2018 Annual Groundwater Monitoring and Corrective Action Report

Wood River West Ash Ponds 1, 2E, 2W – CCR Unit ID 902
Wood River Power Station
1 Chessen Lane
Alton, Illinois 62202

Dynegy Midwest Generation, LLC

January 31, 2019

OBG
Part of Ramboll

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Wood River West Ash Ponds 1, 2E, 2W – CCR Unit ID 902
Wood River Power Station
Alton, Illinois

Prepared for:

Dynegy Midwest Generation, LLC

RACHEL A. BANOFF
Environmental Engineer

JACOB J. WALCZAK, PG
Hydrogeologist

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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 Dynegy Midwest Generation, LLC 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 Wood River West Ash Ponds 1, 2E, 2W located at Wood River Power Station near Alton, 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 Wood River West Ash Ponds 1, 2E, 2W 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, Wood River Power Station, Dynegy Midwest Generation, LLC (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 2, 2017	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 Wood River West Ash Ponds 1, 2E, 2W on April 9, 2018 and the required notifications completed.

The first Assessment Monitoring sampling event was completed on May 2, 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 July 31 thru August 1, 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 2, 2018	Appendix III Appendix IV	Not Applicable
July 31, 2018 and August 1, 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 Wood River West Ash Ponds 1, 2E, 2W 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 and July/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.

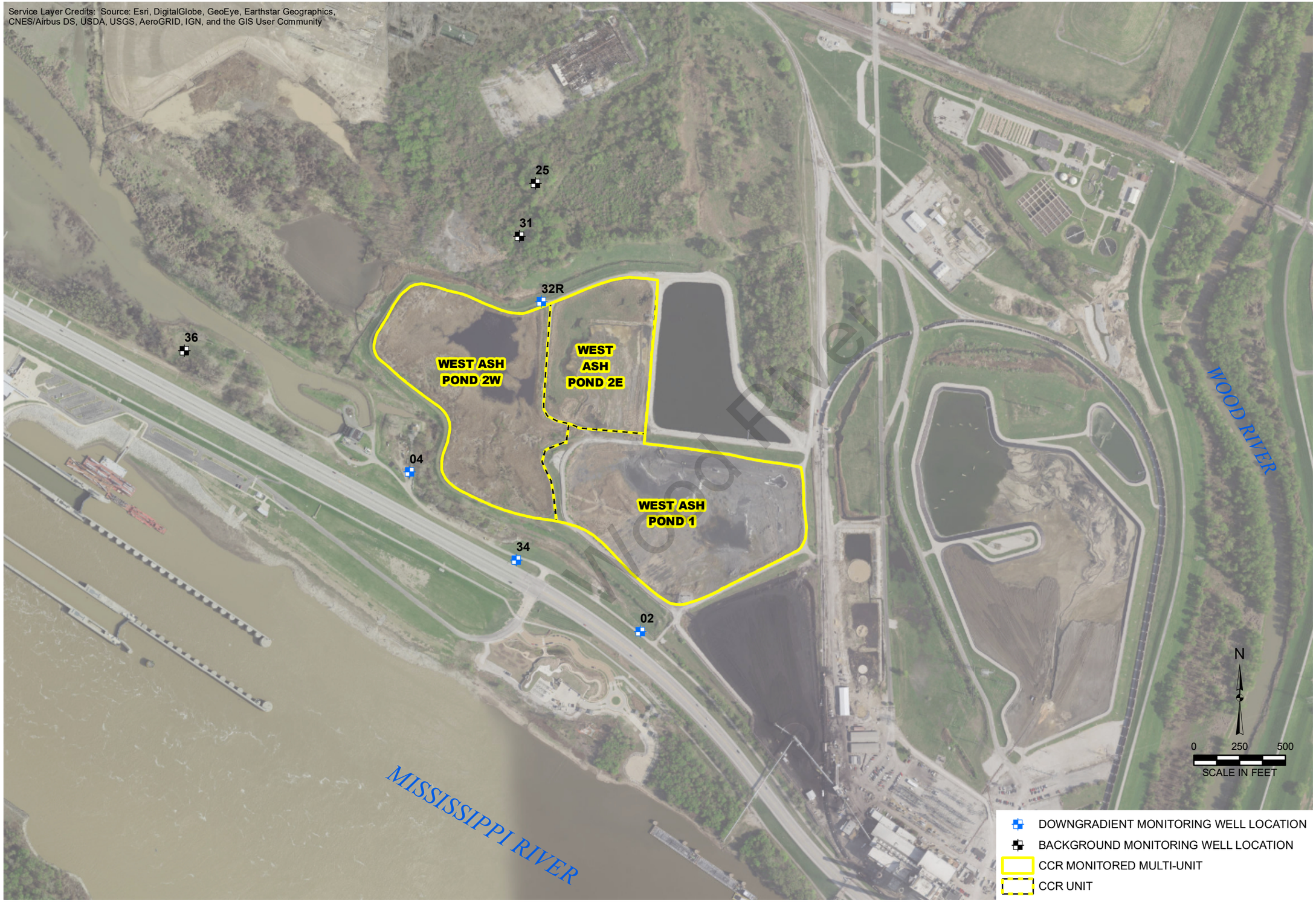
REFERENCES

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

Natural Resource Technology, an OBG Company, 2017b, Sampling and Analysis Plan, Wood River West Ash Ponds 1, 2E, 2W, Wood River Power Station, Alton, Illinois, Project No. 2285, Revision 0, October 17, 2017.

Figures

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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

GROUNDWATER SAMPLING WELL LOCATION MAP
WOOD RIVER WEST ASH PONDS 1, 2E, 2W
MULTI-UNIT ID: 902

2018 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
VISTRA CCR RULE GROUNDWATER MONITORING
WOOD RIVER POWER STATION
EAST ALTON, ILLINOIS

PROJECT NO: 70095

FIGURE NO: 1

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Tables

Table 1. Statistical Background Values

2018 Annual Groundwater Monitoring and Corrective Action Report
Wood River Power Station
Unit ID 902 - Wood River West Ash Ponds 1, 2E, 2W

Parameter	Statistical Background Value
Appendix III	
Boron (mg/L)	1.17
Calcium (mg/L)	667.381
Chloride (mg/L)	3316
Fluoride (mg/L)	0.4
pH (S.U.)	6.4 / 7.4
Sulfate (mg/L)	279
TDS (mg/L)	7629

[O: KLS 8/29/18, C: RAB 8/30/18]

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
Wood River Power Station
Unit ID 902 - Wood River West Ash Ponds 1, 2E, 2W

Parameter	Groundwater Protection Standard
Appendix IV	
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.0574
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)	0.171
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 8/29/18, C: RAB 8/30/18]

Notes:

mg/L = milligrams per liter

pCi/L = picoCuries per liter

Table 3. Appendix III Analytical Results

2018 Annual Groundwater Monitoring and Corrective Action Report
Wood River Power Station
Unit ID 902 - Wood River West Ash Ponds 1, 2E, 2W

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								
25	11/2/2017	0.676	283	129	0.36	7.3	227	1300
	5/2/2018	0.414	177	148	0.41	6.7	130	906
	8/1/2018	0.475	188	148	0.43	6.9	137	998
31	11/2/2017	0.885	224	1090	0.28	7.5	190	3120
	5/2/2018	0.738	331	1320	0.33	6.7	287	3720
	8/1/2018	0.818	248	1150	0.32	7.0	244	3460
36	11/2/2017	0.107	75.2	45	0.24	7.4	<10	370
	5/2/2018	0.144	98.7	48	0.24	6.2	7	392
	7/31/2018	0.119	75.4	50	0.24	7.0	10	384
Downgradient Monitoring Wells								
02	11/2/2017	4.47	196	76	0.17	7.5	230	982
	5/2/2018	5.53	221	53	0.15	6.2	212	968
	8/1/2018	4.13	192	62	0.15	6.7	231	982
04	11/2/2017	0.400	199	61	0.16	7.4	<10	788
	5/2/2018	0.388	226	59	0.18	6.2	10	782
	7/31/2018	0.353	194	46	0.18	6.9	<10	818
32R	11/2/2017	0.716	100	91	0.35	7.5	76	624
	5/2/2018	1.71	204	226	0.36	6.5	108	1190
	8/1/2018	1.30	135	132	0.33	6.8	95	826
34	11/2/2017	1.51	254	152	0.52	7.4	<10	1060
	5/2/2018	2.33	191	182	0.69	6.2	10	946
	7/31/2018	2.36	200	178	0.67	6.8	<10	972

[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

2018 Annual Groundwater Monitoring and Corrective Action Report
Wood River Power Station
Unit ID 902 - Wood River West Ash Ponds 1, 2E, 2W

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																
25	5/2/2018	0.001	0.0339	0.212	<0.001	0.0023	0.0015	0.0024	0.41	0.0024	0.0360	<0.0002	0.0027	0.54	0.0012	<0.002
	8/1/2018[a]	<0.001	0.0038	0.132	NA	<0.001	<0.0015	0.0012	0.43	<0.001	0.0385	NA	0.003	0.73	<0.001	NA
31	5/2/2018	0.001	0.0022	0.181	<0.001	0.001	<0.0015	0.001	0.33	<0.001	0.1000	<0.0002	0.0063	2.96	0.0217	<0.002
	8/1/2018[a]	<0.001	0.0023	0.182	NA	<0.001	0.0039	<0.001	0.32	<0.001	0.0903	NA	0.0066	1.43	0.0256	NA
36	5/2/2018	<0.001	0.0028	0.343	<0.001	<0.001	<0.0015	0.001	0.24	<0.001	0.0042	<0.0002	<0.0015	2.41	<0.001	<0.002
	7/31/2018[a]	<0.001	0.0023	0.300	NA	<0.001	<0.0015	<0.001	0.24	<0.001	0.0040	NA	<0.0015	0.60	<0.001	NA
Downgradient Monitoring Wells																
02	5/2/2018	<0.001	0.0025	0.111	<0.001	<0.001	<0.0015	0.002	0.15	<0.001	0.0292	<0.0002	0.0015	0.42	<0.001	<0.002
	8/1/2018[a]	<0.001	0.0021	0.0927	NA	<0.001	<0.0015	0.0017	0.15	<0.001	0.0235	NA	<0.0015	0.53	<0.001	NA
04	5/2/2018	<0.001	0.0321	0.330	<0.001	<0.001	<0.0015	0.001	0.18	<0.001	0.0026	<0.0002	0.0015	0.57	0.0010	<0.002
	7/31/2018[a]	<0.001	0.0283	0.279	NA	<0.001	<0.0015	<0.001	0.18	<0.001	0.0028	NA	<0.0015	0.29	<0.001	NA
32R	5/2/2018	0.001	0.0010	0.314	<0.001	<0.001	<0.0015	0.001	0.36	<0.001	0.0271	<0.0002	0.0225	1.77	0.0287	<0.002
	8/1/2018[a]	<0.001	<0.001	0.182	NA	<0.001	<0.0015	<0.001	0.33	<0.001	0.0210	NA	0.0158	1.42	0.0158	NA
34	5/2/2018	<0.001	0.0153	0.356	<0.001	<0.001	<0.0015	0.001	0.69	<0.001	0.0022	<0.0002	0.0015	1.46	<0.001	<0.002
	7/31/2018[a]	<0.001	0.0156	0.347	NA	<0.001	<0.0015	<0.001	0.67	<0.001	0.0028	NA	<0.0015	0.90	<0.001	NA

[O: RAB 12/27/18, C: JQW 12/27/18][U: RAB 1/31/19]

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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