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31 January 2018
File No. 129342-001

Associated Electric Cooperative, Inc.
2814 South Golden Avenue
P.O. Box 754
Springfield, MO 65801-0754

Attention: Kim Dickerson – Senior Environmental Analyst
Russ Weatherly – Supervisor, Land and Water Resources

Subject: 2017 Annual Groundwater Monitoring and Corrective Action Report for
Pond 004
New Madrid Power Plant
New Madrid, Missouri

Dear Ms. Dickerson and Mr. Weatherly:

Haley & Aldrich, Inc. is pleased to submit this Annual Groundwater Monitoring and Corrective Action Report (Annual Report) for Pond 004 at the New Madrid Power Plant (NMPP). This Annual Report was developed in accordance with the United States Environmental Protection Agency CCR Rule effective 19 October 2015 (Rule), specifically Code of Federal Regulations Title 40, subsection § 257.90(e). The Annual Report documents the design and construction of the groundwater monitoring system for Pond 004 consistent with applicable sections of § 257.90 through 257.98.

This report describes activities conducted in the prior calendar year and documents compliance with the Rule. The specific requirements listed in Sections § 257.90(e)(1)-(5) of the Rule are provided below in bold/italic type, followed by a short narrative describing how the Rule has been met.

Sincerely yours,
HALEY & ALDRICH, INC.

A handwritten signature in blue ink, appearing to read "Steve Putrich".

Steve Putrich, P.E.
Project Principal

A handwritten signature in blue ink, appearing to read "Mark D. Nicholls".

Mark D. Nicholls, P.G.
Lead Hydrogeologist

2017 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
POND 004
NEW MADRID POWER PLANT
NEW MADRID, MISSOURI

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Associated Electric Cooperative, Inc.
Springfield, Missouri

File No. 129342-001
January 2018



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1	Pond 004 Monitoring Well Location Map

1. 40 CFR § 257.90 Applicability

1.1 40 CFR § 257.90(a)

Except as provided for in §257.100 for inactive CCR surface impoundments, all CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under §257.90 through 257.98.

The Associated Electric Cooperative, Inc. (AECI) Pond 004 at the New Madrid Power Plant (NMPP), which is the coal combustion residuals (CCR) management unit addressed in this Annual Groundwater Monitoring and Corrective Action Report (Annual Report), is subject to the groundwater monitoring and corrective action requirements described under Code of Federal Regulations Title 40 (40 CFR) § 257.90 through 257.98. In particular, this document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e) (Rule).

1.2 40 CFR § 257.90(e)

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).

This Annual Report is the initial report for the NMPP Pond 004 as required by the Rule as the groundwater monitoring system was established and certified by 17 October 2017. Prior to 17 October 2017, AECI installed a groundwater monitoring system at Pond 004 consistent with § 257.91. Groundwater sampling and analysis was conducted per the requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 is provided in this report. This Annual Report documents the activities completed in the calendar year 2017.

At a minimum, the annual groundwater monitoring and corrective action 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;***

As required by § 257.90(e)(1), a map showing the locations of the CCR unit and associated upgradient and downgradient monitoring wells for the Pond 004 is included in this report as Figure 1. In addition, this information is presented in the CCR Groundwater Monitoring Network Description Report prepared for AECI, which was placed in the facility's operating record by 17 October 2017 as required by § 257.105(h)(2).

(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;

The design and construction of the monitoring well network for Pond 004 at NMPP are described in the CCR Groundwater Monitoring Network Description Report dated 17 October 2017. This report was placed in the facility's operating record by 17 October 2017, as required by § 257.105(h)(2). Since the groundwater monitoring system was certified, no new monitoring wells were installed or decommissioned.

(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;

In accordance with § 257.94(b), ten independent samples from each background and downgradient monitoring well were collected prior to 17 October 2017. A summary table including the sample names, dates of sample collection, reason for sample collection (detection or assessment), and monitoring data obtained for the groundwater monitoring program for Pond 004 is presented in Table I of this report. In 2017, the groundwater monitoring sampling and laboratory analyses were completed under the detection monitoring program.

(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 over background levels); and

Detection monitoring was conducted in accordance with § 257.94(b), and no transitions between monitoring programs occurred for the Pond 004 in calendar year 2017.

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

This initial Annual Report documents activities conducted to comply with § 257.90 through § 257.94 of the Rule. It is understood that there are supplemental references in § 257.90 through § 257.98 to information that must be placed in the Annual Report; however, none of the activities referenced as required in the Annual Report are relevant to the groundwater monitoring program for activities completed in calendar year 2017.

1.3 40 CFR § 257.90(f)

The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(h), the notification requirements specified in § 257.106(h), and the internet requirements specified in § 257.107(h).

To comply with the Rule recordkeeping requirements:

- Pursuant to § 257.105(h)(1), this Annual Report must be placed in the facility's operating record.
- Pursuant to § 257.106(h)(1), notification must be sent to the relevant State Director and/or Tribal authority within 30 days of this Annual Report being placed on the facility's operating record [§ 257.106(d)].
- Pursuant to § 257.107(h)(1), this Annual Report must be posted to the AECl CCR Website within 30 days of this Annual Report being placed on the facility's operating record [§ 257.107(d)].

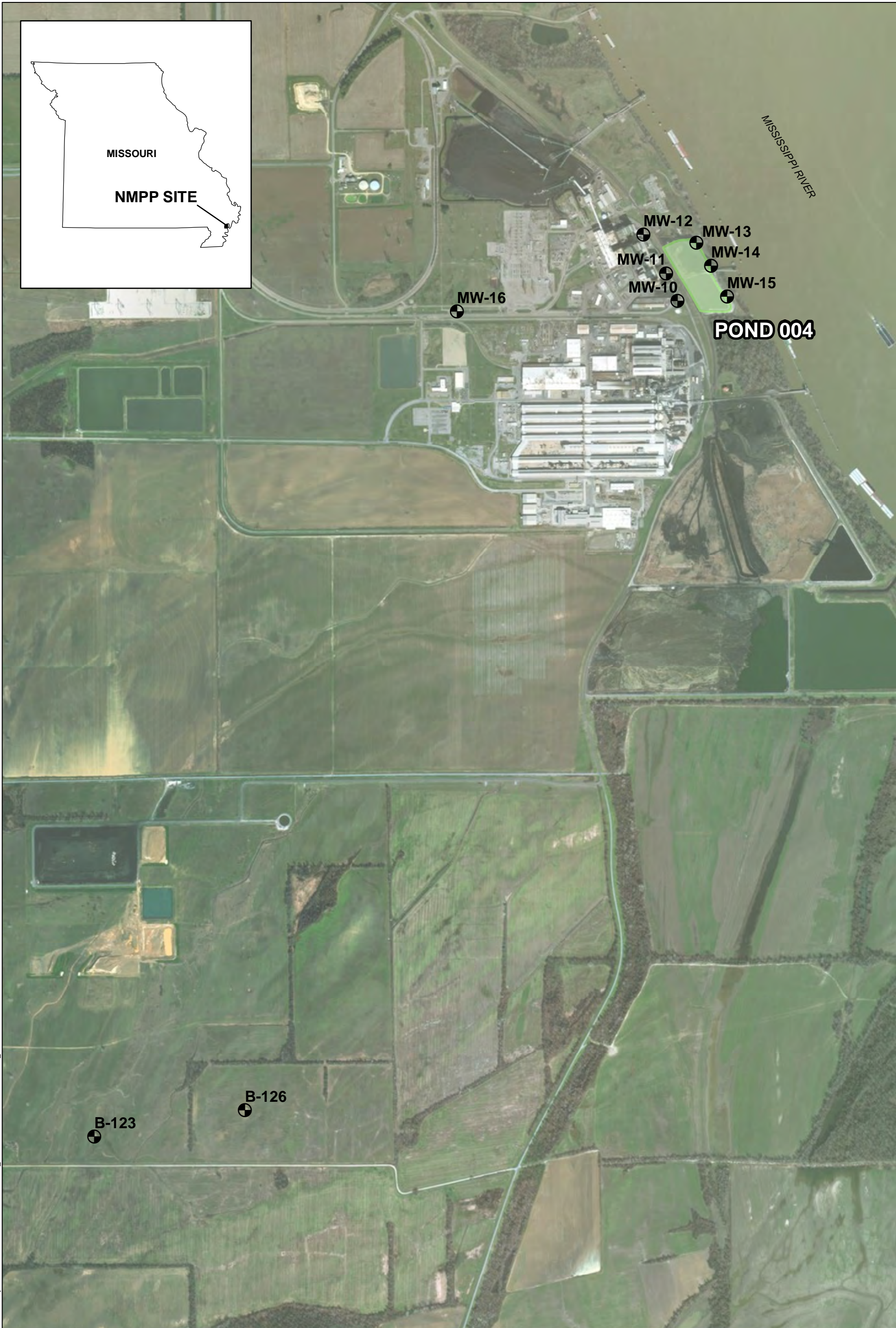
TABLES

TABLE I
SUMMARY OF ANALYTICAL RESULTS
 AECI New Madrid Power Plant
 Pond 004
 New Madrid, Missouri

Location	Sample Name	Sample Date	Field Parameters				USEPA Appendix III Constituents (mg/L)							USEPA Appendix IV Constituents (mg/L)											USEPA Appendix IV Constituents (pCi/L)					
			Temperature (Deg C)	Conductivity (µS/cm)	Turbidity (NTU)	pH (su)	Boron, Total	Calcium, Total	Chloride	Fluoride	Sulfate	pH (su)	TDS	Antimony, Total	Arsenic, Total	Barium, Total	Beryllium, Total	Cadmium, Total	Chromium, Total	Cobalt, Total	Lead, Total	Lithium, Total	Molybdenum, Total	Selenium, Total	Thallium, Total	Mercury, Total	Fluoride	Radium-226 & 228 Combined		
Down Gradient	MW-14	MW-14-11022016	11/2/2016	19.45	854	4.86	6.82	0.320	167	15	0.68	126	7.00	490	<0.0010	<0.0010	0.15	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	0.015	<0.0100	0.0034	<0.0010	<0.00020	0.680	0.17
		MW-14-120816	12/8/2016	15.6	898	1.27	7.21	0.426	151	16	0.57	114	7.07	544	<0.0010	0.0019	0.16	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	0.016	<0.0100	<0.0010	<0.0010	<0.00020	0.570	1.96
		MW-14-010617	1/6/2017	14.3	870	8.93	6.79	0.350	120	18	0.503	130	7.37	460	<0.0030	0.0017	0.16	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.018	0.0010	<0.0010	<0.0010	<0.00020	0.503	0.40	
		MW-14-013017	1/30/2017	16.7	910	3.79	6.86	0.300	120	17	0.504	110	7.72	550	<0.0030	0.0019	0.16	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.016	<0.0010	<0.0010	<0.0010	<0.00020	0.504	0.42	
		MW-14-022217	2/22/2017	17.1	930	1.72	6.87	0.360	150	15	0.563	120	7.15	540	<0.0030	<0.0010	0.18	<0.0010	<0.0010	<0.0040	0.0050	<0.0010	0.016	0.0013	<0.0010	<0.0010	<0.00020	0.563	0.74	
		MW-14-032817	3/28/2017	17.0	958	3.12	6.90	0.240	130	14	0.782	120	7.03	560	<0.0030	<0.0010	0.18	<0.0010	<0.0010	<0.0040	0.0040	<0.0010	0.017	0.0016	<0.0010	<0.0010	<0.00020	0.782	0.31	
		MW-14-042717	4/27/2017	16.7	880	5.00	7.0	0.240	130	17	0.539	110	7.26	500	<0.0030	<0.0010	0.15	<0.0010	<0.0010	<0.0040	0.0030	<0.0010	0.016	<0.0010	<0.0010	<0.0010	<0.00020	0.539	1.85	
		MW-14-051817	5/18/2017	17.0	798	2.55	7.0	0.140	130	19	0.797	80	7.17	440	<0.0030	<0.0010	0.12	<0.0010	<0.0010	<0.0040	0.0033	<0.0010	0.013	0.0011	<0.0010	<0.0010	<0.00020	0.797	0.86	
		MW-14-062317	6/23/2017	16.90	723	2.60	7.0	0.210	97	23	0.649	72	7.32	350	<0.0030	<0.0010	0.11	<0.0010	<0.0010	<0.0040	0.0028	<0.0010	0.012	<0.0010	<0.0010	<0.0010	<0.00020	0.649	0.66	
	MW-14-081517	8/15/2017	16.82	805	1.20	7.18	0.190	140	12	0.710	120	7.09	480	<0.0030	<0.0010	0.16	<0.0010	<0.0010	<0.0040	0.0051	<0.0010	0.018	0.0012	0.0019	<0.0010	<0.00020	0.710	1.28		
	MW-15	MW-15-11012016	11/1/2016	21.24	1026	34.9	6.74	0.928	181	10	0.30	164	6.93	642	<0.0010	0.0030	0.28	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	0.018	<0.0100	<0.0010	<0.0010	<0.00020	0.300	1.94	
		MW-15-120816	12/8/2016	15.2	1101	10.9	7.02	1.060	174	10	0.28	171	6.96	646	<0.0010	0.0033	0.32	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	0.021	<0.0100	<0.0010	<0.0010	<0.00020	0.280	NS	
		MW-15-010617	1/6/2017	14.0	1140	11.8	6.70	1.000	150	10	0.331	190	7.94	640	<0.0030	0.0024	0.29	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.025	<0.0010	<0.0010	<0.0010	<0.00020	0.331	2.54	
		MW-15-013017	1/30/2017	15.9	1090	2.33	6.77	0.820	130	12	0.392	200	7.89	640	<0.0030	0.0024	0.25	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.020	<0.0010	<0.0010	<0.0010	<0.00020	0.392	0.69	
		MW-15-022217	2/22/2017	17.1	1070	2.93	6.80	1.000	160	11	0.284	150	7.03	680	<0.0030	0.0029	0.26	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.021	0.0027	<0.0010	<0.0010	<0.00020	0.284	1.76	
		MW-15-032817	3/28/2017	17.1	1037	3.49	6.84	0.830	130	13	0.498	150	6.89	640	<0.0030	0.0028	0.25	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.020	<0.0010	<0.0010	<0.0010	<0.00020	0.498	1.20	
		MW-15-042717	4/27/2017	16.6	820	4.61	6.9	0.800	110	20	0.280	110	7.08	440	<0.0030	0.0023	0.20	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.018	<0.0010	<0.0010	<0.0010	<0.00020	0.280	0.99	
		MW-15-051817	5/18/2017	17.3	557	8.42	6.9	0.500	64	26	0.399	64	7.02	310	<0.0030	0.0021	0.12	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.011	<0.0010	<0.0010	<0.0010	<0.00020	0.399	0.97	
MW-15-062417		6/24/2017	17.2	586	3.43	6.60	0.620	66	26	0.353	69	7.12	260	<0.0030	0.0020	0.13	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.012	<0.0010	<0.0010	<0.0010	<0.00020	0.353	0.53		
MW-15-081517	8/15/2017	16.85	835	4.20	6.87	0.700	98	17	0.427	110	6.96	460	<0.0030	0.0026	0.16	<0.0010	<0.0010	<0.0040	<0.0020	<0.0010	0.019	<0.0010	<0.0010	<0.0010	<0.00020	0.427	1.14			



ABBREVIATIONS AND NOTES:
Bold value: Detection above laboratory reporting limit
 USEPA. 2016. Final Rule: Disposal of Coal Combustion Residuals from Electric Utilities. July 26. 40 CFR Part 257.
 µS/cm = microSiemen per centimeter
 btoc = below top of casing
 C = Celsius
 CCR = coal combustion residuals
 ft AMSL = feet above mean sea level
 MCL = maximum contaminant level
 mg/L = milligrams per liter
 NA = not applicable
 NTU = Nephelometric Turbidity Units
 pCi/L = picoCurie per liter
 su = standard units
 TDS = total dissolved solids
 TOC = top of casing
 USEPA = United States Environmental Protection Agency

FIGURES



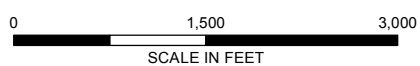
GIS FILE PATH: \\haleyaldrich.com\share\pdx_common\Projects\AECI\New Madrid\GIS\MXDs\2018_1\IPOND 4 WELL LOCATION MAP_REV1.mxd — USER: ibruce — LAST SAVED: 1/30/2018 4:51:43 PM

LEGEND

-  MONITORING WELL
-  POND 004

NOTE

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI, 19 MAY 2016.



**HALEY
ALDRICH**

ASSOCIATED ELECTRIC COOPERATIVE, INC.
NEW MADRID POWER PLANT
MARSTON, MISSOURI

**POND 004 MONITORING WELL
LOCATION MAP**

aeci

JANUARY 2018
SCALE: AS SHOWN

FIGURE 1