

**2017 ANNUAL GROUNDWATER MONITORING  
AND  
CORRECTIVE ACTION REPORT**

**CCR LANDFILL AND LOWER AQC IMPOUNDMENT  
LA CYGNE GENERATING STATION  
LA CYGNE, KANSAS**

Presented To:

**Kansas City Power & Light Company**

Presented By:

**SCS ENGINEERS**  
7311 West 130th Street, Suite 100  
Overland Park, Kansas 66213  
(913) 681-0030

January 30, 2018  
File Number 27217233.00

## CERTIFICATIONS

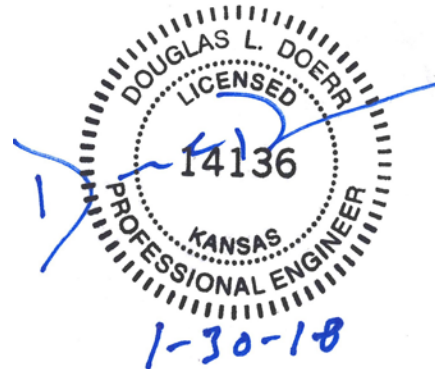
I, John R. Rockhold, being a qualified groundwater scientist and Professional Geologist in the State of Kansas, do hereby certify that the 2017 Annual Groundwater Monitoring and Corrective Action Report for the CCR Landfill and Lower AQC Impoundment at the La Cygne Generating Station was prepared by me or under my direct supervision and fulfills the requirements of 40 CFR 257.90(e).



---

John R. Rockhold, P.G.  
SCS Engineers

I, Douglas L. Doerr, being a qualified licensed Professional Engineer in the State of Kansas, do hereby certify that the 2017 Annual Groundwater Monitoring and Corrective Action Report for the CCR Landfill and Lower AQC Impoundment at the La Cygne Generating Station was prepared by me or under my direct supervision and fulfills the requirements of 40 CFR 257.90(e).



---

Douglas L. Doerr, P.E.  
SCS Engineers

## Table of Contents

Section	Page
CERTIFICATIONS .....	i
1 INTRODUCTION.....	1
2 § 257.90(E) ANNUAL REPORT REQUIREMENTS .....	1
2.1 § 257.90(e)(1) Site Map .....	1
2.2 § 257.90(e)(2) Monitoring System Changes .....	2
2.3 § 257.90(e)(3) Summary of Sampling Events.....	2
2.4 § 257.90(e)(4) Monitoring Transition Narrative.....	2
2.5 § 257.90(e)(5) Other Requirements .....	2
2.5.1 § 257.90(e) .....	3
2.5.2 § 257.94(d)(3).....	3
2.5.3 § 257.94(e)(2).....	3
2.5.4 § 257.95(c)(3).....	4
2.5.5 § 257.95(d)(3).....	4
2.5.6 § 257.95(g)(3)(ii).....	4
2.5.7 § 257.96(a).....	4
3 GENERAL COMMENTS .....	5

## Appendices

### Appendix A Figures

Figure 1: Site Map

### Appendix B Tables

Table 1: Appendix III and Appendix IV Detection Monitoring Results

Table 2: Detection Monitoring Field Measurements

## 1 INTRODUCTION

This 2017 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the “Coal Combustion Residuals (CCR) Final Rule” (Rule) published by the United States Environmental Protection Agency (USEPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (USEPA, 2015). Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90 (e). The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2017 Annual Groundwater Monitoring and Corrective Action Report for the multi-unit groundwater monitoring system for the CCR Landfill and Lower AQC Impoundment at the La Cygne Generating Station.

## 2 § 257.90(e) ANNUAL REPORT REQUIREMENTS

*Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility’s operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:*

### 2.1 § 257.90(e)(1) SITE MAP

*A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;*

A site map with an aerial image showing the CCR Landfill and Lower AQC Impoundment and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR Landfill and Lower AQC Impoundment groundwater monitoring program is provided as **Figure 1** in **Appendix A**.

## 2.2 § 257.90(e)(2) MONITORING SYSTEM CHANGES

*Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;*

The CCR groundwater monitoring system was initially certified on October 13, 2017. No new monitoring wells were installed and no wells were decommissioned as part of the CCR groundwater monitoring program for the CCR Landfill and Lower AQC Impoundment in 2017.

## 2.3 § 257.90(e)(3) SUMMARY OF SAMPLING EVENTS

*In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;*

Only detection monitoring was conducted during the reporting period. Sampling for the detection monitoring program began in June 2016. Samples were analyzed as indicated in **Appendix B, Table 1** (Appendix III and Appendix IV Detection Monitoring Results, and **Table 2** (Detection Monitoring Field Measurements). The dates of sample collection and the results of the analyses are also provided in these tables.

## 2.4 § 257.90(e)(4) MONITORING TRANSITION NARRATIVE

*A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and*

There was no transition between monitoring programs in 2017. Only detection monitoring was conducted in 2017. Statistical evaluation of the data was still in process as of the end of 2017.

## 2.5 § 257.90(e)(5) OTHER REQUIREMENTS

*Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.*

A summary of potentially required information and the corresponding section of the Rule is provided in the following sections. In addition, the information if applicable is provided.

**2.5.1 § 257.90(e)**

*Status of Groundwater Monitoring and Corrective Action Program.*

The groundwater monitoring and corrective action program is in detection monitoring.

*Summary of Key Actions Completed.*

Collection of initial background groundwater quality data was completed and the initial detection monitoring sampling and analysis event was completed in October 2017. Verification sampling was in process as of the end of 2017.

*Description of Any Problems Encountered.*

No noteworthy problems were encountered.

*Discussion of Actions to Resolve the Problems.*

Not applicable because no noteworthy problems were encountered.

*Projection of Key Activities for the Upcoming Year (2018).*

Completion of statistical evaluation of detection monitoring data. Groundwater sampling and analysis and alternative source demonstration(s) (if required).

**2.5.2 § 257.94(d)(3)**

*Demonstration providing the basis for an alternative monitoring frequency for detection monitoring and certification that it meets the requirements of this section.*

Not applicable because no alternative monitoring frequency for detection monitoring and certification was pursued.

**2.5.3 § 257.94(e)(2)**

*Demonstration that an alternative source other than the CCR unit caused the statistically significant increase (SSI) over background or that the SSI was caused by an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. In addition, certification of the demonstration is to be included in the annual report.*

Not applicable because no such demonstration was conducted.

**2.5.4 § 257.95(c)(3)**

*Demonstration providing the basis for an alternative monitoring frequency for assessment monitoring and certification that it meets the requirements of this section.*

Not applicable because no such demonstration was conducted.

**2.5.5 § 257.95(d)(3)**

*Include the concentrations of Appendix III and detected Appendix IV constituents from the assessment monitoring, the established background concentrations, and the established groundwater protection standards.*

Not applicable because there was no assessment monitoring conducted.

**2.5.6 § 257.95(g)(3)(ii)**

*Demonstration that an alternative source other than the CCR unit caused the contamination, or that the SSI (during assessment monitoring) resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. In addition, certification of the demonstration is to be included in the annual report.*

Not applicable because no such demonstration was conducted.

**2.5.7 § 257.96(a)**

*Demonstration of the need for additional time to complete the assessment of corrective measures due to site-specific conditions or circumstances. In addition, certification of the demonstration is to be included in the annual report.*

Not applicable because no such demonstration was conducted.

### 3 GENERAL COMMENTS

This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. The information contained in this report is a reflection of the conditions encountered at the La Cygne Generating Station at the time of fieldwork. This report includes a review and compilation of the required information and does not reflect any variations of the subsurface, which may occur between sampling locations. Actual subsurface conditions may vary and the extent of such variations may not become evident without further investigation.

Conclusions drawn by others from the result of this work should recognize the limitation of the methods used. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report. This report is prepared in accordance with generally accepted environmental engineering and geological practices, within the constraints of the client's directives. It is intended for the exclusive use of KCP&L for specific application to the La Cygne Generating Station CCR Landfill and Lower AQC Impoundment. No warranties, express or implied, are intended or made.



## **APPENDIX A**

### **FIGURES**

Figure 1: Site Map

N:\KCP\Projects\Groundwater\DWG\La Cygne\CCR Annual Report\Fig 1 -La Cygne LF LAQC Imp.dwg Jan 16, 2018 - 5:14pm Layout Name: Fig 1 By: 4121rcw

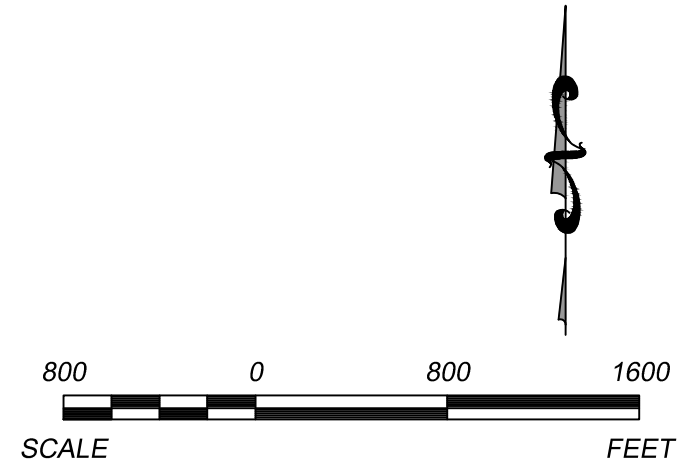


**LEGEND**

- CCR UNIT BOUNDARY (APPROXIMATE LIMITS OF CCR LANDFILL AND LOWER AQC IMPOUNDMENT)
- CCR GROUNDWATER MONITORING SYSTEM WELLS

MW-601

- NOTES:**
1. KDHE FACILITY PERMIT AND LANDFILL PERMIT BOUNDARIES VARY FROM THAT SHOWN.
  2. GOOGLE EARTH IMAGE DATED OCTOBER 2014. BOUNDARY AND MONITOR WELL LOCATIONS ARE APPROXIMATE.
  3. BOUNDARY AND MONITOR WELL LOCATIONS ARE PROVIDED BY AECOM.



	SITE MAP	REV. DATE	CHK. BY
CCR LANDFILL & LOWER AQC IMPOUNDMENT CCR GROUNDWATER MONITORING SYSTEM	△	-	-
PROJECT TITLE	△	-	-
<b>2017 CCR GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT</b>	△	-	-
CLIENT	KANSAS CITY POWER & LIGHT COMPANY LA CYGNE GENERATING STATION LA CYGNE, KANSAS		
SHEET TITLE	SCS ENGINEERS 7311 W. 130th St. Ste. 100 Overland Park, Kansas 66213 PH: (913) 681-0030 FAX: (913) 681-0012 PROJ. NO. 27217233.00 DWN. BY: RCW CHK. BY: JRR D/A RW BY: JRR PROD. MGR. JRR		
CADD FILE:	FIG 1 -LA CYGNE LF LAQC IMP.DWG		
DATE:	1/16/18		
FIGURE NO.	<b>1</b>		

## **APPENDIX B**

### **TABLES**

Table 1: Appendix III and Appendix IV Detection Monitoring Results

Table 2: Detection Monitoring Field Measurements





**Table 2**  
**CCR Landfill and Lower AQC Impoundment**  
**Detection Monitoring Field Measurements**  
**KCP&L LaCygne Generating Station**

Well Number	Sample Date	pH (S.U.)	Specific Conductivity (µS)	Temperature (°C)	Turbidity (NTU)	***Water Level (ft btoc)	Groundwater Elevation (ft NGVD)
MW-10	6/6/2016	7.33	886	21.56	2.60	2.24	872.71
MW-10	8/11/2016	7.26	1092	22.76	1.30	1.99	872.96
MW-10	10/12/2016	7.33	1031	16.18	0.68	1.16	873.79
MW-10	12/9/2016	7.22	1042	12.03	1.26	1.38	873.57
MW-10	2/8/2017	7.21	1000	8.20	2.96	2.36	872.59
MW-10	4/6/2017	7.23	1035	11.88	6.93	2.45	872.50
MW-10	6/15/2017	7.31	1112	19.34	2.01	2.62	872.33
MW-10	8/10/2017	7.29	1038	20.10	0.96	2.51	872.44
MW-10	10/4/2017	7.23	1055	19.04	1.39	2.06	872.89
MW-10	12/12/2017	**7.19	752	13.20	1.08	2.49	872.46
MW-13	6/9/2016	6.88	3999	30.95	8.30	4.63	872.59
MW-13	8/11/2016	6.78	3039	23.77	4.73	5.00	872.22
MW-13	10/13/2016	6.95	2991	17.65	1.39	3.47	873.75
MW-13	12/13/2016	6.36	2683	13.29	10.95	6.44	870.78
MW-13	2/10/2017	7.08	2760	15.18	0.75	4.47	872.75
MW-13	4/6/2017	6.86	2774	14.25	1.54	3.61	873.61
MW-13	6/15/2017	6.80	3018	18.60	0.85	4.57	872.65
MW-13	8/8/2017	6.74	2648	18.86	0.59	5.36	871.86
MW-13	10/5/2017	6.90	2454	17.72	2.76	5.33	871.89
MW-14R	6/9/2016	7.42	975	23.02	0.03	11.33	867.50
MW-14R	8/11/2016	7.26	1014	20.74	16.10	10.75	868.08
MW-14R	10/13/2016	7.51	982	13.86	2.58	9.77	869.06
MW-14R	12/9/2016	7.42	836	7.58	1.89	11.24	867.59
MW-14R	2/9/2017	7.92	837	11.41	5.82	12.03	866.80
MW-14R	4/7/2017	7.34	915	15.87	3.47	13.06	865.77
MW-14R	6/15/2017	7.19	958	17.78	2.13	10.34	868.49
MW-14R	8/10/2017	7.01	851	19.49	2.10	10.79	868.04
MW-14R	10/5/2017	7.63	954	15.34	0.60	10.19	868.64
MW-15	6/9/2016	7.31	1207	25.89	0.10	9.02	864.86
MW-15	8/9/2016	7.23	1270	20.47	0.64	8.65	865.23
MW-15	10/12/2016	7.28	1255	16.22	1.39	8.32	865.56
MW-15	12/7/2016	7.02	1174	14.85	0.55	9.18	864.70
MW-15	2/7/2017	7.28	1267	13.45	0.25	10.14	863.74
MW-15	4/5/2017	11.38	1303	14.39	7.54	9.72	864.16
MW-15	6/14/2017	7.34	1253	19.65	2.49	8.59	865.29
MW-15	8/10/2017	7.02	1131	23.26	1.50	8.55	865.33
MW-15	10/3/2017	6.95	1121	17.54	0.33	9.08	864.80
MW-15	1/9/2018	*7.21	1014	14.96	0.93	10.27	863.61
MW-601	6/9/2016	7.66	1655	21.04	1.40	10.42	868.76
MW-601	8/9/2016	7.72	1679	20.46	4.52	10.98	868.20
MW-601	10/13/2016	7.71	1754	15.58	2.57	9.36	869.82
MW-601	12/7/2016	7.61	1568	11.15	2.99	9.23	869.95
MW-601	2/8/2017	8.60	1691	6.86	1.45	9.03	870.15
MW-601	4/6/2017	7.61	1566	14.96	5.58	9.48	869.70
MW-601	6/15/2017	7.62	1700	18.58	2.80	10.06	869.12
MW-601	8/9/2017	7.72	1599	24.67	1.88	10.72	868.46
MW-601	10/6/2017	7.53	1625	18.46	1.53	9.60	869.58
MW-601	1/9/2018	*7.41	1412	15.04	1.27	8.82	870.36
MW-602	6/10/2016	7.01	1035	21.54	4.80	3.71	876.18
MW-602	8/9/2016	7.64	1069	24.56	1.95	3.66	876.23
MW-602	10/13/2016	7.34	967	16.70	3.37	3.61	876.28
MW-602	12/9/2016	8.15	979	10.03	5.89	3.21	876.68
MW-602	2/8/2017	8.36	1008	8.12	0.96	2.75	877.14
MW-602	4/7/2017	7.51	995	18.62	4.74	2.97	876.92
MW-602	6/15/2017	7.77	1031	18.83	2.71	3.61	876.28
MW-602	8/10/2017	7.56	869	26.79	2.04	4.13	875.76
MW-602	10/5/2017	7.78	1019	20.90	0.71	3.93	875.96

\* Verification Sample

\*\* Extra Sample Collected per Standard Sampling Procedure

\*\*\*Depth to water measured in all monitoring wells within 24 hour period prior to the sampling event

S.U. - Standard Units

µS - microsiemens

°C - Degrees Celsius

ft btoc - Feet Below Top of Casing

ft NGVD - National Geodetic Vertical Datum (NAVD 88)

NTU - Nephelometric Turbidity Unit

**Table 2**  
**CCR Landfill and Lower AQC Impoundment**  
**Detection Monitoring Field Measurements**  
**KCP&L LaCygne Generating Station**

Well Number	Sample Date	pH (S.U.)	Specific Conductivity (µS)	Temperature (°C)	Turbidity (NTU)	***Water Level (ft btoc)	Groundwater Elevation (ft NGVD)
MW-801	6/7/2016	7.47	1464	17.80	5.17	0.15	857.50
MW-801	8/9/2016	7.48	1596	20.28	11.87	0.08	857.57
MW-801	10/11/2016	7.32	1659	18.87	3.54	0.09	857.56
MW-801	12/6/2016	7.14	1455	11.57	4.44	0.09	857.56
MW-801	2/7/2017	7.58	1543	11.16	6.20	0.45	857.20
MW-801	4/6/2017	7.26	1460	14.48	8.13	0.20	857.45
MW-801	6/14/2017	6.95	1560	18.38	4.63	0.16	857.49
MW-801	8/9/2017	7.51	1498	26.38	3.16	0.10	857.55
MW-801	10/4/2017	7.58	1459	18.04	3.89	0.60	857.05
MW-802	6/7/2016	7.46	1149	18.72	1.45	0.16	853.31
MW-802	8/10/2016	7.52	1201	21.13	3.05	0.36	853.11
MW-802	10/11/2016	7.34	1259	20.73	1.55	0.09	853.38
MW-802	12/6/2016	7.48	1108	14.67	0.75	0.10	853.37
MW-802	2/7/2017	7.67	1148	14.27	2.96	0.18	853.29
MW-802	4/4/2017	8.72	1232	13.42	7.16	0.20	853.27
MW-802	6/13/2017	7.60	1164	19.27	2.74	0.16	853.31
MW-802	8/7/2017	7.29	978	19.57	1.66	0.10	853.37
MW-802	10/4/2017	7.58	1108	18.31	0.85	0.82	852.65
MW-803	6/9/2016	7.48	1032	22.23	1.63	22.38	832.62
MW-803	8/12/2016	7.51	1090	18.00	3.33	27.00	828.00
MW-803	10/13/2016	6.99	1110	15.04	4.52	30.35	824.65
MW-803	12/6/2016	7.48	981	14.61	4.53	30.76	824.24
MW-803	2/8/2017	8.12	1030	5.46	0.44	27.34	827.66
MW-803	4/7/2017	7.36	1036	14.20	3.84	28.80	826.20
MW-803	6/13/2017	7.98	1082	17.59	3.29	29.92	825.08
MW-803	8/8/2017	7.52	967	20.55	2.47	32.62	822.38
MW-803	10/4/2017	7.55	1014	19.50	0.62	29.63	825.37
MW-804	6/8/2016	7.13	909	20.04	1.65	8.96	846.24
MW-804	8/10/2016	7.32	1003	22.17	2.61	8.82	846.38
MW-804	10/11/2016	7.20	1059	23.80	1.55	7.42	847.78
MW-804	12/7/2016	6.93	876	12.54	2.60	5.04	850.16
MW-804	2/7/2017	7.41	936	17.57	2.24	5.74	849.46
MW-804	4/4/2017	7.65	1003	13.70	7.77	7.12	848.08
MW-804	6/13/2017	7.22	951	21.38	3.11	8.86	846.34
MW-804	8/8/2017	7.06	939	22.37	3.05	9.55	845.65
MW-804	10/5/2017	6.93	978	22.72	0.46	9.94	845.26
MW-805	6/7/2016	6.52	3006	23.42	0.47	4.43	850.20
MW-805	8/10/2016	6.35	3275	21.64	16.70	3.91	850.72
MW-805	10/11/2016	6.36	2762	20.80	9.10	3.88	850.75
MW-805	12/6/2016	6.36	2999	16.10	7.68	4.36	850.27
MW-805	2/6/2017	6.62	2988	15.01	4.61	5.00	849.63
MW-805	4/4/2017	6.90	2817	13.09	11.09	4.81	849.82
MW-805	6/13/2017	6.43	3113	22.20	4.71	4.36	850.27
MW-805	8/8/2017	6.49	3000	25.33	2.25	4.62	850.01
MW-805	10/5/2017	5.99	3400	22.26	1.00	6.74	847.89
MW-805	12/12/2017	*6.35	3299	16.19	4.07	6.77	847.86
MW-805	1/9/2018	**6.76	2441	16.38	0.91	8.18	846.45

\* Verification Sample

\*\* Extra Sample Collected per Standard Sampling Procedure

\*\*\*Depth to water measured in all monitoring wells within 24 hour period prior to the sampling event

S.U. - Standard Units

µS - microsiemens

°C - Degrees Celsius

ft btoc - Feet Below Top of Casing

ft NGVD - National Geodetic Vertical Datum (NAVD 88)

NTU - Nephelometric Turbidity Unit