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1940074917

**2020 ANNUAL GROUNDWATER
MONITORING AND CORRECTIVE
ACTION REPORT**
**EDWARDS ASH POND, EDWARDS POWER
STATION**

**2020 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
EDWARDS ASH POND, EDWARDS POWER STATION**

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ACRONYMS AND ABBREVIATIONS

40 C.F.R.	Title 40 of the Code of Federal Regulations
AP	Ash Pond
CCR	Coal Combustion Residuals
CMA	Corrective Measures Assessment
GWPS	Groundwater Protection Standard
SSI	Statistically Significant Increase
SSL	Statistically Significant Level

Edwards

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 Edwards Ash Pond (AP) located at Edwards Power Station near Bartonville, Illinois.

Groundwater is being monitored at Edwards AP in accordance with the Assessment Monitoring Program requirements specified in 40 C.F.R. § 257.95. Assessment Monitoring was initiated at Edwards AP on April 9, 2018.

No changes were made to the monitoring system in 2020 (no wells were installed or decommissioned).

No Statistically Significant Levels (SSLs) of 40 C.F.R. Part 257 Appendix IV parameters were determined. Consequently, a Corrective Measures Assessment (CMA) is not required and Edwards AP remains in the Assessment Monitoring Program.

Edwards

1. INTRODUCTION

This report has been prepared by Ramboll Americas Engineering Solutions Inc. (Ramboll) on behalf of Illinois Power Resources Generating, LLC, to provide the information required by 40 C.F.R. § 257.90(e) for Edwards AP located at Edwards Power Station near Bartonville, 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 [SSI] relative to background levels).
5. Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.
6. A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:
 - i. At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95.
 - ii. At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95.
 - iii. If it was determined that there was a SSI over background for one or more constituents listed in Appendix III of §257 pursuant to §257.94(e):
 - A. Identify those constituents listed in Appendix III of §257 and the names of the monitoring wells associated with the SSI(s).
 - B. Provide the date when the assessment monitoring program was initiated for the CCR unit.

- iv. If it was determined that there was a SSL above the Groundwater Protection Standard (GWPS) for one or more constituents listed in Appendix IV of §257 pursuant to §257.95(g) include all of the following:
 - A. Identify those constituents listed in Appendix IV of §257 and the names of the monitoring wells associated with the SSL(s).
 - B. Provide the date when the CMA was initiated for the CCR unit.
 - C. Provide the date when the public meeting was held for CMA for the CCR unit.
 - D. Provide the date when the CMA was completed for the CCR unit.
- v. Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection.
- vi. Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.

This report provides the required information for Edwards AP for calendar year 2020.

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2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

No changes have occurred to the Monitoring Program status in calendar year 2020, and Edwards AP remains in the Assessment Monitoring Program in accordance with 40 C.F.R. § 257.95.

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3. KEY ACTIONS COMPLETED IN 2020

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 2020. 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 (NRT/OBG, 2017a). All monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 (as applicable) in 2020, and analytical results for the August 2019 sampling event, 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 GWPSs.

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

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Table A – 2019-2020 Assessment Monitoring Program Summary

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	SSL(s)	SSL(s) Determination Date
August 6, 2019	October 15, 2019	Appendix III Appendix IV Detected ¹	none	January 13, 2020
February 27, 2020	April 15, 2020	Appendix III Appendix IV	none	July 14, 2020
August 31 - September 1, 2020	October 15, 2020	Appendix III Appendix IV Detected ¹	TBD	TBD

Notes:

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).

Edwards

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the Groundwater Monitoring Program during 2020. Groundwater samples were collected and analyzed in accordance with the Sampling and Analysis Plan (NRT/OBG, 2017a), and all data were accepted.

Edwards

5. KEY ACTIVITIES PLANNED FOR 2021

The following key activities are planned for 2021:

- Continuation of the Assessment Monitoring Program with semi-annual sampling scheduled for the first and third quarters of 2021.
- Complete evaluation of analytical data from the downgradient wells, using GWPSs to determine whether an SSL of Appendix IV parameters has occurred.
- If an SSL is identified, potential alternate sources (*i.e.*, a source other than the CCR unit caused the SSL or that that SSL resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is demonstrated to be the cause of the SSL, a written demonstration will be completed within 90 days of SSL determination and included in the 2021 Annual Groundwater Monitoring and Corrective Action Report.
 - If an alternate source(s) is not identified to be the cause of the SSL, the applicable requirements of 40 C.F.R. §§ 257.94 through 257.98 (*e.g.*, assessment of corrective measures) as may apply in 2021 will be met, including associated recordkeeping/notifications required by 40 C.F.R. §§ 257.105 through 257.108.

6. REFERENCES

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

Natural Resource Technology, an OBG Company (NRT/OBG), 2017b. Statistical Analysis Plan, Duck Creek Power Station, Edwards Power Station, Illinois Power Resources Generating, LLC, October 17, 2017.

Edwards

TABLES

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TABLE 1.
ANALYTICAL RESULTS - GROUNDWATER ELEVATION AND APPENDIX III PARAMETERS
2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
EDWARDS POWER STATION
301 - ASH POND
BARTONVILLE, IL

Well ID	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft NAVD88)	Boron, total (mg/L)	Calcium, total (mg/L)	Chloride, total (mg/L)	Fluoride, total (mg/L)	pH (field) (STD)	Sulfate, total (mg/L)	Total Dissolved Solids (mg/L)
				6020A	6020A	6020A	6020A	9251	9214	SM4500 H+B	9036	SM 2540C
AP05S Background	40.598807	-89.66191	8/6/2019	3.22	440.31	0.24	110	37	<0.25	7.1	<1	900
			2/27/2020	3.68	439.85	0.31	170	40	<0.25	6.7	<1	840
			9/1/2020	5.34	438.19	0.38	110	41	<0.25	6.9	<1	760
AW-05 Downgradient	40.598645	-89.666407	2/27/2020	8.11	435.26	1.8	170	81	0.284	7.0	270	910
AW-06 Downgradient	40.594237	-89.670051	8/6/2019	27.45	434.12	0.093	120	33	0.393	7.2	29	580
			2/27/2020	26.63	434.94	0.12	110	33	0.413	7.0	23	500
			8/31/2020	28.01	433.56	0.12	100	34	0.372	7.3	25	540
AW-08 Background	40.593964	-89.661996	8/6/2019	19.74	442.8	0.1	130	19	0.287	7.3	20	700
			2/27/2020	19.86	442.68	0.11	140	16	0.3	6.9	<1	680
			9/1/2020	22.47	440.07	0.17	130	16	0.278	7.1	2.3	660
AW-09 Downgradient	40.590422	-89.668777	8/6/2019	25.82	435.63	0.2	140	27	<0.25	7.2	<1	770
			2/27/2020	25.12	436.33	0.24	130	24	<0.25	6.9	<1	740
			8/31/2020	26.14	435.31	0.26	120	26	<0.25	6.9	<1	760
AW-10 Downgradient	40.590733	-89.663826	8/6/2019	0.92	439.01	0.5	160	100	<0.25	7.3	<1	1200
			2/27/2020	1	438.93	0.46	140	83	<0.25	6.8	<1	1200
			8/31/2020	1.09	438.84	0.54	140	88	<0.25	6.8	<1	1200
AW-11 Downgradient	40.587261	-89.663781	8/6/2019	7.17	432.7	0.18	160	30	<0.25	7.2	<1	980
			2/27/2020	4.66	435.21	0.22	170	30	<0.25	6.7	<1	970
			8/31/2020	5.72	434.15	0.21	150	29	<0.25	6.9	<1	970

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.

4-digit numbers below parameter represent SW-846 analytical methods and alpha-numeric values that begin with SM represent Standard Methods for the Examination of Water and Wastewater.

TABLE 2.
ANALYTICAL RESULTS - APPENDIX IV PARAMETERS
2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
EDWARDS POWER STATION
301 - ASH POND
BARTONVILLE, IL

Well ID	Date	Antimony, total (mg/L) 6020A	Arsenic, total (mg/L) 6020A	Barium, total (mg/L) 6020A	Beryllium, total (mg/L) 6020A	Cadmium, total (mg/L) 6020A	Chromium, total (mg/L) 6020A	Cobalt, total (mg/L) 6020A	Fluoride, total (mg/L) 6020A	Lead, total (mg/L) 6020A	Lithium, total (mg/L) 6020A	Mercury, total (mg/L) 7470A	Molybdenum, total (mg/L) 6020A	Radium-226 + Radium 228, total (pCi/L) 6020A	Selenium, total (mg/L) 6020A	Thallium, total (mg/L) 6020A
AP05S Background	8/6/2019		0.0067	1.1	<0.001		<0.004	<0.002	<0.25	<0.001	0.031		<0.001	3	<0.001	
	2/27/2020	<0.003	0.0088	1.4	<0.001	<0.001	0.028	0.013	<0.25	0.0099	0.059	<0.0002	0.0026	2.85	0.0016	<0.001
	9/1/2020		0.003	1.2	<0.001		0.0076	0.004	<0.25	0.0033	0.036		<0.001	3.16	<0.001	
AW-05 Downgradient	2/27/2020	<0.003	0.032	0.4	0.001	<0.001	0.04	0.018	0.284	0.014	0.053	<0.0002	0.004	0.809	0.0017	<0.001
AW-06 Downgradient	8/6/2019		0.02	0.35	<0.001		0.024	0.01	0.393	0.011	0.035		0.0055	1.82	0.002	
	2/27/2020	<0.003	0.0053	0.21	<0.001	<0.001	0.0068	<0.002	0.413	0.0016	0.02	<0.0002	0.0049	0.242	<0.001	<0.001
	8/31/2020		0.0024	0.15	<0.001		<0.004	<0.002	0.372	<0.001	<0.02		0.0046	0.945	<0.001	
AW-08 Background	8/6/2019		0.0074	0.18	<0.001		<0.004	<0.002	0.287	<0.001	0.017		0.0037	3.95	<0.001	
	2/27/2020	<0.003	0.019	0.23	<0.001	<0.001	<0.004	<0.002	0.3	<0.001	<0.02	<0.0002	0.0051	0.933	<0.001	<0.001
	9/1/2020		0.0086	0.17	<0.001		<0.004	<0.002	0.278	<0.001	<0.02		0.0023	0.124	<0.001	
AW-09 Downgradient	8/6/2019		0.026	0.54	<0.001		0.017	0.011	<0.25	0.011	0.036		0.015	1.94	0.0012	
	2/27/2020	<0.003	0.017	0.46	<0.001	<0.001	0.0092	0.0051	<0.25	0.0035	0.023	<0.0002	0.012	1.51	<0.001	<0.001
	8/31/2020		0.02	0.46	<0.001		0.0089	0.0059	<0.25	0.0044	0.022		0.016	1.43	<0.001	
AW-10 Downgradient	8/6/2019		0.019	1.5	0.0014		0.05	0.026	<0.25	0.026	0.12		0.0022	4.08	0.0033	
	2/27/2020	<0.003	0.011	1.2	<0.001	<0.001	0.023	0.0098	<0.25	0.0092	0.065	<0.0002	0.0012	2.19	0.0012	<0.001
	8/31/2020		0.014	1.3	<0.001		0.0095	0.0062	<0.25	0.0051	0.051		<0.001	3.43	<0.001	
AW-11 Downgradient	8/6/2019		0.018	0.88	<0.001		<0.004	0.0023	<0.25	<0.001	0.031		0.0046	1.69	<0.001	
	2/27/2020	<0.003	0.013	1.3	<0.001	<0.001	0.0081	0.0041	<0.25	0.0033	0.029	<0.0002	0.0028	3.68	<0.001	<0.001
	8/31/2020		0.011	0.77	<0.001		<0.004	0.0024	<0.25	<0.001	0.025		0.0021	1.52	<0.001	

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.
4-digit numbers below parameter represent SW-846 analytical methods and 3-digit numbers represent Clean Water Act analytical methods.

TABLE 3.
STATISTICAL BACKGROUND VALUES
2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
EDWARDS POWER STATION
301 - ASH POND
BARTONVILLE, ILLINOIS
ASSESSMENT MONITORING PROGRAM

Parameter	Statistical Background Value (UPL)
40 C.F.R. Part 257 Appendix III	
Boron (mg/L)	0.42
Calcium (mg/L)	174
Chloride (mg/L)	44
Fluoride (mg/L)	0.376
pH (S.U.)	6.6 / 7.4
Sulfate (mg/L)	77.7
Total Dissolved Solids (mg/L)	940

[O: RAB 12/20/19, C: KLT 12/23/19]

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

Edwards

TABLE 4.
GROUNDWATER PROTECTION STANDARDS
2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
EDWARDS POWER STATION
301 - ASH POND
BARTONVILLE, 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)	0.019
Barium (mg/L)	2
Beryllium (mg/L)	0.014
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)	0.054
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: RAB 12/20/19, C: KLT 12/23/19]

Notes:

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

mg/L = milligrams per liter

pCi/L = picoCuries per liter

¹Groundwater Protection Standard is the higher of the Maximum Contaminant Level / Health-Based Level or background.

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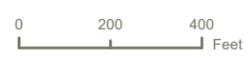
FIGURES

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PROJECT: 169000XXXXX | DATED: 1/26/2021 | DESIGNER: gblarmmc
Y:\Mapping\Projects\229285\MXD\2020_AnnualGWM_CAR\Figure 1_GWS_WellLoc_Edwards.mxd



- BACKGROUND MONITORING WELL LOCATION
- DOWNGRADIENT MONITORING WELL LOCATION
- CCR MONITORED UNIT



MONITORING WELL LOCATION MAP EDWARDS ASH POND UNIT ID:301

2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
VISTRA CCR RULE GROUNDWATER MONITORING
EDWARDS POWER STATION
BARTONVILLE, ILLINOIS

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

