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2019 Annual Groundwater Monitoring and Corrective Action Report

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2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

COFFEEN ASH POND NO. 2, COFFEEN POWER STATION

RAMBOLL Bright ideas. Sustainable change.

2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
COFFEEN ASH POND NO. 2, COFFEEN POWER STATION

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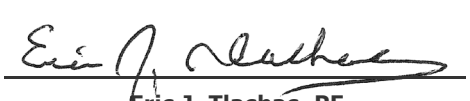

Eric J. Tlachac, PE
Managing Engineer

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ACRONYMS AND ABBREVIATIONS

AP2	Ash Pond No. 2
CCR	Coal Combustion Residuals
CMA	Corrective Measures Assessment
GWPS	Groundwater Protection Standard
SAP	Sampling and Analysis Plan
SSL	Statistically Significant Level

EXECUTIVE SUMMARY

This report has been prepared to provide the information required by Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257.90(e) for the Coffeen Ash Pond No. 2 (AP2) located at Coffeen Power Station near Coffeen, Illinois.

Groundwater is being monitored at Coffeen AP2 in accordance with the Assessment Monitoring Program requirements specified in 40 C.F.R. § 257.95.

No changes were made to the monitoring system in 2019 (no wells were installed or decommissioned).

The following Statistically Significant Levels (SSLs) of 40 C.F.R. Part 257 Appendix IV parameters were determined during one or more sampling events in 2019:

- Cobalt at wells G401 and G402

As required by 40 C.F.R. § 257.95(g)(3)(i), a Corrective Measures Assessment (CMA) (OBG, 2019) in accordance with 40 C.F.R. § 257.96 was initiated on May 8, 2019 and completed on July 8, 2019, and remedy selection is in progress.

A public meeting to discuss the results of the of the CMA was held in October 2019.

1. INTRODUCTION

This report has been prepared on by Ramboll behalf of Illinois Power Generating Company, to provide the information required by 40 C.F.R. § 257.90(e) for the Coffeen AP2 located at Coffeen Power Station near Coffeen, Illinois.

In accordance with 40 C.F.R. § 257.90(e), the owner or operator of a Coal Combustion Residuals (CCR) unit must prepare an Annual Groundwater Monitoring and Corrective Action Report for the preceding calendar year that documents the status of the Groundwater Monitoring and Corrective Action Program for the CCR unit, summarizes key actions completed, describes any problems encountered, discusses actions to resolve the problems, and projects key activities for the upcoming year. At a minimum, the Annual Report must contain the following information, to the extent available:

1. 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.
2. 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.
3. 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.
4. 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 relative to background levels).
5. Other information required to be included in the Annual Report as specified in §§ 257.90 through 257.98.

This report provides the required information for the Coffeen AP2 for calendar year 2019.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

SSLs were determined for Coffeen AP2 and alternate source evaluations were inconclusive. In accordance with 40 C.F.R. § 257.95(g)(5), a CMA meeting the requirements of 40 C.F.R. § 257.96 was initiated on May 8, 2019 and completed on July 8, 2019. Remedy selection is in progress. Coffeen AP2 remains in the Assessment Monitoring Program in accordance with 40 C.F.R. § 257.96(b).

3. KEY ACTIONS COMPLETED IN 2019

The Assessment Monitoring Program is summarized in Table A. The groundwater monitoring system, including the CCR unit and all background and downgradient monitoring wells, is presented in Figure 1. No changes were made to the monitoring system in 2019. In general, one groundwater sample was collected from each background and downgradient well during each monitoring event. All samples were collected and analyzed in accordance with the Sampling and Analysis Plan (SAP) (NRT/OBG, 2017a). All monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 (as applicable) in 2019 are presented in Tables 1 and 2. Analytical data were evaluated in accordance with the Statistical Analysis Plan (NRT/OBG, 2017b) to determine any SSLs of Appendix IV parameters over Groundwater Protection Standards (GWPSs). Notifications were completed in accordance with 40 C.F.R. § 257.95(g).

Statistical background values are provided in Table 3 and GWPSs in Table 4.

Analytical results for the May and August 2018 sampling events were provided in the 2018 Annual Groundwater Monitoring and Corrective Action Report.

Alternate source evaluations were inconclusive for one or more of the SSLs. Consequently, and in accordance with 40 C.F.R. § 257.95(g)(5), a CMA meeting the requirements of 40 C.F.R. § 257.96 was initiated on April 8, 2019 and the required notification completed. The CMA (OBG, 2019) was completed on July 8, 2019 and posted to the publicly accessible website, as required by 40 C.F.R. § 257.107(h)(8).

A public meeting was held on October 7, 2019 at the Coffeen Elementary School in Coffeen, Illinois to discuss the results of the of the CMA in accordance with 40 C.F.R. § 257.96(e).

Table A – 2018-2019 Assessment Monitoring Program Summary

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	SSL(s)	SSL(s) Determination Date	CMA Initiated
May 11, 12, 29, 30, and 31, 2018	July 16, 2018	Appendix III Appendix IV	NA	NA	NA
August 4, 2018	October 10, 2018	Appendix III Appendix IV Detected [1]	Cobalt (G401, G402)	January 7, 2019	April 8, 2019
January 24-25, 2019	April 15, 2019	Appendix III Appendix IV	Cobalt (G401, G402)	July 15, 2019	NA
August 16-20, 2019	October 15, 2019	Appendix III Appendix IV Detected [1]	TBD	TBD	NA

Notes:

NA: Not Applicable
TBD: To Be Determined
1. Groundwater sample analysis was limited to Appendix IV parameters detected in previous events in accordance with 40 C.F.R. § 257.95(d)(1).

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the Groundwater Monitoring Program during 2019. Groundwater samples were collected and analyzed in accordance with the SAP (NRT/OBG, 2017a), and all data were accepted.

5. KEY ACTIVITIES PLANNED FOR 2020

The following key activities are planned for 2020:

- Continuation of the Assessment Monitoring Program with semi-annual sampling scheduled for the first and third quarters of 2020.
- Remedy selection will continue; semiannual progress reports required by 40 C.F.R. § 257.97(a) will be completed and posted to the publicly accessible website as required by 40 C.F.R. § 257.107(h)(9).

6. REFERENCES

Natural Resource Technology, an OBG Company (NRT/OBG), 2017a. Sampling and Analysis Plan, Coffeen Ash Pond No. 2, Coffeen Power Station, Coffeen, Illinois, Project No. 2285, Revision 0, October 17, 2017.

Natural Resource Technology, an OBG Company (NRT/OBG), 2017b. Statistical Analysis Plan, Coffeen Power Station, Newton Power Station, Illinois Power Generating Company, October 17, 2017.

OBG, Part of Ramboll (OBG), 2019. Corrective Measures Assessment, Coffeen Ash Pond No. 2 – CCR Unit ID 102, Coffeen Power Station, 134 Cips Lane, Coffeen, Illinois 62017. Illinois Power Generating Company, July 8, 2019.

TABLES

TABLE 1.
2019 ANALYTICAL RESULTS - GROUNDWATER ELEVATION AND APPENDIX III PARAMETERS
2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
COFFEEN POWER STATION
UNIT ID 102 - COFFEEN ASH POND NO. 2
COFFEEN, ILLINOIS
ASSESSMENT MONITORING PROGRAM

Well Identification Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Date & Time Sampled	Depth to Groundwater (ft)[1]	Groundwater Elevation (ft NAVD88)	40 C.F.R. Part 257 Appendix III						
						Boron, total (mg/L) 6020A[2]	Calcium, total (mg/L) 6020A[2]	Chloride, total (mg/L) 9251[2]	Fluoride, total (mg/L) 9214[2]	pH (field) (S.U.) SM 4500 H+B[2]	Sulfate, total (mg/L) 9036[2]	Total Dissolved Solids (mg/L) SM 2540C[2]
Background / Upgradient Monitoring Wells												
G270	39.066564	-89.397403	1/21/2019 16:49	7.46	618.46	<0.010	56	9.6	0.375	7.0	49	480
			8/15/2019 12:21	3.80	622.12	<0.010	54	9.8	0.461	7.1	50	470
G281	39.065405	-89.399322	1/23/2019 12:16	8.17	618.19	0.013	130	85	0.299	7.0	380	880
			8/13/2019 13:29	6.20	620.16	<0.010	140	72	0.546	6.9	310	900
Downgradient Monitoring Wells												
G401	39.060259	-89.395295	1/24/2019 10:51	17.21	608.36	3.8	560	3.1	<0.250	6.3	4600	2900
			8/16/2019 11:43	17.12	608.45	4.0	550	2.5	<0.250	6.4	4300	3400
G402	39.060207	-89.391712	1/24/2019 12:22	11.00	602.37	5.4	260	1.9	0.349	6.8	940	1800
			8/16/2019 10:55	9.55	603.82	5.9	270	2.2	0.338	6.8	990	1600
G403	39.063167	-89.398779	1/24/2019 14:50	5.96	620.51	0.071	71	4.6	0.382	6.9	32	360
			8/19/2019 17:58	4.83	621.64	0.022	77	3.9	0.431	7.0	26	360
G404	39.064329	-89.392493	1/24/2019 15:48	6.69	608.98	2.80	120	100	<0.250	7.1	220	720
			8/16/2019 12:32	4.07	611.60	2.90	110	100	0.323	7.1	170	600
G405	39.064345	-89.396234	1/25/2019 10:07	6.82	616.81	7.8	220	14	0.462	6.6	890	1500
			8/20/2019 8:29	5.91	617.72	4.8	140	17	0.794	6.7	340	720

[O: RAB 12/9/19, C: KLT 12/10/19]

Notes:

40 C.F.R. = Title 40 of the Code of Federal Regulations

ft = foot/feet

mg/L = milligrams per liter

NAVD88 = North American Vertical Datum of 1988

S.U. = Standard Units

< = concentration is less than the concentration shown, which corresponds to the reporting limit for the method; estimated concentrations below the reporting limit and associated qualifiers are not provided since not utilized in statistics to determine Statistically Significant Increases (SSIs) over background.

[1]All depths to groundwater were measured on the first day of the sampling event.

[2]4-digit numbers represent SW-846 analytical methods.

TABLE 2.
2019 ANALYTICAL RESULTS - APPENDIX IV PARAMETERS
2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
COFFEEN POWER STATION
UNIT ID 102 - COFFEEN ASH POND NO. 2
COFFEEN, ILLINOIS
ASSESSMENT MONITORING PROGRAM

Well Identification Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Date & Time Sampled	40 C.F.R. Part 257 Appendix IV														
				Antimony, total (mg/L) 6020A[1]	Arsenic, total (mg/L) 6020A[1]	Barium, total (mg/L) 6020A[1]	Beryllium, total (mg/L) 6020A[1]	Cadmium, total (mg/L) 6020A[1]	Chromium, total (mg/L) 6020A[1]	Cobalt, total (mg/L) 6020A[1]	Fluoride, total (mg/L) 6020A[1]	Lead, total (mg/L) 6020A[1]	Lithium, total (mg/L) 6020A[1]	Mercury, total (mg/L) 7470A[1]	Molybdenum, total (mg/L) 6020A[1]	Radium 226/228, Combined (pCi/L) 903/904[1]	Selenium, total (mg/L) 6020A[1]	Thallium, total (mg/L) 6020A[1]
Background / Upgradient Monitoring Wells																		
G270	39.066564	-89.397403	1/21/2019 16:49	<0.0030	<0.0010	0.047	<0.0010	<0.0010	0.0043	<0.0020	0.375	0.0013	<0.01	<0.00020	<0.0010	0.651	<0.0010	<0.0010
			8/15/2019 12:21[2]	NA	<0.0010	0.040	<0.0010	<0.0010	<0.0040	<0.0020	0.461	<0.0010	0.012	NA	<0.0010	1.34	<0.0010	NA
G281	39.065405	-89.399322	1/23/2019 12:16	<0.0030	<0.0010	0.072	<0.0010	<0.0010	<0.0040	<0.0020	0.299	<0.0010	<0.01	<0.00020	<0.0010	0.333	<0.0010	<0.0010
			8/13/2019 13:29[2]	NA	0.0015	0.091	<0.0010	<0.0010	0.0048	<0.0020	0.546	0.0016	0.014	NA	<0.0010	0.879	<0.0010	NA
Downgradient Monitoring Wells																		
G401	39.060259	-89.395295	1/24/2019 10:51	<0.0030	0.030	0.30	0.0024	0.0049	0.090	0.31	<0.250	0.043	0.096	0.00029	0.0034	0.700	0.014	<0.0010
			8/16/2019 11:43[2]	NA	0.016	0.19	0.0015	0.0026	0.058	0.30	<0.250	0.030	0.092	0.00021	0.0027	1.43	0.0046	NA
G402	39.060207	-89.391712	1/24/2019 12:22	<0.0030	0.0048	0.042	<0.0010	<0.0010	0.0064	0.0076	0.349	0.0036	0.024	<0.00020	0.0019	0.827	0.0012	<0.0010
			8/16/2019 10:55[2]	NA	0.0047	0.036	<0.0010	<0.0010	0.0062	0.0045	0.338	0.0026	0.046	<0.00020	0.0027	1.96	<0.0010	NA
G403	39.063167	-89.398779	1/24/2019 14:50	<0.0030	0.0011	0.14	<0.0010	<0.0010	<0.0040	0.0031	0.382	<0.0010	<0.01	<0.00020	<0.0010	1.45	<0.0010	<0.0010
			8/19/2019 17:58[2]	NA	<0.0010	0.14	<0.0010	<0.0010	<0.0040	0.0027	0.431	<0.0010	<0.01	<0.00020	0.0010	1.09	<0.0010	NA
G404	39.064329	-89.392493	1/24/2019 15:48	<0.0030	<0.0010	0.037	<0.0010	<0.0010	<0.0040	<0.0020	<0.250	<0.0010	<0.01	<0.00020	<0.0010	1.61	<0.0010	<0.0010
			8/16/2019 12:32[2]	NA	0.0012	0.050	<0.0010	<0.0010	<0.0040	0.0029	0.323	0.0016	0.013	<0.00020	<0.0010	1.79	<0.0010	NA
G405	39.064345	-89.396234	1/25/2019 10:07	<0.0030	0.0032	0.041	<0.0010	<0.0010	<0.0040	0.0038	0.462	0.0043	<0.01	<0.00020	0.0013	1.43	0.0014	<0.0010
			8/20/2019 8:29[2]	NA	<0.0010	0.036	<0.0010	<0.0010	<0.0040	<0.0020	0.794	0.0014	<0.01	<0.00020	0.0024	1.75	<0.0010	NA

[O: RAB 12/9/19, C: KLT 12/10/19]

Notes:

40 C.F.R. = Title 40 of the Code of Federal Regulations

mg/L = milligrams per liter

NA = Not Analyzed

pCi/L = picoCuries per liter

< = concentration is less than concentration shown, which corresponds to the reporting limit for the method; estimated concentrations below the reporting limit and associated qualifiers are not provided since not utilized in statistics to determine Statistically Significant Levels (SSLs) over Groundwater Protection Standards.

[1]4-digit numbers represent SW-846 analytical methods and 3-digit numbers represent Clean Water Act analytical methods.

[2]Only the parameters detected during the previous sampling events were analyzed during this sampling event, in accordance with 40 C.F.R. § 257.95(d)(1).

TABLE 3.
STATISTICAL BACKGROUND VALUES
2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
COFFEEN POWER STATION
UNIT ID 102 - ASH POND NO. 2
COFFEEN, ILLINOIS
ASSESSMENT MONITORING PROGRAM

Parameter	Statistical Background Value (UPL)
40 C.F.R. Part 257 Appendix III	
Boron (mg/L)	0.02
Calcium (mg/L)	150
Chloride (mg/L)	75
Fluoride (mg/L)	0.483
pH (S.U.)	6.7 / 7.3
Sulfate (mg/L)	370
Total Dissolved Solids (mg/L)	840

[O: KLT 12/11/19, C: RAB 12/12/19]

Notes:
40 C.F.R. = Title 40 of the Code of Federal Regulations
mg/L = milligrams per liter
S.U. = Standard Units
UPL = Upper Prediction Limit

TABLE 4.
GROUNDWATER PROTECTION STANDARDS
2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
COFFEEN POWER STATION
UNIT ID 102 - ASH POND NO. 2
COFFEEN, ILLINOIS
ASSESSMENT MONITORING PROGRAM

Parameter	Groundwater Protection Standard[1]
40 C.F.R. Part 257 Appendix IV	
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.010
Barium (mg/L)	2
Beryllium (mg/L)	0.004
Cadmium (mg/L)	0.005
Chromium (mg/L)	0.10
Cobalt (mg/L)	0.006
Fluoride (mg/L)	4
Lead (mg/L)	0.015
Lithium (mg/L)	0.040
Mercury (mg/L)	0.002
Molybdenum (mg/L)	0.10
Radium 226+228 (pCi/L)	5
Selenium (mg/L)	0.05
Thallium (mg/L)	0.002

[O: KLT 12/11/19, C: RAB 12/12/19]

Notes:
40 C.F.R. = Title 40 of the Code of Federal Regulations
mg/L = milligrams per liter
pCi/L = picoCuries per liter
[1]Groundwater Protection Standard is the higher of the Maximum Contaminant Level / Health-Based Level or background.

FIGURES

Y:\Mapping\Projects\222285\MXD\2019_AnnualGWM_CAR\Figure 1_GWS_WellLoc_CoffeenAshPond2.mxd

PROJECT: 169000XXXX | DATED: 1/28/2020 | DESIGNER: BARTELAB

DOWNGRADIENT MONITORING WELL LOCATION
BACKGROUND MONITORING WELL LOCATION
CCR MONITORED UNIT

0 500 1,000 Feet

MONITORING WELL LOCATION MAP
COFFEEN ASH POND NO. 2
UNIT ID:102

2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
VISTRA CCR RULE GROUNDWATER MONITORING
COFFEEN POWER STATION
COFFEEN, ILLINOIS

FIGURE 1

O'BRIEN & GERE ENGINEERS, INC.
A RAMBOLL COMPANY

RAMBOLL