2018 Annual Groundwater Monitoring and Corrective Action Report

Kincaid Ash Pond – CCR Unit ID 141
Kincaid Power Station
West Route 104
Kincaid, Illinois 62540

Kincaid Generation, L.L.C.

January 31, 2019

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Kincaid Ash Pond – CCR Unit ID 141
Kincaid Power Station
Kincaid, Illinois

Prepared for:
Kincaid Generation, L.L.C.

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ACRONYMS AND ABBREVIATIONS

CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
mg/L	milligrams per liter
NRT/OBG	Natural Resource Technology, an OBG Company
OBG	O'Brien & Gere Engineers, part of Ramboll
pCi/L	picoCuries per liter
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
S.U.	Standard Units
TDS	Total Dissolved Solids

SECTION 1: INTRODUCTION

This report has been prepared on behalf of Kincaid Generation, L.L.C. by O'Brien & Gere Engineers, part of Ramboll (OBG), to provide the information required by the Code of Federal Regulations (CFR) found in 40 CFR 257.90(e) for the Kincaid Ash Pond located at Kincaid Power Station near Kincaid, Illinois.

In accordance with 40 CFR § 257.90(e), the owner or operator of an existing 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 over background levels).
5. Other information required to be included in the annual report as specified in §§ 257.90 through 257.98[1].

This report provides the required information for the Kincaid Ash Pond for calendar year 2018.

[1] For calendar year 2018, corrective action and other information required to be included in the annual report as specified in §§ 257.96 through 257.98 is not applicable.

SECTION 2: MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

Detection Monitoring Program sampling event dates and parameters collected are provided in the detection monitoring program summary table below. One sample was collected from each background and downgradient well in the monitoring system during each sampling event. Analytical data was evaluated after each event in accordance with the Statistical Analysis Plan, Kincaid Power Station, Kincaid Generation, L.L.C. (NRT/OBG, 2017a) to identify any statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The sampling event and whether SSIs were identified are provided in the detection monitoring program summary table below.

Detection Monitoring Program Summary

Sampling Dates	Parameters Collected	SSIs	Assessment Monitoring Program Established
November 6 and 7, 2018	Appendix III	Yes	April 9, 2018

Alternate source evaluations were inconclusive for one or more of the SSIs. Consequently, and in accordance with 40 CFR § 257.94(e)(2), an Assessment Monitoring Program was established for the Kincaid Ash Pond on April 9, 2018 and the required notifications completed.

The first Assessment Monitoring sampling event was completed on May 31, 2018 and June 1, 2018. One sample was collected from each background and downgradient well in the monitoring system and analyzed for Appendix III and Appendix IV parameters. In accordance with 40 CFR § 257.95(d)(1), all wells were resampled on August 28, 2018 for all Appendix III parameters and Appendix IV parameters detected during the first Assessment Monitoring sampling event. One sample was collected from each background and downgradient well in the monitoring system. Analytical data from the resampling event was evaluated in accordance with the statistical analysis plan (NRT/OBG, 2017a) to determine any SSIs of Appendix III parameters over background concentrations or statistically significant levels (SSLs) of Appendix IV parameters over Groundwater Protection Standards (GWPSs). The assessment monitoring program summary table below provides a summary of the Assessment Monitoring Program and results of SSL determinations.

Assessment Monitoring Program Summary

Sampling Dates	Parameters Collected	SSLs
May 31, 2018 and June 1, 2018	Appendix III Appendix IV	Not Applicable
August 28, 2018	Appendix III Appendix IV Detected	To Be Determined

Statistical background values are provided in Table 1 and GWPSs in Table 2. Analytical results from the events summarized in the detection and assessment monitoring summary tables above are included in Tables 3 and 4.

The Kincaid Ash Pond remains in the Assessment Monitoring Program in accordance with 40 CFR § 257.95.

SECTION 3: KEY ACTIONS COMPLETED IN 2018

Two groundwater monitoring events were completed in 2018 under the Assessment Monitoring Program. These events occurred in May, June, and August, and are detailed in Section 2. One groundwater sample was collected from each background and downgradient well in the monitoring system during each event. All samples were collected and analyzed in accordance with the Sampling and Analysis Plan (NRT/OBG, 2017b). All monitoring data obtained under 40 CFR §§ 257.90 through 257.98 (as applicable) in 2018 are presented in Tables 3 and 4.

The groundwater monitoring system, including the CCR unit and all background and downgradient monitoring wells, is presented in Figure 1.

SECTION 4: PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the groundwater monitoring program during 2018. Groundwater samples were collected and analyzed in accordance with the Sampling and Analysis Plan (NRT/OBG, 2017b), and all data was accepted.

SECTION 5: KEY ACTIVITIES PLANNED FOR 2019

The following key activities are planned for 2019:

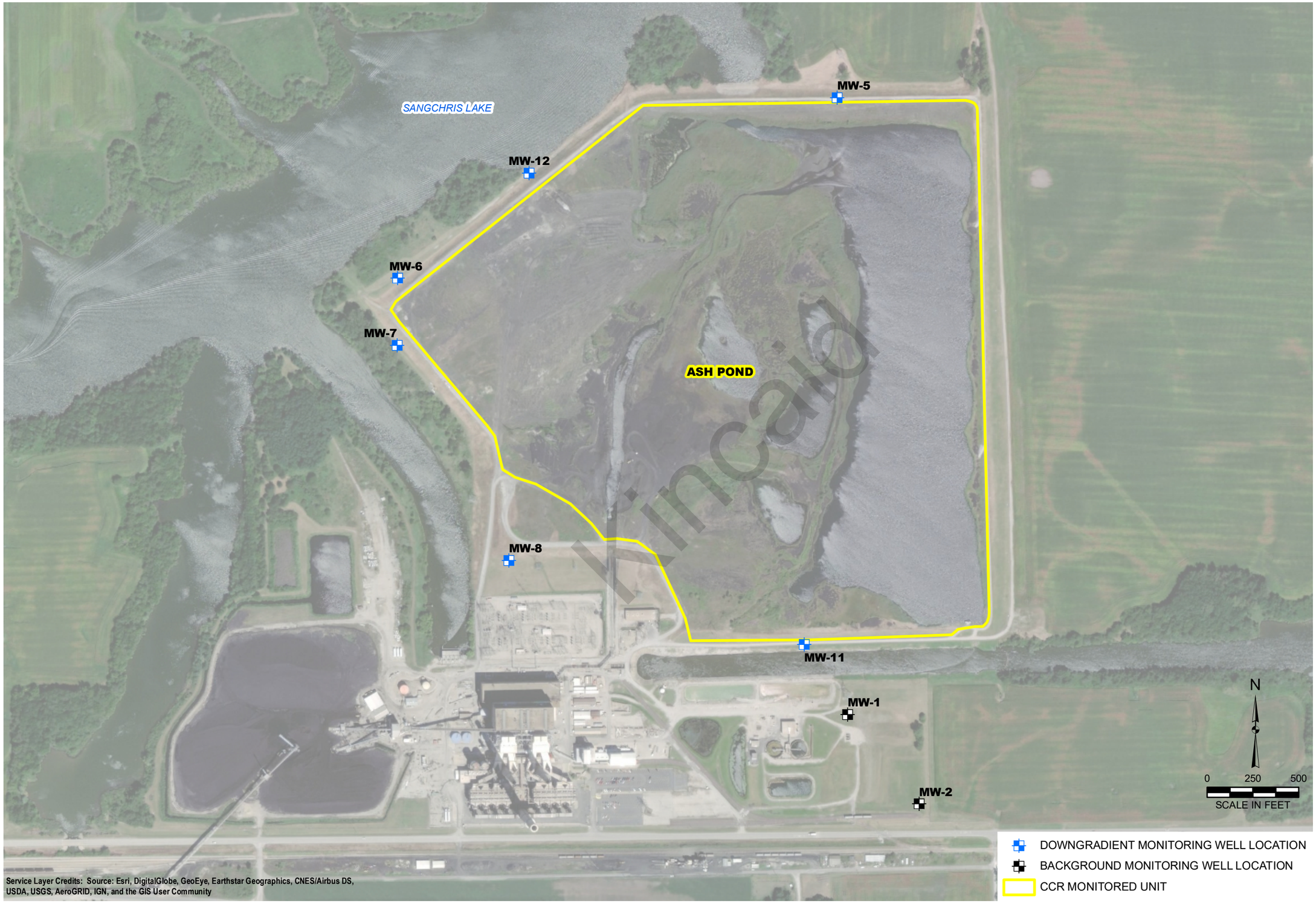
- Continuation of the Assessment Monitoring Program with semi-annual sampling scheduled for the first and third quarters of 2019.
- Complete evaluation of analytical data from the downgradient wells, using GWPSs to determine whether an SSL of Appendix IV parameters has occurred.
- If an SSL is identified, potential alternate sources (i.e., a source other than the CCR unit caused the SSL or that 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 annual groundwater monitoring and corrective action report for 2019.
  - If an alternate source(s) is not identified to be the cause of the SSL, the applicable requirements of 40 CFR §§ 257.94 through 257.98 (e.g., assessment of corrective measures) as may apply in 2019 will be met, including associated recordkeeping/notifications required by 40 CFR §§ 257.105 through 257.108.

REFERENCES

Natural Resource Technology, an OBG Company, 2017a, Statistical Analysis Plan, Kincaid Power Station, Kincaid Generation, L.L.C., October 17, 2017.

Natural Resource Technology, an OBG Company, 2017b, Sampling and Analysis Plan, Kincaid Ash Pond, Kincaid Power Station, Kincaid, Illinois, Project No. 2285, Revision 0, October 17, 2017.

Figures



GROUNDWATER SAMPLING WELL LOCATION MAP
KINCAID ASH POND
UNIT ID: 141

2018 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
VISTRA CCR RULE GROUNDWATER MONITORING
KINCAID POWER STATION
KINCAID, ILLINOIS

DRAWN BY/DATE: SDS 12/18/18
REVIEWED BY/DATE: RAB 12/18/18
APPROVED BY/DATE: JJW 12/21/18

PROJECT NO: 70097

FIGURE NO: 1

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Tables

Table 1. Statistical Background Values

2018 Annual Groundwater Monitoring and Corrective Action Report
Kincaid Power Station
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Parameter	Statistical Background Value
Appendix III	
Boron (mg/L)	0.273
Calcium (mg/L)	105
Chloride (mg/L)	17
Fluoride (mg/L)	0.47
pH (S.U.)	6.3 / 7.7
Sulfate (mg/L)	178
TDS (mg/L)	666

[O: KLS 8/22/18, C: RAB 8/28/18]

Notes:

mg/L = milligrams per liter
S.U. = Standard Units
TDS = Total Dissolved Solids

Table 2. Groundwater Protection Standards

2018 Annual Groundwater Monitoring and Corrective Action Report
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Parameter	Groundwater Protection Standard
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)	0.006
Fluoride (mg/L)	4
Lead (mg/L)	0.015
Lithium (mg/L)	0.04
Mercury (mg/L)	0.002
Molybdenum (mg/L)	0.10
Selenium (mg/L)	0.05
Thallium (mg/L)	0.002
Radium 226+228 (pCi/L)	5

[O: KLS 8/22/18, C: RAB 8/28/18]

Notes:

mg/L = milligrams per liter

pCi/L = picoCuries per liter

Table 3. Appendix III Analytical Results

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Sample Location	Date Sampled	B, total (mg/L)	Ca, total (mg/L)	Cl, total (mg/L)	F, total (mg/L)	pH (field) (S.U.)	SO4, total (mg/L)	TDS (mg/L)
Background / Upgradient Monitoring Wells								
MW-1	11/6/2017	0.281	60.3	11	0.18	6.8	104	340
	5/31/2018	0.234	59.1	12	0.19	6.5	91	356
	8/28/2018	0.258	59.8	11	0.18	6.2	94	374
MW-2	11/6/2017	0.0848	102	14	0.44	7.1	159	506
	5/31/2018	0.0787	125	14	0.50	7.0	142	538
	8/28/2018	0.0907	104	14	0.44	6.8	145	558
Downgradient Monitoring Wells								
MW-5	11/6/2017	0.515	141	40	0.15	7.1	<10	652
	5/31/2018	0.657	136	43	0.18	6.7	<10	666
	8/28/2018	0.567	135	41	0.17	6.8	12	696
MW-6	11/6/2017	1.91	139	11	0.16	6.7	335	780
	5/31/2018	1.07	93.6	<5	0.19	6.5	195	554
	8/28/2018	1.16	122	<5	0.22	6.6	133	544
MW-7	11/7/2017	0.462	127	<5	0.32	7.0	247	674
	6/1/2018	0.240	112	<5	0.32	7.0	172	602
	8/28/2018	0.276	104	<5	0.33	7.0	143	578
MW-8	11/7/2017	1.09	164	24	0.20	6.9	285	872
	6/1/2018	1.14	163	25	0.22	6.6	264	898
	8/28/2018	1.05	157	25	0.21	6.6	255	884
MW-11	11/6/2017	1.95	125	39	0.49	7.0	114	646
	5/31/2018	1.52	127	40	0.52	6.8	102	662
	8/28/2018	1.73	114	41	0.54	6.8	103	658
MW-12	11/6/2017	2.99	212	38	0.18	7.1	388	1110
	5/31/2018	3.87	214	35	0.16	6.6	413	1230
	8/28/2018	3.00	209	33	0.18	6.7	388	1160

[O: RAB 12/27/18, C: JQW 12/27/18]

Notes:

mg/L = milligrams per liter
S.U. = Standard Units
TDS = Total Dissolved Solids
< = concentration is less than the reporting limit

Table 4. Appendix IV Analytical Results

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Sample Location	Date Sampled	Sb, total (mg/L)	As, total (mg/L)	Ba, total (mg/L)	Be, total (mg/L)	Cd, total (mg/L)	Cr, total (mg/L)	Co, total (mg/L)	F, total (mg/L)	Pb, total (mg/L)	Li, total (mg/L)	Hg, total (mg/L)	Mo, total (mg/L)	Ra226/228 Combined (pCi/L)	Se, total (mg/L)	Tl, total (mg/L)
Background / Upgradient Monitoring Wells																
MW-1	5/31/2018	<0.001	<0.001	0.0444	<0.001	<0.001	0.0016	<0.001	0.19	<0.001	0.0017	<0.0002	<0.0015	0.66	<0.001	<0.002
	8/28/2018[a]	NA	<0.001	0.0440	NA	NA	0.0090	<0.001	0.18	<0.001	0.0026	NA	0.0016	0.41	<0.001	NA
MW-2	5/31/2018	<0.001	0.0058	0.163	<0.001	<0.001	0.0139	0.0052	0.50	0.0067	0.0160	<0.0002	0.0051	0.73	0.0026	<0.002
	8/28/2018[a]	NA	0.0013	0.103	NA	NA	0.0023	<0.001	0.44	<0.001	0.0043	NA	0.0033	0.42	0.0023	NA
Downgradient Monitoring Wells																
MW-5	5/31/2018	<0.001	<0.001	0.179	<0.001	<0.001	<0.0015	<0.001	0.18	<0.001	0.0033	<0.0002	<0.0015	0.61	<0.001	<0.002
	8/28/2018[a]	NA	<0.001	0.132	NA	NA	<0.0015	<0.001	0.17	<0.001	0.0029	NA	<0.0015	0.55	<0.001	NA
MW-6	5/31/2018	<0.001	<0.001	0.0322	<0.001	<0.001	<0.0015	<0.001	0.19	<0.001	<0.0015	<0.0002	<0.0015	1.97	<0.001	<0.002
	8/28/2018[a]	NA	<0.001	0.0436	NA	NA	0.0016	<0.001	0.22	<0.001	<0.0015	NA	<0.0015	0.53	0.001	NA
MW-7	6/1/2018	<0.001	<0.001	0.0363	<0.001	<0.001	<0.0015	<0.001	0.32	<0.001	0.0026	<0.0002	0.0029	0.66	<0.001	<0.002
	8/28/2018[a]	NA	0.0013	0.0349	NA	NA	0.0029	<0.001	0.33	<0.001	0.0046	NA	0.0046	0.41	<0.001	NA
MW-8	6/1/2018	<0.001	<0.001	0.0338	<0.001	<0.001	<0.0015	0.0014	0.22	<0.001	0.0022	<0.0002	<0.0015	0.14	<0.001	<0.002
	8/28/2018[a]	NA	<0.001	0.0303	NA	NA	<0.0015	0.0014	0.21	<0.001	0.0020	NA	<0.0015	0.39	<0.001	NA
MW-11	5/31/2018	<0.001	0.002	0.126	<0.001	<0.001	<0.0015	<0.001	0.52	<0.001	0.0021	<0.0002	0.0036	1.16	0.0011	<0.002
	8/28/2018[a]	NA	0.0017	0.126	NA	NA	0.0018	<0.001	0.54	<0.001	0.0032	NA	0.0032	0.29	<0.001	NA
MW-12	5/31/2018	<0.001	<0.001	0.0701	<0.001	<0.001	<0.0015	<0.001	0.16	<0.001	0.0085	<0.0002	<0.0015	1.44	<0.001	<0.002
	8/28/2018[a]	NA	<0.001	0.0815	NA	NA	<0.0015	<0.001	0.18	<0.001	0.0097	NA	<0.0015	1.05	<0.001	NA

[O: RAB 12/27/18, C: JQW 12/27/18, U: AJB 1/28/19]

Notes:
mg/L = milligrams per liter
pCi/L = picoCuries per liter
NA = Not Analyzed
< = concentration is less than the reporting limit
[a]Only the parameters detected during the previous sampling event were analyzed during this sampling event, in accordance with 40CFR § 257.95(d)(1).

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