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2019 Annual Groundwater Monitoring and Corrective Action Report

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2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

HENNEPIN EAST ASH POND, HENNEPIN POWER STATION

RAMBOLL Bright ideas. Sustainable change.

2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
HENNEPIN EAST ASH POND, HENNEPIN POWER STATION

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ACRONYMS AND ABBREVIATIONS

CCR	Coal Combustion Residuals
EAP	East Ash Pond
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 Hennepin East Ash Pond (EAP) located at Hennepin Power Station near Hennepin, Illinois.

Groundwater is being monitored at Hennepin EAP 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).

No Statistically Significant Levels (SSLs) of 40 C.F.R. Part 257 Appendix IV parameters were determined in 2019 and Hennepin EAP remains in the Assessment Monitoring Program.

1. INTRODUCTION

This report has been prepared by Ramboll on behalf of Dynegy Midwest Generation, LLC, to provide the information required by 40 C.F.R.§ 257.90(e) for Hennepin EAP located at Hennepin Power Station near Hennepin, 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 Hennepin EAP for calendar year 2019.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

No changes have occurred to the Monitoring Program status in calendar year 2019, and Hennepin EAP remains in the Assessment Monitoring Program in accordance with 40 C.F.R. § 257.95.

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 (no wells were installed or decommissioned). 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).

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

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

Table A – 2018-2019 Assessment Monitoring Program Summary

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	SSL(s)	SSL(s) Determination Date
June 13-14, 2018	October 10, 2018	Appendix III Appendix IV	NA	NA
September 12-13, 2018	October 10, 2018	Appendix III Appendix IV Detected [1]	None	January 7, 2019
March 13-14, 2019	April 15, 2019	Appendix III Appendix IV	None	July 16, 2019
September 17-18, 2019	October 15, 2019	Appendix III Appendix IV Detected [1]	NA	TBD

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.
- 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 2020 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 2020 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, Hennepin East Ash Pond, Hennepin Power Station, Hennepin, Illinois, Project No. 2285, Revision 0, October 17, 2017.

Natural Resource Technology, an OBG Company (NRT/OBG), 2017b. Statistical Analysis Plan, Baldwin Energy Complex, Havana Power Station, Hennepin Power Station, Wood River Power Station, Dynegy Midwest Generation, LLC, October 17, 2017.

TABLES

TABLE 1.
2019 ANALYTICAL RESULTS - GROUNDWATER ELEVATION AND APPENDIX III PARAMETERS
2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
HENNEPIN POWER STATION
UNIT ID 803 - HENNEPIN EAST ASH POND
HENNEPIN, 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												
07	41.297944	-89.305756	3/14/2019 13:05	65.50	452.77	0.0869	140	44	<0.10	6.9	59	590
			9/18/2019 8:48	64.60	453.67	0.0797	147	33	0.11	6.3	55	666
08	41.300653	-89.304486	3/14/2019 11:53	51.59	449.79	0.172	239	272	<0.10	6.8	193	1370
			9/18/2019 9:42	50.82	450.56	0.151	242	220	<0.10	6.6	195	1360
08D	41.300797	-89.304532	3/14/2019 11:31	51.89	449.45	0.170	184	246	0.12	6.8	143	1220
			9/18/2019 9:15	50.90	450.44	0.117	187	226	0.12	6.7	121	1230
Downgradient Monitoring Wells												
12	41.303663	-89.304304	3/13/2019 17:12	48.91	449.53	0.404	105	83	0.21	7.3	66	548
			9/17/2019 14:50	48.36	450.08	0.345	83.4	66	0.28	7.1	58	510
13	41.303658	-89.304315	3/13/2019 17:29	48.91	449.56	1.41	78.4	82	0.23	7.6	95	548
			9/17/2019 14:30	48.38	450.09	1.14	75.7	77	0.26	7.4	92	552
46	41.303953	-89.303471	3/14/2019 10:15	49.12	449.63	0.277	78.7	85	0.25	7.3	63	472
			9/17/2019 15:13	48.58	450.17	0.298	76.1	64	0.28	7.3	57	468
47	41.303292	-89.305994	3/14/2019 10:38	54.74	449.58	0.309	96.6	78	0.31	7.1	63	502
			9/17/2019 14:10	54.25	450.07	0.156	99.0	71	0.31	7.0	54	520

[O: RAB 12/23/19, C: KLT 12/24/19]

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
HENNEPIN POWER STATION
UNIT ID 803 - HENNEPIN EAST ASH POND
HENNEPIN, 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																		
07	41.297944	-89.305756	3/14/2019 13:05	<0.0010	0.0016	0.109	<0.0010	<0.0010	<0.0015	<0.0010	<0.10	<0.0010	0.0094	<0.00020	<0.0015	0.59	<0.0010	<0.0020
			9/18/2019 8:48[2]	NA	<0.0010	0.114	NA	<0.0010	NA	<0.0010	0.11	<0.0010	0.0088	NA	<0.0015	0.85	<0.0010	NA
08	41.300653	-89.304486	3/14/2019 11:53	<0.0010	0.0012	0.105	<0.0010	<0.0010	<0.0015	0.0319	<0.10	<0.0010	0.0158	<0.00020	0.0017	0.66	<0.0010	<0.0020
			9/18/2019 9:42[2]	NA	<0.0010	0.0943	NA	<0.0010	NA	0.0099	<0.10	<0.0010	0.0123	NA	<0.0015	1.39	<0.0010	NA
08D	41.300797	-89.304532	3/14/2019 11:31	<0.0010	0.0012	0.145	<0.0010	0.0023	<0.0015	0.0157	0.12	0.0016	0.0199	<0.00020	0.0015	0.48	<0.0010	<0.0020
			9/18/2019 9:15[2]	NA	<0.0010	0.143	NA	<0.0010	NA	0.0057	0.12	<0.0010	0.0142	NA	0.0016	0.42	<0.0010	NA
Downgradient Monitoring Wells																		
12	41.303663	-89.304304	3/13/2019 17:12	<0.0010	<0.0010	0.0783	<0.0010	<0.0010	<0.0015	<0.0010	0.21	<0.0010	0.0165	<0.00020	0.0193	0.05	0.0021	<0.0020
			9/17/2019 14:50[2]	NA	<0.0010	0.0640	NA	<0.0010	NA	<0.0010	0.28	<0.0010	0.0148	NA	0.0285	0.58	<0.0010	NA
13	41.303658	-89.304315	3/13/2019 17:29	<0.0010	0.0011	0.0529	<0.0010	<0.0010	<0.0015	<0.0010	0.23	<0.0010	0.0281	<0.00020	0.0190	0.81	0.0034	<0.0020
			9/17/2019 14:30[2]	NA	<0.0010	0.0428	NA	<0.0010	NA	<0.0010	0.26	<0.0010	0.0207	NA	0.0187	0.00	0.0022	NA
46	41.303953	-89.303471	3/14/2019 10:15	<0.0010	<0.0010	0.0712	<0.0010	<0.0010	<0.0015	<0.0010	0.25	<0.0010	0.0112	<0.00020	0.0302	0.31	0.0012	<0.0020
			9/17/2019 15:13[2]	NA	<0.0010	0.0621	NA	<0.0010	NA	<0.0010	0.28	<0.0010	0.0113	NA	0.0272	1.01	0.0010	NA
47	41.303292	-89.305994	3/14/2019 10:38	<0.0010	0.0010	0.0870	<0.0010	<0.0010	<0.0015	<0.0010	0.31	<0.0010	0.0101	<0.00020	0.0387	0.18	<0.0010	<0.0020
			9/17/2019 14:10[2]	NA	<0.0010	0.0871	NA	<0.0010	NA	<0.0010	0.31	<0.0010	0.0095	NA	0.0287	0.33	<0.0010	NA

[O: RAB 12/23/19, C: KLT 12/24/19]

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
HENNEPIN POWER STATION
UNIT ID 803 - HENNEPIN EAST ASH POND
HENNEPIN, ILLINOIS
ASSESSMENT MONITORING PROGRAM

Parameter	Statistical Background Value (UPL)
40 C.F.R. Part 257 Appendix III	
Boron (mg/L)	0.15
Calcium (mg/L)	274
Chloride (mg/L)	384
Fluoride (mg/L)	0.12
pH (S.U.)	6.6 / 7.5
Sulfate (mg/L)	196
Total Dissolved Solids (mg/L)	1493

[O: RAB 12/23/19, C: KLT 12/24/19]

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
HENNEPIN POWER STATION
UNIT ID 803 - HENNEPIN EAST ASH POND
HENNEPIN, 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)	0.01
Barium (mg/L)	2
Beryllium (mg/L)	0.004
Cadmium (mg/L)	0.005
Chromium (mg/L)	0.10
Cobalt (mg/L)	0.039
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: RAB 12/23/19, C: KLT 12/24/19]

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

UPGRADIENT WELL LOCATION
DOWNGRADIENT WELL LOCATION
CCR MONITORED UNIT

0 175 350 Feet

MONITORING WELL LOCATION MAP
HENNEPIN EAST ASH POND
UNIT ID:803

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

FIGURE 1

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