000	122000	122000	90	90	70-130	0	20		
Iron	ug/L	84.6	10000	10000	9640	9740	96	97	70-130	1	20		
Magnesium	ug/L	46100	10000	10000	56100	55700	100	96	70-130	1	20		
Manganese	ug/L	29.7	1000	1000	1080	1070	105	104	70-130	1	20		
Potassium	ug/L	76800	10000	10000	87300	87400	105	106	70-130	0	20		
Sodium	ug/L	567000	10000	10000	579000	573000	122	63	70-130	1	20	E,M1	

MATRIX SPIKE SAMPLE: 2403219

Parameter	Units	60302658002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	300	1000	1300	100	70-130	
Calcium	ug/L	74200	10000	84100	98	70-130	
Iron	ug/L	566	10000	10000	94	70-130	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

MATRIX SPIKE SAMPLE:		2403219					
Parameter	Units	60302658002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Magnesium	ug/L	10200	10000	20100	98	70-130	
Manganese	ug/L	18.5	1000	1060	104	70-130	
Potassium	ug/L	11600	10000	21600	101	70-130	
Sodium	ug/L	87900	10000	98300	104	70-130	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 584102

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60301568001, 60301568002, 60301568003, 60301568004, 60301568005, 60301568006, 60301568007

METHOD BLANK: 2397396

Matrix: Water

Associated Lab Samples: 60301568001, 60301568002, 60301568003, 60301568004, 60301568005, 60301568006, 60301568007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	<6.5	20.0	6.5	05/13/19 12:18	

LABORATORY CONTROL SAMPLE: 2397397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	500	497	99	90-110	

SAMPLE DUPLICATE: 2397398

Parameter	Units	60301568001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	427	429	0	10	

SAMPLE DUPLICATE: 2397399

Parameter	Units	60301568005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	392	402	3	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 584515

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60301803001, 60301803002, 60301803003

METHOD BLANK: 2398572

Matrix: Water

Associated Lab Samples: 60301803001, 60301803002, 60301803003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	<6.5	20.0	6.5	05/16/19 10:35	

LABORATORY CONTROL SAMPLE: 2398573

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	500	519	104	90-110	

SAMPLE DUPLICATE: 2398574

Parameter	Units	60301804001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	543	549	1	10	

SAMPLE DUPLICATE: 2398575

Parameter	Units	60302254001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	611	617	1	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 585263

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60302537001, 60302537002

METHOD BLANK: 2401500

Matrix: Water

Associated Lab Samples: 60302537001, 60302537002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	<6.5	20.0	6.5	05/17/19 12:29	

LABORATORY CONTROL SAMPLE: 2401501

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 2401502

Parameter	Units	60302527013 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	498	495	1	10	

SAMPLE DUPLICATE: 2401503

Parameter	Units	60302446001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	202	197	3	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 582881

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60301568002, 60301568006

METHOD BLANK: 2392180

Matrix: Water

Associated Lab Samples: 60301568002, 60301568006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/07/19 09:57	

LABORATORY CONTROL SAMPLE: 2392181

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

SAMPLE DUPLICATE: 2392182

Parameter	Units	60301548001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	559	550	2	10	

SAMPLE DUPLICATE: 2392183

Parameter	Units	60301568002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	395	397	1	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 583021

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60301568001, 60301568003, 60301568004, 60301568005, 60301568007

METHOD BLANK: 2392610

Matrix: Water

Associated Lab Samples: 60301568001, 60301568003, 60301568004, 60301568005, 60301568007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/07/19 11:29	

LABORATORY CONTROL SAMPLE: 2392611

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1030	103	80-120	

SAMPLE DUPLICATE: 2392612

Parameter	Units	60301568001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1130	1120	1	10	

SAMPLE DUPLICATE: 2392613

Parameter	Units	60301618006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2610	2660	2	10	

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**QUALITY CONTROL DATA**

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 583514

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60301803001, 60301803002, 60301803003

METHOD BLANK: 2394354

Matrix: Water

Associated Lab Samples: 60301803001, 60301803002, 60301803003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/09/19 13:57	

LABORATORY CONTROL SAMPLE: 2394355

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

SAMPLE DUPLICATE: 2394356

Parameter	Units	60301670001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	314	308	2	10	

SAMPLE DUPLICATE: 2394357

Parameter	Units	60301786007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	4230	4720	11	10	D6

SAMPLE DUPLICATE: 2394358

Parameter	Units	60301804001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	664	670	1	10	

SAMPLE DUPLICATE: 2394359

Parameter	Units	60301827001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2220	2260	2	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 584820

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60302537001, 60302537002

METHOD BLANK: 2399596

Matrix: Water

Associated Lab Samples: 60302537001, 60302537002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	7.5	5.0	5.0	05/15/19 16:12	

LABORATORY CONTROL SAMPLE: 2399597

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1100	110	80-120	

SAMPLE DUPLICATE: 2399598

Parameter	Units	60302527015 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	11.8	<5.0			

SAMPLE DUPLICATE: 2399599

Parameter	Units	60302459001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	355	719			D6

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**QUALITY CONTROL DATA**

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

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QC Batch: 584698 Analysis Method: EPA 300.0  
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
 Associated Lab Samples: 60301568001, 60301568002, 60301568003, 60301568004, 60301568005, 60301568006, 60301568007

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METHOD BLANK: 2399191 Matrix: Water  
 Associated Lab Samples: 60301568001, 60301568002, 60301568003, 60301568004, 60301568005, 60301568006, 60301568007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	05/15/19 10:10	
Fluoride	mg/L	<0.085	0.20	0.085	05/15/19 10:10	
Sulfate	mg/L	<0.23	1.0	0.23	05/15/19 10:10	

LABORATORY CONTROL SAMPLE: 2399192

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	2.3	91	90-110	
Sulfate	mg/L	5	4.7	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2399193 2399194

Parameter	Units	60301521004		MS		MSD		MS		MSD		% Rec Limits	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	200	5	5	202	202	48	54	80-120	0	15	M1		
Fluoride	mg/L	0.20J	2.5	2.5	2.5	2.4	92	89	80-120	3	15			
Sulfate	mg/L	3.2	5	5	8.3	8.2	100	99	80-120	1	15			

MATRIX SPIKE SAMPLE: 2399195

Parameter	Units	60301568001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	19.7J	5	14.6	103	80-120	
Fluoride	mg/L	<4.2	2.5	2.0	73	80-120	M1

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 584970

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60301568001, 60301568002

METHOD BLANK: 2400377

Matrix: Water

Associated Lab Samples: 60301568001, 60301568002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	05/16/19 09:47	
Sulfate	mg/L	<0.23	1.0	0.23	05/16/19 09:47	

LABORATORY CONTROL SAMPLE: 2400378

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2400379 2400380

Parameter	Units	60301568001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	Spike Conc.	MSD Result						
Chloride	mg/L	19.7J	250	286	250	259	107	96	80-120	10	15	
Sulfate	mg/L	451	250	722	250	691	108	96	80-120	4	15	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 585101 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60301803001, 60301803002, 60301803003

METHOD BLANK: 2400812 Matrix: Water

Associated Lab Samples: 60301803001, 60301803002, 60301803003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.46J	1.0	0.22	05/16/19 18:31	
Fluoride	mg/L	<0.085	0.20	0.085	05/16/19 18:31	
Sulfate	mg/L	<0.23	1.0	0.23	05/16/19 18:31	

LABORATORY CONTROL SAMPLE: 2400813

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	2.4	96	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2400814 2400815

Parameter	Units	60301804001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
Chloride	mg/L	3.7	5	5	5	8.4	8.4	94	95	80-120	0	15			
Fluoride	mg/L	0.24	2.5	2.5	2.5	2.5	2.6	92	93	80-120	1	15			
Sulfate	mg/L	98.6	25	25	25	129	127	120	115	80-120	1	15 E			

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

QC Batch: 586198

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60301803002

METHOD BLANK: 2405133

Matrix: Water

Associated Lab Samples: 60301803002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	<0.23	1.0	0.23	05/22/19 12:16	

LABORATORY CONTROL SAMPLE: 2405134

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE SAMPLE: 2405137

Parameter	Units	60302408005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	65.1	250	311	98	80-120	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR  
Pace Project No.: 60301568

QC Batch: 587622 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 60302537001, 60302537002

METHOD BLANK: 2410440 Matrix: Water  
Associated Lab Samples: 60302537001, 60302537002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	05/30/19 11:43	
Fluoride	mg/L	<0.085	0.20	0.085	05/30/19 11:43	
Sulfate	mg/L	<0.23	1.0	0.23	05/30/19 11:43	

LABORATORY CONTROL SAMPLE: 2410441

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2410442 2410443

Parameter	Units	60302527003		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Sulfate	mg/L	24.7	10	10	35.4	35.6	107	109	80-120	0	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2410444 2410445

Parameter	Units	60302527010		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Fluoride	mg/L	<4.2	2.5	2.5	2.9	3.0	112	114	80-120	1	15		
Sulfate	mg/L	24.0J	25	25	42.2	42.5	98	99	80-120	1	15		

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**QUALITY CONTROL DATA**

Project: AMEREN LABADIE ENERGY CTR  
Pace Project No.: 60301568

QC Batch: 587875 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 60302537002

METHOD BLANK: 2411258 Matrix: Water  
Associated Lab Samples: 60302537002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	05/31/19 10:08	
Sulfate	mg/L	<0.23	1.0	0.23	05/31/19 10:08	

LABORATORY CONTROL SAMPLE: 2411259

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	
Sulfate	mg/L	5	5.3	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2411260 2411261

Parameter	Units	60302527003 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Chloride	mg/L	4.1	5	5	8.9	8.9	97	96	80-120	1	15	
Sulfate	mg/L	24.7	5	5	30.1	30.1	108	107	80-120	0	15 E	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2411262 2411263

Parameter	Units	60302527010 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Chloride	mg/L	175	250	250	418	415	97	96	80-120	1	15	
Sulfate	mg/L	24.0J	250	250	271	268	99	98	80-120	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2411265 2411266

Parameter	Units	60303293015 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Chloride	mg/L	3080	2500	2500	6090	5880	120	112	80-120	4	15	
Sulfate	mg/L	ND	2500	2500	2880	2910	99	100	80-120	1	15	

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## QUALIFIERS

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

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

E Analyte concentration exceeded the calibration range. The reported result is estimated.

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60301568001	L-LMW-1S	EPA 200.7	583885	EPA 200.7	584051
60301568002	L-LMW-2S	EPA 200.7	583885	EPA 200.7	584051
60301568003	L-LMW-5S	EPA 200.7	583885	EPA 200.7	584051
60301568004	L-BMW-1S	EPA 200.7	583885	EPA 200.7	584051
60301568005	L-BMW-2S	EPA 200.7	583885	EPA 200.7	584051
60301568006	L-LMW-DUP-1	EPA 200.7	583885	EPA 200.7	584051
60301568007	L-LMW-4S	EPA 200.7	583885	EPA 200.7	584051
60301803001	L-LMW-3S	EPA 200.7	584623	EPA 200.7	584665
60301803002	L-LMW-8S	EPA 200.7	584623	EPA 200.7	584665
60301803003	L-LMW-FB-1	EPA 200.7	584623	EPA 200.7	584665
60302537001	L-LMW-6S	EPA 200.7	585659	EPA 200.7	585727
60302537002	L-LMW-7S	EPA 200.7	585659	EPA 200.7	585727
60301568001	L-LMW-1S	SM 2320B	584102		
60301568002	L-LMW-2S	SM 2320B	584102		
60301568003	L-LMW-5S	SM 2320B	584102		
60301568004	L-BMW-1S	SM 2320B	584102		
60301568005	L-BMW-2S	SM 2320B	584102		
60301568006	L-LMW-DUP-1	SM 2320B	584102		
60301568007	L-LMW-4S	SM 2320B	584102		
60301803001	L-LMW-3S	SM 2320B	584515		
60301803002	L-LMW-8S	SM 2320B	584515		
60301803003	L-LMW-FB-1	SM 2320B	584515		
60302537001	L-LMW-6S	SM 2320B	585263		
60302537002	L-LMW-7S	SM 2320B	585263		
60301568001	L-LMW-1S	SM 2540C	583021		
60301568002	L-LMW-2S	SM 2540C	582881		
60301568003	L-LMW-5S	SM 2540C	583021		
60301568004	L-BMW-1S	SM 2540C	583021		
60301568005	L-BMW-2S	SM 2540C	583021		
60301568006	L-LMW-DUP-1	SM 2540C	582881		
60301568007	L-LMW-4S	SM 2540C	583021		
60301803001	L-LMW-3S	SM 2540C	583514		
60301803002	L-LMW-8S	SM 2540C	583514		
60301803003	L-LMW-FB-1	SM 2540C	583514		
60302537001	L-LMW-6S	SM 2540C	584820		
60302537002	L-LMW-7S	SM 2540C	584820		
60301568001	L-LMW-1S	EPA 300.0	584698		
60301568001	L-LMW-1S	EPA 300.0	584970		
60301568002	L-LMW-2S	EPA 300.0	584698		
60301568002	L-LMW-2S	EPA 300.0	584970		

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CTR

Pace Project No.: 60301568

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60301568003	L-LMW-5S	EPA 300.0	584698		
60301568004	L-BMW-1S	EPA 300.0	584698		
60301568005	L-BMW-2S	EPA 300.0	584698		
60301568006	L-LMW-DUP-1	EPA 300.0	584698		
60301568007	L-LMW-4S	EPA 300.0	584698		
60301803001	L-LMW-3S	EPA 300.0	585101		
60301803002	L-LMW-8S	EPA 300.0	585101		
60301803002	L-LMW-8S	EPA 300.0	586198		
60301803003	L-LMW-FB-1	EPA 300.0	585101		
60302537001	L-LMW-6S	EPA 300.0	587622		
60302537002	L-LMW-7S	EPA 300.0	587622		
60302537002	L-LMW-7S	EPA 300.0	587875		

## REPORT OF LABORATORY ANALYSIS

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**Sample Condition Upon Receipt**

**WO# : 60301803**  
  
60301803

Client Name: Golden

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: P-296 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 1.5 Corr. Factor -1.0 Corrected 0.5

Date and initials of person examining contents: 5/1/19

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>COC 2/2 same Sample &amp; COC</u>
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>1/2</u>
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<u>Sample 2-2mm-SS doesn't</u>
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<u>have labels on them.</u>
Samples contain multiple phases? Matrix: <u>WET</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DPO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: Jamie Clark Date: 5/6/19







Sample Condition Upon Receipt

WO#: 60301568



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-296 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 3.0, 3.2 Corr. Factor -1.0 Corrected 2.0, 2.2

Date and initials of person examining contents: 5/2/19

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<u>sent extra samples 2-2mm-25</u>
Samples contain multiple phases? Matrix: <u>WFT</u>	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<u>time + date 5/1/19 @ 11:00 (BP2, BP3, N)</u>
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<u>BP3W</u>
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

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

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: Per Eric, analyze extra sample L-LMW-4S for all parameters.

Project Manager Review: Jana Church Date: 5/4/19





**Sample Condition Upon Receipt**

**WO# : 60302537**



Client Name: Colder Assoc

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

Tracking #: \_\_\_\_\_ Pace Shipping Label Used? Yes  No

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

Packing Material: Bubble Wrap  Bubble Bags  Foam  None  Other  EPIC

Thermometer Used: 7200 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 0.4 Corr. Factor 70.4 Corrected 0.8

Date and initials of person examining contents: 5-10-19

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>There are 2 COC for the same set of samples</u>
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exemptions: VOA Micro O&G KS TPH OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: Janni Chank Date: 5/13/19



**MEMORANDUM****DATE** August 16, 2019**Project No.** 1531406**TO** Project File  
Golder Associates**CC** Amanda Derhake, Jeff Ingram**FROM** Tommy Goodwin**EMAIL** [Tommy\\_Goodwin@golder.com](mailto:Tommy_Goodwin@golder.com)**DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – DETECTION MONITORING - DATA PACKAGE 60301568**

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

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

## QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Project Manager: J Ingram  
 Project Name: Ameron - Labadie - LCPB - ~~100~~ DM Project Number: 153140601  
 Reviewer: T Goodwin Validation Date: 8/16/19  
 Laboratory: Pace Analytical - KS SDG #: 60301568  
 Analytical Method (type and no.): EPA 200.7 (Metal), 23202 (~~100~~ <sup>Alk</sup>), 25400 (TDS), 300.0 (Amias)  
 Matrix:  Air  Soil/Sed.  Water  Waste   
 Sample Names L-LMW-1S, L-LMW-2S, L-LMW-3S, L-LMW-4S, L-LMW-5S, L-LMW-6S, L-LMW-7S, L-LMW-8S  
L-BMW-1S, L-BMW-2S, L-LMW-DUP-1, L-LMW-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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>4/30-5/8/19</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated ( <u>grab</u> /composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performance from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

## QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Notes
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Notes
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DUP-1: <del>L-LMW-25</del> L-LMW-25 FB-1: <del>L-LMW-35</del> L-LMW-35 Max Field Dup RPD: 15.3% (Limit 20%)
b) Were field dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Notes (12)

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

-6F  
-03  
-37

Comments/Notes:

MB	MS/MSD	SD	FB
-65001-07: Na (14.6)	04001: Ca (A)	31001: TDS	8 (14.8)
-04001-05: Mg (15.8)	04001: SO <sub>4</sub> (B)	53001: FDS	6 (81.1)
-04001-03: Cl (0.46)	65001: F (-)		Fe (14.9)
-03001-03: Mg (15.8)	46001: K (-)		Mg (25.8)
-37001-02: TDS (7.5)	33002: Na (-)		Na (14.6)
-03001-03: Cl (0.46)	56001: Na (-)		
	21001: Cl (-)		
	22001: SO <sub>4</sub> (B)		

Dilutions: Chloride + Sulfate were diluted in several samples; no quantification is necessary. (12)





November 08, 2019

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

RE: Project: AMEREN LABADIE ENERGY CTR LCPB  
Pace Project No.: 60312686

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on August 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

REV-1, 11/8/19: Anion list trimmed to match COC.

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  
Tommy Goodwin, Golder Associates  
Mark Haddock, Golder Associates  
Eric Schneider, Golder Associates



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60312686

---

### **Kansas Certification IDs**

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 19-016-0

Arkansas Drinking Water

Illinois Certification #: 004455

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212018-8

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60312686

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60312686001	L-LMW-6S	Water	08/21/19 13:10	08/22/19 02:55
60312686002	L-LMW-4S	Water	08/21/19 13:25	08/22/19 02:55

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60312686

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60312686001	L-LMW-6S	EPA 300.0	MGS	1	PASI-K
60312686002	L-LMW-4S	EPA 300.0	JDS	1	PASI-K

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60312686

---

**Sample: L-LMW-6S**      **Lab ID: 60312686001**    Collected: 08/21/19 13:10    Received: 08/22/19 02:55    Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>300.0 IC Anions 28 Days</b>									
Analytical Method: EPA 300.0									
Chloride	<b>21.5</b>	mg/L	2.0	0.44	2		09/05/19 15:47	16887-00-6	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60312686

---

**Sample: L-LMW-4S**      **Lab ID: 60312686002**    Collected: 08/21/19 13:25    Received: 08/22/19 02:55    Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>300.0 IC Anions 28 Days</b>									
Analytical Method: EPA 300.0									
Fluoride	<b>0.25</b>	mg/L	0.20	0.085	1		09/05/19 03:00	16984-48-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60312686

QC Batch: 607274	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60312686002	

METHOD BLANK: 2481584 Matrix: Water

Associated Lab Samples: 60312686001, 60312686002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.085	0.20	0.085	09/04/19 16:58	

LABORATORY CONTROL SAMPLE: 2481585

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.3	93	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2481586 2481587

Parameter	Units	60311649003		2481586		2481587		% Rec Limits	RPD	Max RPD	Qual	
		MS Result	MSD Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					MS % Rec
Fluoride	mg/L	0.67	0.67	2.5	2.5	3.1	3.0	98	94	80-120	3	15

MATRIX SPIKE SAMPLE: 2481588

Parameter	Units	60312823002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	12.5	11.8	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

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60312686

QC Batch: 607541

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Associated Lab Samples: 60312686001

METHOD BLANK: 2482447

Matrix: Water

Associated Lab Samples: 60312686001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	09/05/19 14:18	

LABORATORY CONTROL SAMPLE: 2482448

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	

MATRIX SPIKE SAMPLE: 2482449

Parameter	Units	60312563001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	ND	1000	988	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2482450 2482451

Parameter	Units	60312762002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	250	250	258	258	90	90	80-120	0	15	

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

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60312686

---

### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CTR LCPB  
Pace Project No.: 60312686

---

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60312686001	L-LMW-6S	EPA 300.0	607541		
60312686002	L-LMW-4S	EPA 300.0	607274		

### REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60312686



Client Name: Goinder

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  XPIC

Thermometer Used: T295 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 1.2 Corr. Factor -0.2 Corrected 1.0

Date and initials of person examining contents: 8/22/19 HF

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State: _____	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: Jamie Church Date: 8/23/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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

<b>Section A</b> Required Client Information: Company: Golder Associates Address: 13515 Barrett Parkway Drive, Ste 260 Ballwin, MO 63021 Email To: <a href="mailto:maddock@golder.com">maddock@golder.com</a> Phone: 636-724-9191 Fax: 636-724-9323 Requested Due Date/TAT: Standard		<b>Section B</b> Required Project Information: Report To: Mark Maddock ( <a href="mailto:mhaddock@golder.com">mhaddock@golder.com</a> ) Copy To: Jeffrey Ingram Purchase Order No.: <u>2014-10-13</u> Project Name: Ameren Stawk EC SPC Project Number: 159-1406-00026 (GOC#17)		<b>Section C</b> Invoice Information: Attention: Company Name: Address: Pace Quote Reference: Pace Project Manager: Jamie Church Pace Profile #: 9285	
<b>Section D</b> Required Client Information Valid Matrix Codes DRINKING WATER: DW WASTE WATER: WW PRODUCT: P SOIL/SOLID: SL OIL: OL WP OT TS <b>SAMPLE ID</b> (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE		REGULATORY AGENCY NPDES: <u>GROUND WATER</u> DRINKING WATER UST: RCRA OTHER Site Location: MO STATE:		Page: 1 of 1	

ITEM #	Valid Matrix Codes	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		PRESERVATIVES	ANALYSIS TESTS	REQUESTED ANALYSIS FILTERED (Y/N)		SAMPLE CONDITIONS
				COMPOSITE START	COMPOSITE END			DATE	TIME	
1	S-UG-1A	L-LMW-4S	WT G	8/21/19	1310	Unpreserved	Metals	Y	N	Residual Chlorine (Y/N)
2	S-UG-2	L-LMW-4S	WT G	8/21/19	1325	Unpreserved	Chloride / Fluoride / Sulfate	Y	N	001 002
3	S-DG-1		WT G			Unpreserved				
4	S-DG-2		WT G			Unpreserved				
5	S-DG-3		WT G			Unpreserved				
6	S-DG-4		WT G			Unpreserved				
7	S-SCPG-DUP-1		WT G			Unpreserved				
8	S-SCPG-FB-1		WT G			Unpreserved				
9	S-BMW-1S		WT G			Unpreserved				
10	S-BMW-3S		WT G			Unpreserved				
11			WT G			Unpreserved				
12			WT G			Unpreserved				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	RECEIVED ON	ICE (Y/N)	CUSTODY	SEALED COOLER	SAMPLES INTACT
	Erickson / Golder	08/21/19	1800	Jelly Anderson	08/21/19	0255	Y	Y	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER: *[Signature]*

DATE Signed (MM/DD/YYYY): 08/21/19



**GOLDER**

**MEMORANDUM**

**DATE** October 1, 2019

**Project No.** 1531406

**TO** Project File  
Golder Associates

**CC** Amanda Derhake, Jeff Ingram

**FROM** Tommy Goodwin

**EMAIL** [Tommy\\_Goodwin@golder.com](mailto:Tommy_Goodwin@golder.com)

**DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – VERIFICATION SAMPLING - DATA PACKAGE 60312686**

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

- None.

## QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates  
 Project Name: Ameren - Labadie - LCPB - VS  
 Reviewer: T Goodwin

Project Manager: J Ingram  
 Project Number: 1531406  
 Validation Date: 10/1/2019

Laboratory: Pace Analytical - KS SDG #: 60312686  
 Analytical Method (type and no.): EPA 200.7 (Metals); EPA 300.0 (Anions)  
 Matrix:  Air  Soil/Sed.  Water  Waste   
 Sample Names L-LMW-6S, L-LMW-4S

**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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>8/21/2019</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
e) Sample type indicated ( <u>grab</u> composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Sp.Cond, ORP, Temp, DO, Turb</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note Deficiencies: _____				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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

## QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
b) Were analytes detected in the field blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
d) Were lab dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See Notes
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
b) Was MSD accuracy criteria met?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See Notes
Recovery could not be calculated since sample contained high concentration of analyte?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____
c) Were MS/MSD precision criteria met?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	_____

**Comments/Notes:**

MS/MSD for unrelated samples

Chloride analyzed at a dilution in L-LMW-6S





November 22, 2019

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

RE: Project: AMEREN LABADIE ENERGY CTR LCPB  
Pace Project No.: 60320429

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between November 07, 2019 and November 09, 2019. 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  
Tommy Goodwin, Golder Associates  
Mark Haddock, Golder Associates  
Eric Schneider, Golder Associates



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

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### **Pace Analytical Services Kansas**

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 19-016-0

Arkansas Drinking Water

Illinois Certification #: 004455

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212018-8

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60320429001	L-LMW-4S	Water	11/06/19 14:25	11/07/19 03:50
60320429002	L-LMW-3S	Water	11/06/19 14:25	11/07/19 03:50
60320429003	L-LMW-5S	Water	11/06/19 15:10	11/07/19 03:50
60320429004	L-LMW-6S	Water	11/06/19 13:20	11/07/19 03:50
60320429005	L-LMW-7S	Water	11/06/19 12:25	11/07/19 03:50
60320429006	L-LMW-8S	Water	11/06/19 11:25	11/07/19 03:50
60320429007	L-BMW-1S	Water	11/05/19 10:45	11/07/19 03:50
60320429008	L-BMW-2S	Water	11/05/19 13:25	11/07/19 03:50
60320429009	L-LMW-DUP-1	Water	11/06/19 08:00	11/07/19 03:50
60320429010	L-LMW-FB-1	Water	11/06/19 14:00	11/07/19 03:50
60320741001	L-LMW-1S	Water	11/07/19 11:10	11/09/19 02:55
60320741002	L-LMW-2S	Water	11/07/19 11:39	11/09/19 02:55

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60320429001	L-LMW-4S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60320429002	L-LMW-3S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60320429003	L-LMW-5S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	LDB, MGS	3	PASI-K
60320429004	L-LMW-6S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60320429005	L-LMW-7S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	LDB, MGS	3	PASI-K
60320429006	L-LMW-8S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60320429007	L-BMW-1S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60320429008	L-BMW-2S	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60320429009	L-LMW-DUP-1	EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60320429010	L-LMW-FB-1	EPA 200.7	HKC	7	PASI-K

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60320741001	L-LMW-1S	SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
		EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
60320741002	L-LMW-2S	EPA 300.0	CNB, MJK	3	PASI-K
		EPA 200.7	HKC	7	PASI-K
		SM 2320B	AJS2	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		EPA 300.0	CNB, MJK	3	PASI-K

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-4S**      **Lab ID: 60320429001**      Collected: 11/06/19 14:25      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>8730</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 14:58	7440-42-8	
Calcium	<b>136000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 14:58	7440-70-2	
Iron	<b>5360</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 14:58	7439-89-6	
Magnesium	<b>24700</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 14:58	7439-95-4	
Manganese	<b>1360</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 14:58	7439-96-5	
Potassium	<b>7540</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 14:58	7440-09-7	
Sodium	<b>81900</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 14:58	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<b>377</b>	mg/L	20.0	6.5	1		11/12/19 13:18		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>804</b>	mg/L	10.0	10.0	1		11/11/19 13:20		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>25.2</b>	mg/L	2.0	0.44	2		11/15/19 19:54	16887-00-6	
Fluoride	<b>0.17J</b>	mg/L	0.20	0.085	1		11/15/19 19:04	16984-48-8	
Sulfate	<b>261</b>	mg/L	20.0	4.6	20		11/15/19 20:43	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-3S**      **Lab ID: 60320429002**      Collected: 11/06/19 14:25      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>3700</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:05	7440-42-8	
Calcium	<b>144000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:05	7440-70-2	
Iron	<b>13500</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:05	7439-89-6	
Magnesium	<b>16000</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:05	7439-95-4	
Manganese	<b>1210</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:05	7439-96-5	
Potassium	<b>8270</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:05	7440-09-7	
Sodium	<b>107000</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:05	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>465</b>	mg/L	20.0	6.5	1		11/12/19 13:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>763</b>	mg/L	10.0	10.0	1		11/11/19 13:20		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>42.8</b>	mg/L	20.0	4.4	20		11/15/19 22:40	16887-00-6	
Fluoride	<b>0.24</b>	mg/L	0.20	0.085	1		11/15/19 22:07	16984-48-8	
Sulfate	<b>151</b>	mg/L	20.0	4.6	20		11/15/19 22:40	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-5S**      **Lab ID: 60320429003**      Collected: 11/06/19 15:10      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Boron	<b>498</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:08	7440-42-8	
Calcium	<b>192000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:08	7440-70-2	
Iron	<b>50.3</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:08	7439-89-6	
Magnesium	<b>24600</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:08	7439-95-4	
Manganese	<b>187</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:08	7439-96-5	
Potassium	<b>5030</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:08	7440-09-7	
Sodium	<b>5140</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:08	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>519</b>	mg/L	20.0	6.5	1		11/12/19 13:37		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>648</b>	mg/L	10.0	10.0	1		11/11/19 13:20		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>8.8</b>	mg/L	1.0	0.22	1		11/15/19 22:56	16887-00-6	
Fluoride	<b>&lt;0.085</b>	mg/L	0.20	0.085	1		11/15/19 22:56	16984-48-8	
Sulfate	<b>55.9</b>	mg/L	10.0	2.3	10		11/16/19 14:10	14808-79-8	

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### ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-6S**      **Lab ID: 60320429004**      Collected: 11/06/19 13:20      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>429</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:10	7440-42-8	
Calcium	<b>146000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:10	7440-70-2	
Iron	<b>72.4</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:10	7439-89-6	
Magnesium	<b>28900</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:10	7439-95-4	
Manganese	<b>2990</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:10	7439-96-5	
Potassium	<b>6180</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:10	7440-09-7	
Sodium	<b>9040</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:10	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>407</b>	mg/L	20.0	6.5	1		11/12/19 13:42		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>691</b>	mg/L	10.0	10.0	1		11/11/19 13:21		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>20.9</b>	mg/L	10.0	2.2	10		11/15/19 23:46	16887-00-6	
Fluoride	<b>0.28</b>	mg/L	0.20	0.085	1		11/15/19 23:30	16984-48-8	
Sulfate	<b>155</b>	mg/L	10.0	2.3	10		11/15/19 23:46	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-7S**      **Lab ID: 60320429005**      Collected: 11/06/19 12:25      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Boron	<b>10500</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:13	7440-42-8	
Calcium	<b>136000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:13	7440-70-2	
Iron	<b>10900</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:13	7439-89-6	
Magnesium	<b>34000</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:13	7439-95-4	
Manganese	<b>1660</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:13	7439-96-5	
Potassium	<b>7100</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:13	7440-09-7	
Sodium	<b>65800</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:13	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>332</b>	mg/L	20.0	6.5	1		11/12/19 13:49		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>815</b>	mg/L	10.0	10.0	1		11/11/19 13:21		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>22.9</b>	mg/L	10.0	2.2	10		11/16/19 00:19	16887-00-6	
Fluoride	<b>0.24</b>	mg/L	0.20	0.085	1		11/16/19 00:03	16984-48-8	
Sulfate	<b>278</b>	mg/L	20.0	4.6	20		11/16/19 14:26	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-8S**      **Lab ID: 60320429006**      Collected: 11/06/19 11:25      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>7750</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:15	7440-42-8	
Calcium	<b>212000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:15	7440-70-2	
Iron	<b>18000</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:15	7439-89-6	
Magnesium	<b>37100</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:15	7439-95-4	
Manganese	<b>2850</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:15	7439-96-5	
Potassium	<b>8570</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:15	7440-09-7	
Sodium	<b>106000</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:15	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>209</b>	mg/L	20.0	6.5	1		11/12/19 13:53		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>1300</b>	mg/L	13.3	13.3	1		11/12/19 09:48		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>19.5</b>	mg/L	1.0	0.22	1		11/16/19 01:09	16887-00-6	
Fluoride	<b>0.31</b>	mg/L	0.20	0.085	1		11/16/19 01:09	16984-48-8	
Sulfate	<b>773</b>	mg/L	50.0	11.5	50		11/16/19 01:42	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-BMW-1S**      **Lab ID: 60320429007**      Collected: 11/05/19 10:45      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>122</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:25	7440-42-8	
Calcium	<b>194000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:25	7440-70-2	
Iron	<b>32000</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:25	7439-89-6	
Magnesium	<b>43400</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:25	7439-95-4	
Manganese	<b>2570</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:25	7439-96-5	
Potassium	<b>5880</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:25	7440-09-7	
Sodium	<b>19600</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:25	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>671</b>	mg/L	20.0	6.5	1		11/12/19 14:01		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>700</b>	mg/L	10.0	10.0	1		11/11/19 13:19		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>4.8</b>	mg/L	1.0	0.22	1		11/16/19 01:59	16887-00-6	
Fluoride	<b>&lt;0.085</b>	mg/L	0.20	0.085	1		11/16/19 01:59	16984-48-8	
Sulfate	<b>29.9</b>	mg/L	5.0	1.2	5		11/16/19 02:16	14808-79-8	

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### ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-BMW-2S**      **Lab ID: 60320429008**      Collected: 11/05/19 13:25      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>61.2J</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:27	7440-42-8	
Calcium	<b>125000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:27	7440-70-2	
Iron	<b>22.1J</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:27	7439-89-6	
Magnesium	<b>18700</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:27	7439-95-4	
Manganese	<b>&lt;2.1</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:27	7439-96-5	
Potassium	<b>7240</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:27	7440-09-7	
Sodium	<b>8560</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:27	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<b>371</b>	mg/L	20.0	6.5	1		11/12/19 14:17		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>425</b>	mg/L	5.0	5.0	1		11/11/19 13:19		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>3.3</b>	mg/L	1.0	0.22	1		11/18/19 13:20	16887-00-6	
Fluoride	<b>0.12J</b>	mg/L	0.20	0.085	1		11/18/19 13:20	16984-48-8	
Sulfate	<b>28.5</b>	mg/L	5.0	1.2	5		11/18/19 13:36	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-DUP-1**      **Lab ID: 60320429009**      Collected: 11/06/19 08:00      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>491</b>	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:30	7440-42-8	
Calcium	<b>195000</b>	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:30	7440-70-2	
Iron	<b>33.7J</b>	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:30	7439-89-6	
Magnesium	<b>25000</b>	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:30	7439-95-4	
Manganese	<b>189</b>	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:30	7439-96-5	
Potassium	<b>5050</b>	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:30	7440-09-7	
Sodium	<b>4930</b>	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:30	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<b>553</b>	mg/L	20.0	6.5	1		11/12/19 14:23		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>604</b>	mg/L	10.0	10.0	1		11/12/19 09:48		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>8.9</b>	mg/L	1.0	0.22	1		11/18/19 13:53	16887-00-6	
Fluoride	<b>&lt;0.085</b>	mg/L	0.20	0.085	1		11/18/19 13:53	16984-48-8	
Sulfate	<b>63.1</b>	mg/L	5.0	1.2	5		11/18/19 14:09	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-FB-1**      **Lab ID: 60320429010**      Collected: 11/06/19 14:00      Received: 11/07/19 03:50      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<10.7	ug/L	100	10.7	1	11/13/19 14:22	11/14/19 15:32	7440-42-8	
Calcium	149J	ug/L	200	50.0	1	11/13/19 14:22	11/14/19 15:32	7440-70-2	
Iron	<14.0	ug/L	50.0	14.0	1	11/13/19 14:22	11/14/19 15:32	7439-89-6	
Magnesium	13.4J	ug/L	50.0	13.0	1	11/13/19 14:22	11/14/19 15:32	7439-95-4	
Manganese	<2.1	ug/L	5.0	2.1	1	11/13/19 14:22	11/14/19 15:32	7439-96-5	
Potassium	158J	ug/L	500	79.0	1	11/13/19 14:22	11/14/19 15:32	7440-09-7	B
Sodium	<144	ug/L	500	144	1	11/13/19 14:22	11/14/19 15:32	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<6.5	mg/L	20.0	6.5	1		11/12/19 14:27		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		11/12/19 09:48		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<0.22	mg/L	1.0	0.22	1		11/18/19 15:16	16887-00-6	
Fluoride	<0.085	mg/L	0.20	0.085	1		11/18/19 15:16	16984-48-8	
Sulfate	<0.23	mg/L	1.0	0.23	1		11/18/19 15:16	14808-79-8	

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### ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-1S**      **Lab ID: 60320741001**      Collected: 11/07/19 11:10      Received: 11/09/19 02:55      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>11100</b>	ug/L	100	10.7	1	11/20/19 11:31	11/20/19 16:03	7440-42-8	
Calcium	<b>291000</b>	ug/L	200	50.0	1	11/20/19 11:31	11/20/19 16:03	7440-70-2	M1
Iron	<b>18900</b>	ug/L	50.0	14.0	1	11/20/19 11:31	11/20/19 16:03	7439-89-6	
Magnesium	<b>53800</b>	ug/L	50.0	13.0	1	11/20/19 11:31	11/20/19 16:03	7439-95-4	
Manganese	<b>1800</b>	ug/L	5.0	2.1	1	11/20/19 11:31	11/20/19 16:03	7439-96-5	
Potassium	<b>8950</b>	ug/L	500	79.0	1	11/20/19 11:31	11/20/19 16:03	7440-09-7	
Sodium	<b>139000</b>	ug/L	500	144	1	11/20/19 11:31	11/20/19 16:03	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO <sub>3</sub>	<b>330</b>	mg/L	20.0	6.5	1		11/12/19 16:48		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>1820</b>	mg/L	20.0	20.0	1		11/13/19 13:44		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>16.8</b>	mg/L	1.0	0.22	1		11/18/19 17:33	16887-00-6	
Fluoride	<b>0.23</b>	mg/L	0.20	0.085	1		11/18/19 17:33	16984-48-8	
Sulfate	<b>938</b>	mg/L	200	46.0	200		11/20/19 20:57	14808-79-8	

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## ANALYTICAL RESULTS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

**Sample: L-LMW-2S**      **Lab ID: 60320741002**      Collected: 11/07/19 11:39      Received: 11/09/19 02:55      Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7    Preparation Method: EPA 200.7							
Boron	<b>3380</b>	ug/L	100	10.7	1	11/20/19 11:31	11/20/19 16:12	7440-42-8	
Calcium	<b>49500</b>	ug/L	200	50.0	1	11/20/19 11:31	11/20/19 16:12	7440-70-2	
Iron	<b>64.7</b>	ug/L	50.0	14.0	1	11/20/19 11:31	11/20/19 16:12	7439-89-6	
Magnesium	<b>98.7</b>	ug/L	50.0	13.0	1	11/20/19 11:31	11/20/19 16:12	7439-95-4	
Manganese	<b>&lt;2.1</b>	ug/L	5.0	2.1	1	11/20/19 11:31	11/20/19 16:12	7439-96-5	
Potassium	<b>8240</b>	ug/L	500	79.0	1	11/20/19 11:31	11/20/19 16:12	7440-09-7	
Sodium	<b>59300</b>	ug/L	500	144	1	11/20/19 11:31	11/20/19 16:12	7440-23-5	
<b>2320B Alkalinity</b>		Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	<b>56.1</b>	mg/L	20.0	6.5	1		11/12/19 16:53		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C							
Total Dissolved Solids	<b>396</b>	mg/L	5.0	5.0	1		11/13/19 13:44		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0							
Chloride	<b>20.1</b>	mg/L	5.0	1.1	5		11/20/19 21:14	16887-00-6	B
Fluoride	<b>0.22</b>	mg/L	0.20	0.085	1		11/18/19 18:06	16984-48-8	
Sulfate	<b>206</b>	mg/L	20.0	4.6	20		11/18/19 18:23	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

QC Batch:	622126	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
Associated Lab Samples:	60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429006, 60320429007, 60320429008, 60320429009, 60320429010		

METHOD BLANK:	2536680	Matrix:	Water
Associated Lab Samples:	60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429006, 60320429007, 60320429008, 60320429009, 60320429010		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<10.7	100	10.7	11/14/19 14:40	
Calcium	ug/L	<50.0	200	50.0	11/14/19 14:40	
Iron	ug/L	<14.0	50.0	14.0	11/14/19 14:40	
Magnesium	ug/L	<13.0	50.0	13.0	11/14/19 14:40	
Manganese	ug/L	<2.1	5.0	2.1	11/14/19 14:40	
Potassium	ug/L	169J	500	79.0	11/14/19 14:40	
Sodium	ug/L	<144	500	144	11/14/19 14:40	

LABORATORY CONTROL SAMPLE: 2536681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	980	98	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Iron	ug/L	10000	10100	101	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	991	99	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2536682 2536683

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60320429001 Result	Spike Conc.	Spike Conc.	Conc.								
Boron	ug/L	8730	1000	1000	9720	9870	100	115	70-130	2	20		
Calcium	ug/L	136000	10000	10000	145000	147000	88	115	70-130	2	20		
Iron	ug/L	5360	10000	10000	15200	15500	98	101	70-130	2	20		
Magnesium	ug/L	24700	10000	10000	34200	34700	95	100	70-130	2	20		
Manganese	ug/L	1360	1000	1000	2360	2390	100	103	70-130	2	20		
Potassium	ug/L	7540	10000	10000	17200	17500	97	100	70-130	2	20		
Sodium	ug/L	81900	10000	10000	92500	94800	106	129	70-130	2	20		

MATRIX SPIKE SAMPLE: 2536684

Parameter	Units	60320429006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	7750	1000	8780	103	70-130	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

MATRIX SPIKE SAMPLE:		2536684					
Parameter	Units	60320429006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	212000	10000	222000	97	70-130	
Iron	ug/L	18000	10000	28000	101	70-130	
Magnesium	ug/L	37100	10000	47200	101	70-130	
Manganese	ug/L	2850	1000	3840	99	70-130	
Potassium	ug/L	8570	10000	18700	101	70-130	
Sodium	ug/L	106000	10000	116000	101	70-130	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

QC Batch: 623536 Analysis Method: EPA 200.7  
 QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total  
 Associated Lab Samples: 60320741001, 60320741002

METHOD BLANK: 2542601 Matrix: Water

Associated Lab Samples: 60320741001, 60320741002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<10.7	100	10.7	11/20/19 16:01	
Calcium	ug/L	<50.0	200	50.0	11/20/19 16:01	
Iron	ug/L	<14.0	50.0	14.0	11/20/19 16:01	
Magnesium	ug/L	<13.0	50.0	13.0	11/20/19 16:01	
Manganese	ug/L	<2.1	5.0	2.1	11/20/19 16:01	
Potassium	ug/L	<79.0	500	79.0	11/20/19 16:01	
Sodium	ug/L	<144	500	144	11/20/19 16:01	

LABORATORY CONTROL SAMPLE: 2542602

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1010	101	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10100	101	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2542603 2542604

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Spike Conc.	Result	Spike Conc.	Result						
Boron	ug/L	11100	1000	1000	12200	12200	112	113	70-130	0	20
Calcium	ug/L	291000	10000	10000	304000	297000	127	59	70-130	2	20 M1
Iron	ug/L	18900	10000	10000	29200	28400	102	95	70-130	2	20
Magnesium	ug/L	53800	10000	10000	63900	63100	101	93	70-130	1	20
Manganese	ug/L	1800	1000	1000	2810	2810	100	101	70-130	0	20
Potassium	ug/L	8950	10000	10000	19300	18800	103	98	70-130	3	20
Sodium	ug/L	139000	10000	10000	152000	149000	122	98	70-130	2	20

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

QC Batch: 621823

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429006, 60320429007, 60320429008, 60320429009, 60320429010

METHOD BLANK: 2535596

Matrix: Water

Associated Lab Samples: 60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429006, 60320429007, 60320429008, 60320429009, 60320429010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<6.5	20.0	6.5	11/12/19 11:56	

LABORATORY CONTROL SAMPLE: 2535597

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	499	100	90-110	

SAMPLE DUPLICATE: 2535600

Parameter	Units	60320422001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	535	531	1	10	

SAMPLE DUPLICATE: 2535601

Parameter	Units	60320429001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	377	383	2	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

QC Batch: 621881

Analysis Method: SM 2320B

QC Batch Method: SM 2320B

Analysis Description: 2320B Alkalinity

Associated Lab Samples: 60320741001, 60320741002

METHOD BLANK: 2535850

Matrix: Water

Associated Lab Samples: 60320741001, 60320741002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	<6.5	20.0	6.5	11/12/19 15:03	

LABORATORY CONTROL SAMPLE: 2535851

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 2535852

Parameter	Units	60320431001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	530	549	4	10	

SAMPLE DUPLICATE: 2535854

Parameter	Units	60320431002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO <sub>3</sub>	mg/L	165	177	7	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

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QC Batch: 621544 Analysis Method: SM 2540C  
 QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
 Associated Lab Samples: 60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429007, 60320429008

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METHOD BLANK: 2534910 Matrix: Water  
 Associated Lab Samples: 60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429007, 60320429008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/11/19 13:18	

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LABORATORY CONTROL SAMPLE: 2534911

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

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SAMPLE DUPLICATE: 2534912

Parameter	Units	60320422001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	673	691	3	10	

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SAMPLE DUPLICATE: 2534913

Parameter	Units	60320429001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	804	844	5	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

QC Batch: 621708

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60320429006, 60320429009, 60320429010

METHOD BLANK: 2535262

Matrix: Water

Associated Lab Samples: 60320429006, 60320429009, 60320429010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/12/19 09:48	

LABORATORY CONTROL SAMPLE: 2535263

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

SAMPLE DUPLICATE: 2535264

Parameter	Units	60320431002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1560	1590	1	10	

SAMPLE DUPLICATE: 2535265

Parameter	Units	60320431004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	459	466	2	10	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

QC Batch: 622003

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 60320741001, 60320741002

METHOD BLANK: 2536188

Matrix: Water

Associated Lab Samples: 60320741001, 60320741002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/13/19 13:43	

LABORATORY CONTROL SAMPLE: 2536189

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

SAMPLE DUPLICATE: 2536190

Parameter	Units	60320741001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1820	1980	8	10	

SAMPLE DUPLICATE: 2536191

Parameter	Units	60320739001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	777	794	2	10	

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**QUALITY CONTROL DATA**

Project: AMEREN LABADIE ENERGY CTR LCPB  
Pace Project No.: 60320429

QC Batch: 622423 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429006, 60320429007

METHOD BLANK: 2537721 Matrix: Water  
Associated Lab Samples: 60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429006, 60320429007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	11/15/19 12:43	
Fluoride	mg/L	<0.085	0.20	0.085	11/15/19 12:43	
Sulfate	mg/L	<0.23	1.0	0.23	11/15/19 12:43	

METHOD BLANK: 2539925 Matrix: Water  
Associated Lab Samples: 60320429001, 60320429002, 60320429003, 60320429004, 60320429005, 60320429006, 60320429007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	11/16/19 12:00	
Fluoride	mg/L	<0.085	0.20	0.085	11/16/19 12:00	
Sulfate	mg/L	0.27J	1.0	0.23	11/16/19 12:00	

LABORATORY CONTROL SAMPLE: 2537722

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	2.7	107	90-110	
Sulfate	mg/L	5	5.3	107	90-110	

LABORATORY CONTROL SAMPLE: 2539926

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	2.6	104	90-110	
Sulfate	mg/L	5	5.4	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2537723 2537724

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60320422001 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	4.4	5	5	9.3	9.4	98	99	80-120	1	15		
Fluoride	mg/L	0.15J	2.5	2.5	3.1	3.2	118	121	80-120	2	15	M1	
Sulfate	mg/L	109	50	50	161	160	103	102	80-120	0	15		

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

Parameter	Units	2537725		2537726		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		60320429001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Chloride	mg/L	25.2	10	10	36.1	36.0	109	108	80-120	0	15	
Fluoride	mg/L	0.17J	2.5	2.5	3.1	3.2	116	120	80-120	3	15	
Sulfate	mg/L	261	100	100	362	373	101	113	80-120	3	15	

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

QC Batch: 622840 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60320429008, 60320429009, 60320429010

METHOD BLANK: 2540041 Matrix: Water

Associated Lab Samples: 60320429008, 60320429009, 60320429010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	11/18/19 08:21	
Fluoride	mg/L	<0.085	0.20	0.085	11/18/19 08:21	
Sulfate	mg/L	<0.23	1.0	0.23	11/18/19 08:21	

METHOD BLANK: 2541249 Matrix: Water

Associated Lab Samples: 60320429008, 60320429009, 60320429010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	11/19/19 07:40	
Fluoride	mg/L	<0.085	0.20	0.085	11/19/19 07:40	
Sulfate	mg/L	0.30J	1.0	0.23	11/19/19 07:40	

METHOD BLANK: 2543009 Matrix: Water

Associated Lab Samples: 60320429008, 60320429009, 60320429010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.45J	1.0	0.22	11/20/19 09:10	
Fluoride	mg/L	<0.085	0.20	0.085	11/20/19 09:10	
Sulfate	mg/L	<0.23	1.0	0.23	11/20/19 09:10	

LABORATORY CONTROL SAMPLE: 2540042

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.6	106	90-110	
Sulfate	mg/L	5	5.3	107	90-110	

LABORATORY CONTROL SAMPLE: 2541250

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	2.6	102	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

LABORATORY CONTROL SAMPLE: 2543010

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.6	102	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2540043 2540044

Parameter	Units	60320174002		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	10.9	50	50	58.8	56.0	96	90	80-120	5	15	H3	
Fluoride	mg/L	1.1J	25	25	30.5	28.6	118	110	80-120	6	15	H3	
Sulfate	mg/L	229	250	250	485	479	103	100	80-120	1	15	H3	

MATRIX SPIKE SAMPLE: 2540045

Parameter	Units	60321269006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	906	250	1150	99	80-120	E
Fluoride	mg/L	31.1	125	168	109	80-120	
Sulfate	mg/L	72.9	250	336	105	80-120	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

QC Project No.: 60320429

QC Batch: 622842 Analysis Method: EPA 300.0

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

Associated Lab Samples: 60320741001, 60320741002

METHOD BLANK: 2540051 Matrix: Water

Associated Lab Samples: 60320741001, 60320741002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.22	1.0	0.22	11/18/19 08:19	
Fluoride	mg/L	<0.085	0.20	0.085	11/18/19 08:19	
Sulfate	mg/L	<0.23	1.0	0.23	11/18/19 08:19	

METHOD BLANK: 2541658 Matrix: Water

Associated Lab Samples: 60320741001, 60320741002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.48J	1.0	0.22	11/20/19 15:53	
Fluoride	mg/L	<0.085	0.20	0.085	11/20/19 15:53	
Sulfate	mg/L	<0.23	1.0	0.23	11/20/19 15:53	

METHOD BLANK: 2544553 Matrix: Water

Associated Lab Samples: 60320741001, 60320741002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.47J	1.0	0.22	11/21/19 23:49	
Fluoride	mg/L	<0.085	0.20	0.085	11/21/19 23:49	
Sulfate	mg/L	<0.23	1.0	0.23	11/21/19 23:49	

LABORATORY CONTROL SAMPLE: 2540052

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	101	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

LABORATORY CONTROL SAMPLE: 2541659

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	2.6	103	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

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

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

LABORATORY CONTROL SAMPLE: 2544554

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	2.6	104	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2540053 2540054

Parameter	Units	60320633013		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Conc.	Result	Result	% Rec	% Rec					
Chloride	mg/L	92.9	50	50	147	145	109	105	80-120	1	15		
Fluoride	mg/L	ND	25	25	25.4	26.1	102	104	80-120	3	15		
Sulfate	mg/L	64.6	50	50	115	116	102	102	80-120	0	15		

MATRIX SPIKE SAMPLE: 2540055

Parameter	Units	60320897005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	19.2J	100	114	95	80-120	
Fluoride	mg/L	ND	50	51.5	103	80-120	
Sulfate	mg/L	75.4	100	178	102	80-120	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

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### DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-K Pace Analytical Services - Kansas City

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

E Analyte concentration exceeded the calibration range. The reported result is estimated.

H3 Sample was received or analysis requested beyond the recognized method holding time.

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

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60320429001	L-LMW-4S	EPA 200.7	622126	EPA 200.7	622187
60320429002	L-LMW-3S	EPA 200.7	622126	EPA 200.7	622187
60320429003	L-LMW-5S	EPA 200.7	622126	EPA 200.7	622187
60320429004	L-LMW-6S	EPA 200.7	622126	EPA 200.7	622187
60320429005	L-LMW-7S	EPA 200.7	622126	EPA 200.7	622187
60320429006	L-LMW-8S	EPA 200.7	622126	EPA 200.7	622187
60320429007	L-BMW-1S	EPA 200.7	622126	EPA 200.7	622187
60320429008	L-BMW-2S	EPA 200.7	622126	EPA 200.7	622187
60320429009	L-LMW-DUP-1	EPA 200.7	622126	EPA 200.7	622187
60320429010	L-LMW-FB-1	EPA 200.7	622126	EPA 200.7	622187
60320741001	L-LMW-1S	EPA 200.7	623536	EPA 200.7	623597
60320741002	L-LMW-2S	EPA 200.7	623536	EPA 200.7	623597
60320429001	L-LMW-4S	SM 2320B	621823		
60320429002	L-LMW-3S	SM 2320B	621823		
60320429003	L-LMW-5S	SM 2320B	621823		
60320429004	L-LMW-6S	SM 2320B	621823		
60320429005	L-LMW-7S	SM 2320B	621823		
60320429006	L-LMW-8S	SM 2320B	621823		
60320429007	L-BMW-1S	SM 2320B	621823		
60320429008	L-BMW-2S	SM 2320B	621823		
60320429009	L-LMW-DUP-1	SM 2320B	621823		
60320429010	L-LMW-FB-1	SM 2320B	621823		
60320741001	L-LMW-1S	SM 2320B	621881		
60320741002	L-LMW-2S	SM 2320B	621881		
60320429001	L-LMW-4S	SM 2540C	621544		
60320429002	L-LMW-3S	SM 2540C	621544		
60320429003	L-LMW-5S	SM 2540C	621544		
60320429004	L-LMW-6S	SM 2540C	621544		
60320429005	L-LMW-7S	SM 2540C	621544		
60320429006	L-LMW-8S	SM 2540C	621708		
60320429007	L-BMW-1S	SM 2540C	621544		
60320429008	L-BMW-2S	SM 2540C	621544		
60320429009	L-LMW-DUP-1	SM 2540C	621708		
60320429010	L-LMW-FB-1	SM 2540C	621708		
60320741001	L-LMW-1S	SM 2540C	622003		
60320741002	L-LMW-2S	SM 2540C	622003		
60320429001	L-LMW-4S	EPA 300.0	622423		
60320429002	L-LMW-3S	EPA 300.0	622423		
60320429003	L-LMW-5S	EPA 300.0	622423		
60320429004	L-LMW-6S	EPA 300.0	622423		
60320429005	L-LMW-7S	EPA 300.0	622423		
60320429006	L-LMW-8S	EPA 300.0	622423		
60320429007	L-BMW-1S	EPA 300.0	622423		
60320429008	L-BMW-2S	EPA 300.0	622840		

### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: AMEREN LABADIE ENERGY CTR LCPB

Pace Project No.: 60320429

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60320429009	L-LMW-DUP-1	EPA 300.0	622840		
60320429010	L-LMW-FB-1	EPA 300.0	622840		
60320741001	L-LMW-1S	EPA 300.0	622842		
60320741002	L-LMW-2S	EPA 300.0	622842		

**REPORT OF LABORATORY ANALYSIS**

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Sample Condition Upon Receipt

WO#: 60320429



Client Name: Golden

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  2PIC

Thermometer Used: T294 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 0.1, 0.5 Corr. Factor 0.0 Corrected -0.1, 0.5

Date and initials of person examining contents: VB 11/7/19

Temperature should be above freezing to 6°C 3.2

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State: _____	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: Jamie Chung Date: 11/7/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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

<b>Section A</b> Required Client Information:		<b>Section B</b> Required Project Information:		<b>Section C</b> Invoice Information:	
Company: <b>Goldier Associates</b>	Report To: <b>Jeffrey Ingram</b>	Attention:	Company Name:	REGULATORY AGENCY	<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER
Address: <b>13515 Barrett Parkway Dr., Ste 260</b>	Copy To:		Address:	<input type="checkbox"/> UST <input type="checkbox"/> RCRA	<input type="checkbox"/> OTHER
Ballwin, MO 63021	Purchase Order No.:		Pace Quote Reference:	Site Location STATE: <b>MO</b>	
Email To: <b>jeffrey_ingram@golder.com</b>	Project Name: <b>Ameren Labadie Energy Center LCPB</b>		Pace Project Manager: <b>Jamie Church</b>		
Phone: <b>636-724-9191</b> Fax: <b>636-724-9323</b>	Project Number:		Pace Profile #: <b>9285</b>		
Requested Due Date/TAT: <b>Standard</b>					

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WT WASTE WATER WW PRODUCT P SOLID SL OIL OL WP AR OT TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives	Analysis Test	Requested Analysis Filtered (Y/N)		Residual Chlorine (Y/N)	SAMPLE CONDITIONS
					DATE	TIME					Y	N		
1	<del>L-LMW-4S</del> <b>L-LMW-4S-MS</b>			G	11/6/19	1425	2	1		Metals* Chloride/Fluoride/Sulfate TDS Alkalinity	/	/		001
2	<del>L-LMW-2S</del> <b>L-LMW-4S-MS</b>			G	11/6/19	1425	1	1			/	/		002
3	L-LMW-3S			G	11/6/19	1425	1	1			/	/		001
4	L-LMW-4S			G	11/6/19	1425	1	1			/	/		003
5	L-LMW-5S			G	11/6/19	1510	1	1			/	/		004
6	L-LMW-6S			G	11/6/19	1320	1	1			/	/		005
7	L-LMW-7S			G	11/6/19	1225	1	1			/	/		006
8	L-LMW-8S			G	11/6/19	1225	1	1			/	/		007
9	L-BMW-1S			G	11/6/19	1045	1	1			/	/		008
10	L-BMW-2S			G	11/6/19	1325	1	1			/	/		009
11	L-LMW-DUP-1			G	11/6/19	1425	1	1			/	/		010
12	L-LMW-FB-1			G	11/6/19	1425	1	1			/	/		

SAMPLER NAME AND SIGNATURE		DATE	TIME	DATE	TIME	TEMP IN °C	RECEIVED ON ICE (Y/N)	CUSTODY SEALED COOLER (Y/N)	SAMPLES INTACT (Y/N)
PRINT NAME of SAMPLER: <b>Eric Schneider</b>		11/6/19	1345	11/6/19	0350	0.1	Y	Y	Y
SIGNATURE of SAMPLER: <i>[Signature]</i>						3.2	Y	Y	Y

\*EPA 2007: B, Ca, Fe, Mn, Mg, K, Na

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

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



Sample Condition Upon Receipt

WO#: 60320741
Barcode
60320741

Client Name: Golder Associates

Courier: FedEx [ ] UPS [ ] VIA [ ] Clay [ ] PEX [ ] ECI [ ] Pace [ ] Xroads [x] Client [ ] Other [ ]

Tracking #: Pace Shipping Label Used? Yes [x] No [ ]

Custody Seal on Cooler/Box Present: Yes [x] No [ ] Seals intact: Yes [x] No [ ]

Packing Material: Bubble Wrap [ ] Bubble Bags [ ] Foam [ ] None [ ] Other [x] 2 PIC

Thermometer Used: T298 Type of Ice: Wet [x] Blue [ ] None [ ]

Cooler Temperature (°C): As-read 0.1 Corr. Factor -10.0 Corrected 0.1

Date and initials of person examining contents: 11/9/19

Temperature should be above freezing to 6°C

Table with 2 columns: Question/Condition and Yes/No/N/A checkboxes. Rows include Chain of Custody, Short Hold Time, Rush Turn Around Time, Sufficient volume, Containers used, Containers intact, Unpreserved soils, Filtered volume, Sample labels match COC, Samples contain multiple phases, Containers requiring pH preservation, Cyanide water sample checks, Trip Blank present, Headspace in VOA vials, Samples from USDA Regulated Area, Additional labels attached to 5035A / TX1005 vials.

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

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Jami Clark Date: 11/10/19



# CHAIN-OF-CUSTODY / Analytical Request Document

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

<b>Section A</b> Required Client Information:		<b>Section B</b> Report To: Jeffrey Ingram		<b>Section C</b> Invoice Information:	
Company:	Goldier Associates	Report To:	Jeffrey Ingram	Attention:	
Address:	13515 Barrett Parkway Dr., Ste 260 Ballwin, MO 63021	Copy To:		Company Name:	
Email To:	jeffrey_ingram@goldier.com	Purchase Order No.:		Address:	
Phone:	636-724-9191	Fax:	636-724-9323	Pace Quote Reference:	
Requested Due Date/TAT:	Standard	Project Name:	Ameren Labadee Energy Center LCPB	Pace Project Manager:	Jamie Church
		Project Number:		Pace Profile #:	9285

<b>Section D</b> Required Client Information		<b>Valid Matrix Codes</b>		<b>Requested Analysis Filtered (Y/N)</b>	
DRINKING WATER DW WATER WAT WASTE WATER WW PRODUCT P SOLID S OIL OIL WP WP AIR AIR OT OT TS TS		MATRIX CODE (see valid codes to left) SAMPLE TYPE (G=GRAB C=COMP)		Preservatives: H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> , HCl, NaOH, Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> , Methanol, Other Analysis Test: Metals*, Chloride/Fluoride/Sulfate, TDS, Alkalinity	

ITEM #	SAMPLE ID (A-Z, 0-9 / -)	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	DATE	TIME	DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	Methanol	Other	Analysis Test	Metals*	Chloride/Fluoride/Sulfate	TDS	Alkalinity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	L-LMW-1S	WT G	G	11-7-19	11:10	11-7-19	11:39		2	1	1							↓	✓	✓	✓	✓		001
2	L-LMW-2S	WT G	G						1															002
3	L-LMW-3S	WT G	G																					
4	L-LMW-4S	WT G	G																					
5	L-LMW-5S	WT G	G																					
6	L-LMW-6S	WT G	G																					
7	L-LMW-7S	WT G	G																					
8	L-LMW-8S	WT G	G																					
9	L-BMW-1S	WT G	G																					
10	L-BMW-2S	WT G	G																					
11	L-LMW-DUP-1	WT G	G																					
12	L-LMW-FB-1	WT G	G																					

<b>ADDITIONAL COMMENTS</b>		<b>RELINQUISHED BY / AFFILIATION</b>		<b>DATE</b>		<b>TIME</b>		<b>ACCEPTED BY / AFFILIATION</b>		<b>DATE</b>		<b>TIME</b>		<b>SAMPLE CONDITIONS</b>	
EPA 2007: B, Ca, Fe, Mn, Mg, K, Na		Annie Muehlstein / Goldier		11/8/19		16:25		Amberla Muma		11/8		16:25		Temp in °C: 0.1	
		Amberla Muma		11/8		16:25		Pace		11/9/19		0255		Received on Ice (Y/N): Y	
														Custody Sealed Cooler (Y/N): Y	
														Samples Intact (Y/N): Y	

Temp in °C: 0.1  
Received on Ice (Y/N): Y  
Custody Sealed Cooler (Y/N): Y  
Samples Intact (Y/N): Y

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

**MEMORANDUM****DATE** January 2, 2020**Project No.** 1531406**TO** Project File  
Golder Associates**CC** Amanda Derhake, Jeff Ingram**FROM** Tommy Goodwin**EMAIL** [Tommy\\_Goodwin@golder.com](mailto:Tommy_Goodwin@golder.com)**DATA VALIDATION SUMMARY, LABADIE ENERGY CENTER – LCPB – DETECTION MONITORING - DATA PACKAGE 60320429**

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

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

## QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates  
 Project Name: Ameren - Labadie - LCPB - DM  
 Reviewer: T Goodwin

Project Manager: J Ingram  
 Project Number: 1531406  
 Validation Date: 1/2/2020

Laboratory: Pace Analytical - KS

SDG #: 60320429

Analytical Method (type and no.): EPA 200.7 (Metals); SM2320B (Alkalinity); SM2540C (Total Dissolved Solids); EPA 300.0 (Anions)

Matrix:  Air  Soil/Sed.  Water  Waste

Sample Names L-LMW-1S, L-LMW-2S, L-LMW-3S, L-LMW-4S, L-LMW-5S, L-LMW-6S, L-LMW-7S, L-LMW-8S, L-BMW-1S, L-BMW-2S, L-LMW-DUP-1, L-LMW-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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>11/5-7/2019</u>
b) Sampling team indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u></u>
c) Sample location noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u></u>
d) Sample depth indicated (Soils)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u></u>
e) Sample type indicated ( <u>grab</u> /composite)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u></u>
f) Field QC noted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u></u>
g) Field parameters collected (note types)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH, Sp.Cond, ORP, Temp, DO, Turb</u>
h) Field Calibration within control limits?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u></u>
i) Notations of unacceptable field conditions/performances from field logs or field notes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u></u>
j) Does the laboratory narrative indicate deficiencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u></u>
Note Deficiencies: <u></u>				
<u></u>				
<u></u>				

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u></u>
b) Was the COC signed by both field and laboratory personnel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u></u>
c) Were samples received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u></u>

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



## QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Notes
b) Were analytes detected in the field blank(s)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Notes
c) Were analytes detected in the equipment blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
d) Were analytes detected in the trip blank(s)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b) Were the proper analytes included in the LCS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c) Was the LCS accuracy criteria met?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DUP-1 @ L-LMW-5S
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	FB-1 @ L-LMW-3S
b) Were field dup. precision criteria met (note RPD)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-29001 (Alk, TDS); -41001 (TDS)
d) Were lab dup. precision criteria met (note RPD)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Notes

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
b) Was the %D within control limits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

**Comments/Notes:**

MS/MSD: -41001: Ca\_MSD-L

MB: -29001-10: K (169), -29008-10: Cl (0.45), SO4 (0.30); -41001-2: Cl (0.48); -29001-007: SO4 (0.27)

FB: Ca (149), Mg (134), K (158)

DUP: Iron (40%)

Max Lab Duplicate RPD: 8% (Limit: 10%)

Dilution: Chloride and Sulfate were diluted in several samples; no qualification is necessary.

**QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST**

**Data Qualification:**

Sample Name	Constituent(s)	Result	Qualifier	Reason
L-LMW-FB-1	Potassium (K)	500	U	Detected in MB; PQL > Result > MDL
L-LMW-1S	Calcium (Ca)	291000	J	MS/MSD Exceeded Calibration Range; %Rec High

Signature: Tommy J. Goodrich

Date: 1/2/2020

**APPENDIX B**

**Alternative Source Demonstration -  
November 2018 Sampling Event**

## TECHNICAL MEMORANDUM

**DATE** May 16, 2019

**Project No.** 153140601

**TO** Ameren Missouri  
1901 Chouteau Ave, St. Louis, Mo 63103

**FROM** Golder Associates Inc.

### LCPB – ALTERNATIVE SOURCE DEMONSTRATION – NOVEMBER 2018 SAMPLING EVENT

#### 1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), Golder Associates Inc. ("Golder") has prepared this Technical Memorandum that indicates Statistically Significant Increases (SSIs) calculated at Ameren Missouri's (Ameren) Labadie Energy Center (LEC), fly ash surface impoundment (LCPB) result from an alternative source. This LCPB Alternative Source Demonstration (ASD) satisfies the requirements of §257.94(e)(2) which allows the owner or operator to demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

#### 2.0 BACKGROUND

In November 2017, the first round of detection monitoring was completed at the Labadie Energy Center's LCPB Coal Combustion Residual (CCR) Unit in Franklin County, Missouri. This sampling was completed in accordance with the CCR Rule and SSIs were identified and verified. In February/March 2018, additional drilling and a detailed analysis of results were completed for the LCPB and it was determined that the SSIs in the CCR Rule groundwater monitoring wells at the LCPB were not caused by impacts from the LCPB. The SSIs observed in LCPB wells were caused by an alternative source, which is the unlined, adjacent LCPA surface impoundment. A copy of the ASD report for the November 2017 sampling event is provided in Appendix B of the 2018 LCPB Annual Groundwater Monitoring and Corrective Action Report.

#### 3.0 NOVEMBER 2018 SAMPLING EVENT

A summary of the November 2018 sampling results can be found in Table 1. Figure 1 of this Technical Memorandum displays where November 2018 LCPB CCR Rule groundwater monitoring well samples plot in comparison to cations and anions for the LCPA pore-water, LCPB pore-water, and background groundwater zones. As displayed in this figure, the monitoring wells around the LCPB plot in similar locations to those from 2017. These results also display that monitoring wells that have SSIs in the November 2018 sampling event plot between the background groundwater quality and the LCPA pore-water. Like the November 2017 Sampling Event ASD, results from this diagram demonstrate that groundwater data from the monitoring wells around the LCPB are impacted by the LCPA and not the LCPB.

Additional supporting lines of evidence from the November 2017 Sampling Event ASD are also applicable in this November 2018 Sampling Event ASD. Additional evidence includes:

- Potentiometric surface mapping from 2018 continue to show that while groundwater conditions can be variable, net groundwater flow is toward the north/northeast, flowing from the bluffs toward the Missouri River. This supports the conclusion that the unlined LCPA is the source of impacts at the downgradient monitoring because impacted monitoring wells around the LCPB are located downgradient from the LCPA.
- The LCPB was constructed with an engineered liner system consisting of a 60-mil High Density Polyethylene (HDPE) geomembrane liner with a bottom elevation of approximately 460 FT MSL at its lowest point. The low permeability HDPE liner system in the LCPB is a barrier to CCR impact migration and provides containment for CCR.
- The LCPA was built in the early 1970's and has a bottom elevation estimated to be at approximately 410 FT MSL. In addition to the different pore-water fingerprints, there are elevated concentrations of CCR impact indicators in the intermediate and deep zones of groundwater in the alluvial aquifer as shown in the LCPA Annual report. Since impacts are present in the shallow, middle, and deep alluvial zones and are not isolated to the shallow zone where LCPB impacts would most readily occur, the impacts are most likely from the LCPA, which extends to deeper depths in the aquifer.

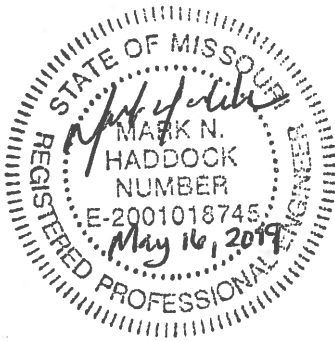
In summary, groundwater chemistry, pore-water chemistry fingerprints, cell construction and hydrogeological evidence all demonstrate that impacts (SSIs) calculated during the November 2018 Sampling Event for the LCPB CCR Unit were not caused by impacts from the LCPB surface impoundment, and the LCPA surface impoundment is the source of the LCPB SSIs.

## CERTIFICATION STATEMENT

This *LCPB – Alternative Source Demonstration – November 2018 Sampling Event* has been prepared to comply with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Golder Associates Inc.

I hereby certify that this *LCPB – Alternative Source Demonstration – November 2018 Sampling Event* located at 226 Labadie Power Plant Road, Labadie Missouri 63055 has been prepared to meet the requirements of 40 CFR §257.94(e)(2).

### GOLDER ASSOCIATES INC.



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

**Table 1**  
**November 2018 Detection Monitoring Results**  
**LCPB Surface Impoundment**  
**Labadie Energy Center, Franklin County, MO**

ANALYTE	UNITS	PREDICTION LIMITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
			BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
<b>November 2018 Detection Monitoring Event</b>												
DATE	NA	NA	11/7/2018	11/7/2018	11/7/2018	11/8/2018	11/7/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018
pH	SU	6.072-7.483	6.83	7.12	7.22	9.82	7.52	7.46	7.48	7.28	7.40	7.48
BORON, TOTAL	µg/L	122	151	84.8 J	13,900	4,210	3,840	9,450	97.2 J	3,760	6,620	6,970
CALCIUM, TOTAL	µg/L	219,000	201,000	128,000	301,000	55,100	58,200	132,000	153,000	182,000	149,000	167,000
CHLORIDE, TOTAL	mg/L	13.75	5.6	1.3 J	16.4	22.8	20.9	23.8	4.0	12.2	19.3	19.5 J
FLUORIDE, TOTAL	mg/L	0.2507	ND	ND	ND	0.23	0.46	0.23	ND	0.20	0.20	0.35 J
SULFATE, TOTAL	mg/L	65.3	36.7	28.4	982	222	263	270	12.1	122	257	334 J
TOTAL DISSOLVED SOLIDS	mg/L	780	751	958 J	1,580	420	496	757	473	740	734	867
<b>January 2019 Verification Sampling</b>												
DATE	NA	NA			1/3/2019		1/3/2019				1/2/2019	
pH	SU	6.072-7.483			6.96		7.63				6.91	
BORON, TOTAL	µg/L	122										
CALCIUM, TOTAL	µg/L	219,000			305,000							
CHLORIDE, TOTAL	mg/L	13.75			14.6						18.3	
FLUORIDE, TOTAL	mg/L	0.2507										
SULFATE, TOTAL	mg/L	65.3										
TOTAL DISSOLVED SOLIDS	mg/L	780			1470							

**NOTES:**

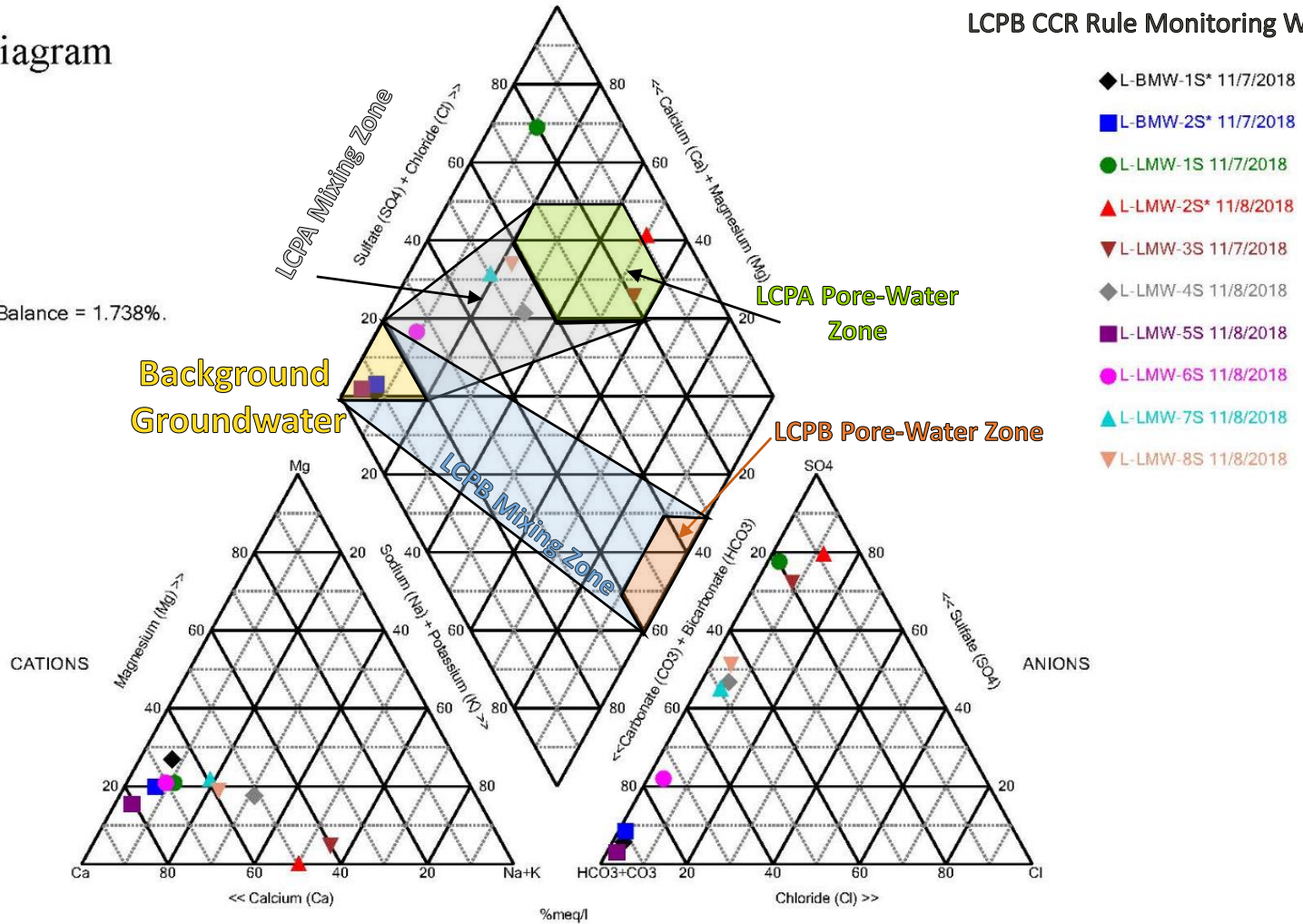
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect. Values displayed as ND.
4. NA -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

Prepared By: RJF  
Checked By: JAP/EMS  
Reviewed By: MNH

# Piper Diagram

## LCPB CCR Rule Monitoring Wells

Cation-Anion Balance = 1.738%.



### Notes

- 1) Piper diagram generated using Sanitas Software.
- 2) Data used to generate diagram available in LCPB Annual Report.

CLIENT/PROJECT  
**AMEREN MISSOURI  
 LABADIE LCPB ASD**



TITLE  
**LCPB PIPER DIAGRAM FOR NOVEMBER  
 2018**

PREPARED JSI	CHECKED JAP	REVIEWED MNH	DATE 03/29/2019	SCALE NA	FILE NO. NA	PROJECT NO. 153-1406.0001	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 1
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**APPENDIX C**

**Alternative Source Demonstration-  
April-May 2019 Sampling Event**

## TECHNICAL MEMORANDUM

**DATE** January 2020

**Project No.** 153140601

**TO** Ameren Missouri  
1901 Chouteau Ave, St. Louis, Mo 63103

**FROM** Mark Haddock, Jeffrey Ingram

### LCPB – ALTERNATIVE SOURCE DEMONSTRATION – APRIL-MAY 2019 SAMPLING EVENT

## 1.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), Golder Associates Inc. ("Golder") has prepared this Technical Memorandum that indicates Statistically Significant Increases (SSIs) calculated at Ameren Missouri's (Ameren) Labadie Energy Center (LEC), fly ash surface impoundment (LCPB) result from an alternative source. This LCPB Alternative Source Demonstration (ASD) satisfies the requirements of §257.94(e)(2) which allows the owner or operator to demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

## 2.0 BACKGROUND

In November 2017, the first round of detection monitoring was completed at the Labadie Energy Center's LCPB Coal Combustion Residual (CCR) Unit in Franklin County, Missouri. This sampling was completed in accordance with the CCR Rule and SSIs were identified and verified. In February/March 2018, additional drilling and a detailed analysis of results were completed for the LCPB and it was determined that the SSIs in the CCR Rule groundwater monitoring wells at the LCPB were not caused by impacts from the LCPB. The SSIs observed in LCPB wells were caused by an alternative source, which is the adjacent LCPA surface impoundment. A copy of the ASD report for the November 2017 sampling event is provided in Appendix B of the 2018 LCPB Annual Groundwater Monitoring and Corrective Action Report.

## 3.0 APRIL-MAY 2019 SAMPLING EVENT

A summary of the April-May 2019 sampling results can be found in **Table 1. Figure 1** of this Technical Memorandum displays where April-May 2019 LCPB CCR Rule groundwater monitoring well samples plot in comparison to cations and anions for the LCPA pore-water, LCPB pore-water, and background groundwater zones. As displayed in this figure, the monitoring wells around the LCPB plot in similar locations to those from 2017 and wells in the April-May 2019 sampling event plot between the background groundwater quality and the LCPA pore-water. Like the November 2017 Sampling Event ASD, results from this diagram demonstrate that groundwater quality in the monitoring wells around the LCPB is impacted by the LCPA and not the LCPB.

Additional supporting lines of evidence from the November 2017 Sampling Event ASD are also applicable in this April-May 2019 Sampling Event ASD. Additional evidence includes:

- Potentiometric surface mapping from 2018 and 2019 continue to show that while groundwater conditions can be variable, net groundwater flow is toward the north/northeast, flowing from the bluffs toward the Missouri River. This supports the conclusion that the unlined LCPA is the source of impacts at the downgradient monitoring wells because impacted monitoring wells around the LCPB are located downgradient from the LCPA.
- The LCPB was constructed with an engineered liner system consisting of a 60-mil High Density Polyethylene (HDPE) geomembrane liner with a bottom elevation of approximately 460 feet above mean sea level (FT MSL) at its lowest point. The low permeability HDPE liner system in the LCPB is a barrier to CCR impact migration and provides containment for CCR.
- The LCPA was built in the early 1970's and has a bottom elevation estimated to be at approximately 410 FT MSL. In addition to the different pore-water fingerprints, there are elevated concentrations of CCR impact indicators in the intermediate and deep zones of groundwater in the alluvial aquifer as shown in the LCPA Annual reports. Since impacts are present in the shallow, intermediate (middle), and deep alluvial zones and are not isolated to the shallow zone where LCPB impacts would most readily occur, the impacts are most likely from the LCPA, which extends to deeper depths in the aquifer.

In summary, groundwater chemistry, pore-water chemistry fingerprints, cell construction and hydrogeological evidence all demonstrate that impacts (SSIs) calculated during the April-May 2019 Sampling Event for the LCPB CCR Unit were not caused by impacts from the LCPB surface impoundment, and the LCPA surface impoundment is the source of the LCPB SSIs.

## CERTIFICATION STATEMENT

This *LCPB – Alternative Source Demonstration – April-May 2019 Sampling Event* has been prepared to comply with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Golder Associates Inc.

I hereby certify that this *LCPB – Alternative Source Demonstration – April-May 2019 Sampling Event* located at 226 Labadie Power Plant Road, Labadie Missouri 63055 has been prepared to meet the requirements of 40 CFR §257.94(e)(2).

### GOLDER ASSOCIATES INC.



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

**Table 1**  
**April-May 2019 Detection Monitoring Results**  
**LCPB Surface Impoundment**  
**Labadie Energy Center, Franklin County, MO**

ANALYTE	UNITS	PREDICTION LIMITS	BACKGROUND		GROUNDWATER MONITORING WELLS							
			BMW-1S	BMW-2S	LMW-1S	LMW-2S	LMW-3S	LMW-4S	LMW-5S	LMW-6S	LMW-7S	LMW-8S
<b>April-May 2019 Detection Monitoring Event</b>												
DATE	NA	NA	5/1/2019	5/1/2019	5/1/2019	4/30/2019	5/2/2019	5/1/2019	5/1/2019	5/8/2019	5/8/2019	5/2/2019
pH	SU	6.132-7.436	6.53	6.18	6.70	9.54	7.33	6.15	5.96	6.67	7.08	6.92
BORON, TOTAL	µg/L	156.1	111	61.3 J	8,840	3,770	4,080	8,770	73.9 J	5,660	7,790	8,340
CALCIUM, TOTAL	µg/L	219,000	196,000	126,000	261,000	51,300	64,300	121,000	133,000	164,000	139,000	187,000
CHLORIDE, TOTAL	mg/L	8.317	4.4	1.4	9.5	22.3	20.2	23.7	2.9	16.2	20.2	17.3
FLUORIDE, TOTAL	mg/L	0.2535	0.22	0.21	0.20 J	0.24	0.45	0.31	0.18 J	0.090 J	0.17 J	0.17 J
SULFATE, TOTAL	mg/L	70.05	39.2	29.4	451	195	237	234	9.0	130	242	460
TOTAL DISSOLVED SOLIDS	mg/L	784	740	459	1,130	395	561	749	417	738	873	1,050
<b>August-October 2019 Verification Sampling Event</b>												
DATE	NA	NA						8/21/2019	10/4/2019	8/21/2019		
pH	SU	6.132-7.436						6.21	6.58	6.63		
BORON, TOTAL	µg/L	156.1										
CALCIUM, TOTAL	µg/L	219,000										
CHLORIDE, TOTAL	mg/L	8.317								21.5		
FLUORIDE, TOTAL	mg/L	0.2535						0.25				
SULFATE, TOTAL	mg/L	70.05										
TOTAL DISSOLVED SOLIDS	mg/L	784										

**NOTES:**

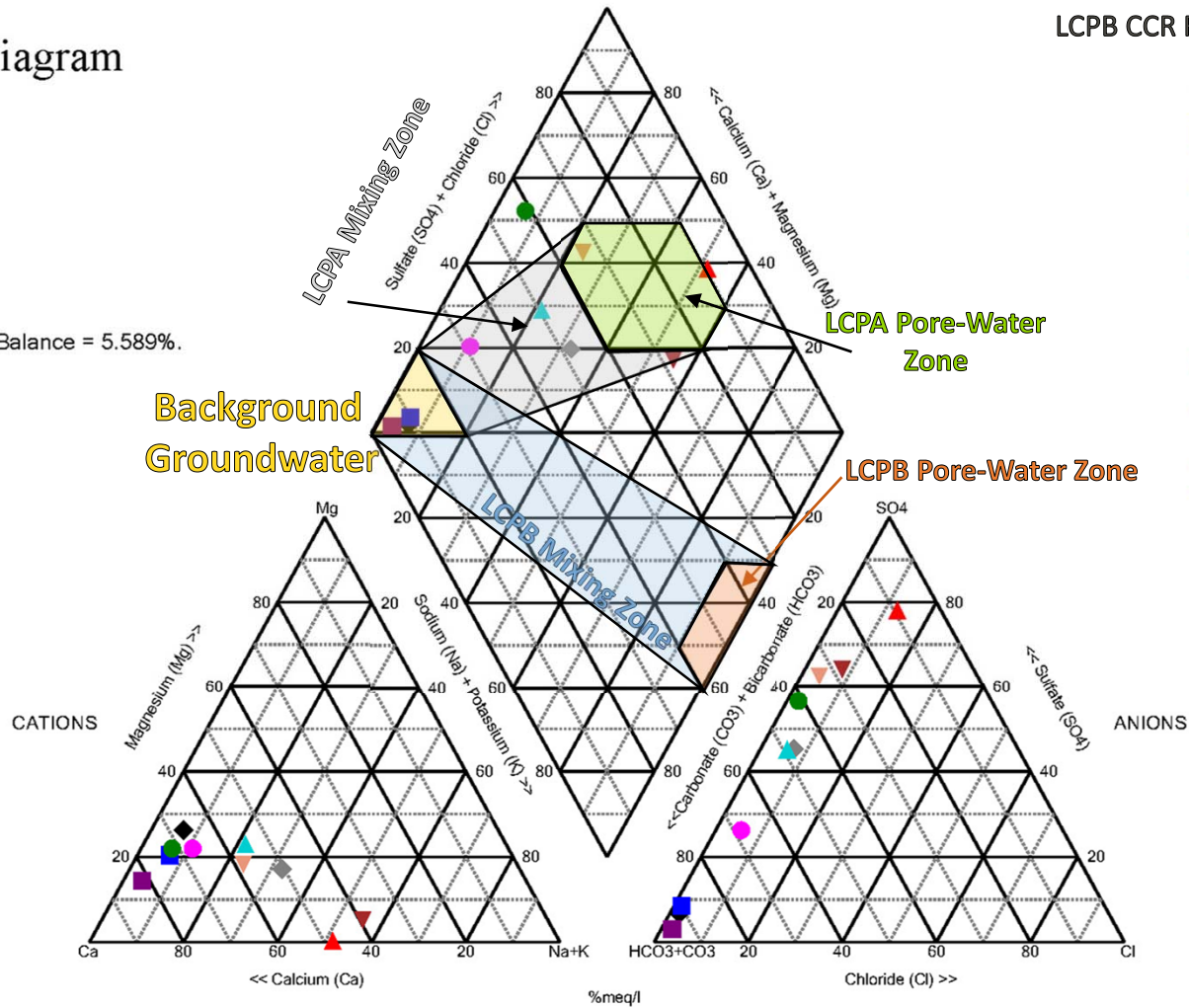
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. ND - Constituent was analyzed for, but was not detected above the Method Detection Limit (MDL) and is considered a non-detect. Values displayed as ND.
4. NA -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

Prepared By: JSI  
Checked By: AMM  
Reviewed By: CMR

# Piper Diagram

## LCPB CCR Rule Monitoring Wells

Cation-Anion Balance = 5.589%.



### Notes

- 1) Piper diagram generated using Sanitas Software.
- 2) Data used to generate diagram available in LCPB Annual Report.

CLIENT/PROJECT  
**AMEREN MISSOURI  
 LABADIE LCPB ASD**



TITLE  
**LCPB PIPER DIAGRAM FOR APRIL-MAY  
 2019**

PREPARED JSI	CHECKED RJF	REVIEWED MNH	DATE 01/02/2020	SCALE NA	FILE NO. NA	PROJECT NO. 153-140601	DRAWING NO. NA	SUBTITLE NA	REV. NO. 0	FIGURE 1
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**APPENDIX D**

# Potentiometric Surface Maps



**LEGEND**

Labadie Energy Center Property Boundary

**Utility Waste Landfill (UWL)**

Proposed Final UWL Fence Perimeter

Utility Waste Landfill Cell LCL1

**Surface Impoundments**

LCPA - Bottom Ash Surface Impoundment

LCPB - Fly Ash Surface Impoundment

**Groundwater Elevation Measurement Location**

Monitoring Well or Piezometer

**Surface Water Elevation Measurement Location**

Missouri River Gauge

LCPA - Bottom Ash Surface Impoundment Gauge

**Groundwater Elevation Contours**

Groundwater Elevation Contour (FT MSL)

Inferred Groundwater Elevation Contour (FT MSL)

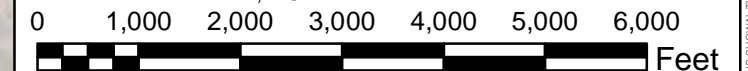
Groundwater Flow Direction

**NOTES**

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
5. POND GAUGE LEVEL OBTAINED ONSITE BY GOLDER.
6. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.

**REFERENCES**

1. ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.
3. USGS (UNITED STATES GEOLOGICAL SURVEY), NATIONAL WATER INFORMATION SYSTEM, USGS GAUGE 06935550 MISSOURI RIVER NEAR LABADIE, MO.



CLIENT  
AMEREN MISSOURI  
LABADIE ENERGY CENTER



PROJECT  
CCR GROUNDWATER MONITORING PROGRAM

TITLE  
**JANUARY 2, 2019 POTENTIOMETRIC SURFACE MAP**

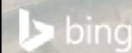
CONSULTANT		YYYY-MM-DD	2019-11-22
		PREPARED	EMS/RJF
		DESIGN	JSI
		REVIEW	TJG
		APPROVED	CMR

PROJECT No.  
153-140601

FIGURE  
**P1**

Path: G:\Projects\153-1406 - Ameren GW Monitoring Program - MOC\Phase 0001 - Labadie Energy\200 - REPORTS\DRIFT\2019 Annual Report\LCPA\Figures\2019 Pot.mxd; 153-140601.dwg; 11/22/2019 10:00 AM

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**LEGEND**

Labadie Energy Center Property Boundary

**Utility Waste Landfill (UWL)**

Proposed Final UWL Fence Perimeter

Utility Waste Landfill Cell LCL1

**Surface Impoundments**

LCPA - Bottom Ash Surface Impoundment

LCPB - Fly Ash Surface Impoundment

**Groundwater Elevation Measurement Location**

Monitoring Well or Piezometer

**Surface Water Elevation Measurement Location**

Missouri River Gauge

LCPA Bottom Ash Surface Impoundment Gauge

**Groundwater Elevation Contours**

Groundwater Elevation Contour (FT MSL)

Inferred Groundwater Elevation Contour (FT MSL)

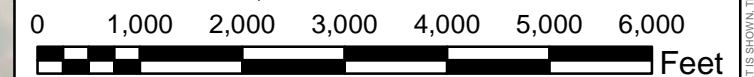
Groundwater Flow Direction

**NOTES**

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
5. POND GAUGE LEVEL OBTAINED ONSITE BY GOLDER.
6. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.
7. LMW-6S, TP-1D AND MW-28 WERE NOT USED IN POTENTIOMETRIC SURFACE CONTOURING.

**REFERENCES**

1. ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.
3. USGS (UNITED STATES GEOLOGICAL SURVEY), NATIONAL WATER INFORMATION SYSTEM, USGS GAUGE 06935550 MISSOURI RIVER NEAR LABADIE, MO.



CLIENT  
AMEREN MISSOURI  
LABADIE ENERGY CENTER



PROJECT  
CCR GROUNDWATER MONITORING PROGRAM

TITLE  
**APRIL 29, 2019 POTENTIOMETRIC SURFACE MAP**

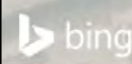
CONSULTANT		YYYY-MM-DD	2019-06-03
		PREPARED	EMS
		DESIGN	JSI
		REVIEW	RJF
		APPROVED	MNH

PROJECT No.  
153-140601

FIGURE  
**P2**

Path: G:\Projects\153-1406 - Ameren GW Monitoring Program - MOC\Phase 0001 - Labadie Energy\200 - REPORTS\DRAF\2019 Annual Report\LCPA\Figures\2019 Pot Map.mxd

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**LEGEND**

Labadie Energy Center Property Boundary

**Utility Waste Landfill (UWL)**

Proposed Final UWL Fence Perimeter

Utility Waste Landfill Cell LCL1

**Surface Impoundments**

LCPA - Bottom Ash Surface Impoundment

LCPB - Fly Ash Surface Impoundment

**Groundwater Elevation Measurement Location**

Monitoring Well or Piezometer

**Surface Water Elevation Measurement Location**

Missouri River Gauge

LCPA Bottom Ash Surface Impoundment Gauge

**Groundwater Elevation Contours**

Groundwater Elevation Contour (FT MSL)

Inferred Groundwater Elevation Contour (FT MSL)

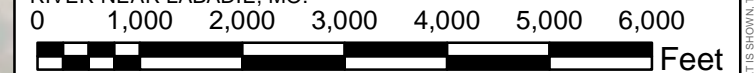
Groundwater Flow Direction

**NOTES**

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
5. POND GAUGE LEVEL OBTAINED ONSITE BY GOLDER.
6. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.
7. THE POND GAUGE WAS BELOW THE GAUGE AND THEREFORE A POND ELEVATION LEVEL WAS NOT COLLECTED (NC).
8. WATER LEVELS WERE NOT COLLECTED AT WELLS LMW-3S, MW-19, MW-20, MW-21, MW-22, TP-4S, TP-4M, TP-4D, PZ-3S/AMW-3, PZ-5D/AMW-5, AND S1.

**REFERENCES**

1. ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.
3. USGS (UNITED STATES GEOLOGICAL SURVEY), NATIONAL WATER INFORMATION SYSTEM, USGS GAUGE 06935550 MISSOURI RIVER NEAR LABADIE, MO.



CLIENT  
AMEREN MISSOURI  
LABADIE ENERGY CENTER



PROJECT  
CCR GROUNDWATER MONITORING PROGRAM

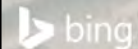
TITLE  
**OCTOBER 4, 2019 POTENTIOMETRIC SURFACE MAP**

CONSULTANT	DATE	BY
	YYYY-MM-DD	2019-10-21
	PREPARED	AMM
	DESIGN	JSI
	REVIEW	BCW
	APPROVED	MNH

PROJECT No.  
153-140601

FIGURE  
**P3**

Path: G:\Projects\153-1406 - Ameren GW Monitoring Program - MOCPhase 0001 - Labadie Energy\200 - REPORTS\DR\AF1019 Annual Report\LC\AVF\AVF1019 For map\LEC - NE for map Oct 2019.mxd  
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**LEGEND**

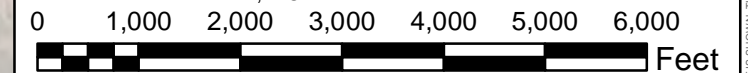
- Labadie Energy Center Property Boundary
- Utility Waste Landfill (UWL)**
- Proposed Final UWL Fence Perimeter
- Utility Waste Landfill Cell LCL1
- Surface Impoundments**
- LCPA - Bottom Ash Surface Impoundment
- LCPB - Fly Ash Surface Impoundment
- Groundwater Elevation Measurement Location**
- Monitoring Well or Piezometer
- Surface Water Elevation Measurement Location**
- Missouri River Gauge
- Groundwater Elevation Contours**
- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)
- Groundwater Flow Direction

**NOTES**

1. ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2. GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDR.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FT MSL (FEET ABOVE MEAN SEA LEVEL).
4. MISSOURI RIVER LEVEL OBTAINED FROM USGS LABADIE GAUGE 06935550.
5. THE UWL BOUNDARIES AND DESIGNATIONS ARE BASED ON AMEREN LABADIE CONSTRUCTION PERMIT APPLICATION DRAWINGS.
6. MONITORING WELLS UMW-6D AND MW-28 WERE NOT USED FOR POTENTIOMETRIC SURFACE CONTOURING

**REFERENCES**

1. ZAHNER AND ASSOCIATES, INC. 2016. LOT CONSOLIDATION PLAT OF "LABADIE ENERGY CENTER" - PREPARED FOR AMEREN MISSOURI. REVISED JUNE 15, 2016.
2. COORDINATE SYSTEM: NAD 1983 STATEPLANE MISSOURI EAST FIPS 2,401 FEET.
3. USGS (UNITED STATES GEOLOGICAL SURVEY), NATIONAL WATER INFORMATION SYSTEM, USGS GAUGE 06935550 MISSOURI RIVER NEAR LABADIE, MO.



CLIENT  
AMEREN MISSOURI  
LABADIE ENERGY CENTER



PROJECT  
CCR GROUNDWATER MONITORING PROGRAM

TITLE  
**NOVEMBER 4, 2019 POTENTIOMETRIC SURFACE MAP**

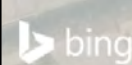
CONSULTANT	DATE	BY
	YYYY-MM-DD	2019-11-22
	PREPARED	EMS
	DESIGN	JSI
	REVIEW	TJG
	APPROVED	CMR

PROJECT No.  
153-140601

FIGURE  
**P4**

Path: G:\Projects\153-1406 - Ameren GW Monitoring Program - MOC\Phase 0001 - Labadie Energy\200 - REPORTS\DRAFET\2019 Annual Report\LCPA\Figures\2019 Pot.mxd - November, 19.mxd

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