2018 Annual Groundwater Monitoring and Corrective Action Report

Hennepin Ash Pond No. 2 – CCR Unit ID 802
Hennepin Power Station
13498 East 800th Street
Hennepin, Illinois 61327

Dynegy Midwest Generation, LLC

January 31, 2019

OBG
Part of Ramboll

JANUARY 31, 2019 | PROJECT #70100

2018 Annual Groundwater Monitoring and Corrective Action Report

Hennepin Ash Pond No. 2 – CCR Unit ID 802
Hennepin Power Station
Hennepin, Illinois

Prepared for:
Dynegy Midwest Generation, LLC

RACHEL A. BANOFF
Environmental Engineer

STACI L. GOETZ, PHD, PG
Managing Geologist

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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 Hennepin Ash Pond No. 2 located at Hennepin Power Station near Hennepin, 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 Hennepin Ash Pond No. 2 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, Hennepin 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 16, 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 Hennepin Ash Pond No. 2 on April 9, 2018 and the required notifications completed.

The first Assessment Monitoring sampling event was completed on June 14, 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 September 13, 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
June 14, 2018	Appendix III Appendix IV	Not Applicable
September 13, 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 Hennepin Ash Pond No. 2 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 June and September, 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:

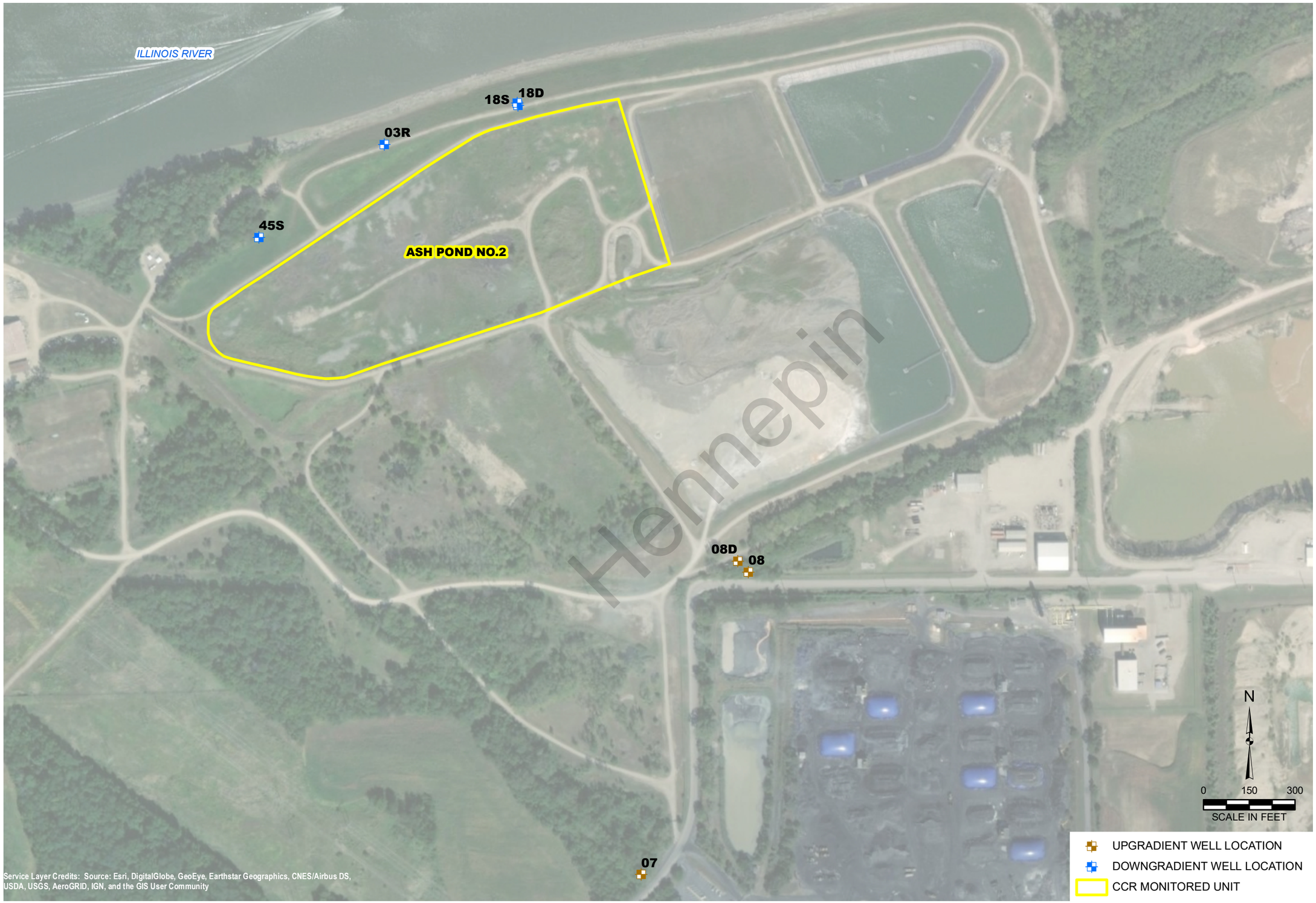
- Continuation of the Assessment Monitoring Program with semi-annual sampling scheduled for the first and third quarters of 2019.
- Complete evaluation of analytical data from the downgradient wells, using GWPSs to determine whether an SSL of Appendix IV parameters has occurred.
- If an SSL is identified, 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, Hennepin Ash Pond No. 2, Hennepin Power Station, Hennepin, Illinois, Project No. 2285, Revision 0, October 17, 2017.

Figures



DRAWN BY/DATE:
SDS 12/18/18
REVIEWED BY/DATE:
AJB 1/24/19
APPROVED BY/DATE:
SLG 1/28/19

GROUNDWATER SAMPLING WELL LOCATION MAP
HENNEPIN ASH POND NO. 2
UNIT ID: 802

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

PROJECT NO: 70100

FIGURE NO: 1

OBG
Part of Ramboll

Y:\Mapping\Projects\22\2285\MXD\2018_AnnualGWM_CAR\Figure 1_GWS_WellLoc_HenAP2.mxd Author: stolzsd Date/Time: 1/28/2019, 1:54:00 PM

Tables

Table 1. Statistical Background Values

2018 Annual Groundwater Monitoring and Corrective Action Report
Hennepin Power Station
Unit ID 802 - Hennepin Ash Pond No. 2

Parameter	Statistical Background Value
Appendix III	
Boron (mg/L)	0.1503
Calcium (mg/L)	274.172
Chloride (mg/L)	384
Fluoride (mg/L)	0.12
pH (S.U.)	6.6 / 7.5
Sulfate (mg/L)	196
TDS (mg/L)	1493

[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
Hennepin Power Station
Unit ID 802 - Hennepin Ash Pond No. 2

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)	0.0385
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

2018 Annual Groundwater Monitoring and Corrective Action Report
Hennepin Power Station
Unit ID 802 - Hennepin Ash Pond No. 2

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								
07	11/16/2017	0.0702	136	48	0.12	7.2	68	658
	6/14/2018	0.0865	133	50	<0.1	6.8	67	644
	9/13/2018	0.0731	168	44	<0.1	6.8	67	684
08	11/16/2017	0.135	243	277	0.10	7.0	167	1370
	6/14/2018	0.168	211	290	<0.1	6.7	128	1280
	9/13/2018	0.114	235	241	<0.1	6.7	184	1200
08D	11/16/2017	0.122	189	200	0.12	7.0	157	1200
	6/14/2018	0.133	204	315	0.12	6.8	114	1310
	9/13/2018	0.0941	252	269	<0.1	6.7	161	1330
Downgradient Monitoring Wells								
03R	11/16/2017	1.13	96.0	62	0.32	7.5	78	530
	6/14/2018	1.16	89.4	71	0.29	6.8	104	552
	9/13/2018	1.65	113	73	0.29	7.3	92	558
18D	11/16/2017	1.76	105	73	0.18	7.5	108	594
	6/14/2018	1.77	104	68	0.14	6.7	95	614
	9/13/2018	1.75	108	74	0.15	7.2	126	618
18S	11/16/2017	3.29	93.4	57	0.16	7.6	145	528
	6/14/2018	6.16	126	87	0.12	6.9	79	700
	9/13/2018	4.72	118	68	0.14	7.4	182	600
45S	11/16/2017	0.328	93.0	70	0.36	7.5	61	516
	6/14/2018	0.381	90.8	56	0.31	7.2	228	596
	9/13/2018	0.365	98.1	86	0.31	7.2	66	542

[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
Hennepin Power Station
Unit ID 802 - Hennepin Ash Pond No. 2

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																
07	6/14/2018	<0.001	<0.001	0.106	<0.001	<0.001	<0.0015	<0.001	<0.1	<0.001	0.0086	<0.0002	<0.0015	0.23	<0.001	<0.002
	9/13/2018[a]	NA	NA	0.136	NA	<0.001	<0.0015	<0.001	<0.1	NA	0.0113	<0.0002	<0.0015	0.86	0.001	NA
08	6/14/2018	<0.001	<0.001	0.119	<0.001	<0.001	<0.0015	0.0073	<0.1	<0.001	0.0122	<0.0002	<0.0015	0.45	<0.001	<0.002
	9/13/2018[a]	NA	NA	0.135	NA	<0.001	<0.0015	0.0050	<0.1	NA	0.0132	<0.0002	<0.0015	0.14	<0.001	NA
08D	6/14/2018	<0.001	<0.001	0.171	<0.001	<0.001	<0.0015	0.0136	0.12	<0.001	0.0163	<0.0002	<0.0015	0.22	<0.001	<0.002
	9/13/2018[a]	NA	NA	0.220	NA	<0.001	0.0087	0.0112	<0.1	NA	0.020	<0.0002	0.0021	0.41	<0.001	NA
Downgradient Monitoring Wells																
03R	6/14/2018	<0.001	<0.001	0.0637	<0.001	<0.001	<0.0015	<0.001	0.29	<0.001	0.0313	<0.0002	0.179	1.15	0.0061	<0.002
	9/13/2018[a]	NA	NA	0.0842	NA	<0.001	<0.0015	<0.001	0.29	NA	0.0344	NA	0.238	0.28	0.0058	NA
18D	6/14/2018	<0.001	<0.001	0.0801	<0.001	<0.001	<0.0015	0.0060	0.14	<0.001	0.0311	<0.0002	0.0347	1.79	<0.001	<0.002
	9/13/2018[a]	NA	NA	0.0875	NA	<0.001	0.0021	0.0062	0.15	NA	0.0355	NA	0.0378	0.62	<0.001	NA
18S	6/14/2018	<0.001	<0.001	0.0687	<0.001	<0.001	0.0016	<0.001	0.12	<0.001	0.0898	<0.0002	0.303	1.23	0.0523	<0.002
	9/13/2018[a]	NA	NA	0.0822	NA	<0.001	<0.0015	<0.001	0.14	NA	0.092	NA	0.314	0.09	0.0336	NA
45S	6/14/2018	<0.001	<0.001	0.0786	<0.001	0.0013	<0.0015	0.0065	0.31	<0.001	0.0163	<0.0002	0.0753	1.00	<0.001	<0.002
	9/13/2018[a]	NA	NA	0.0814	NA	<0.001	<0.0015	0.0017	0.31	NA	0.0181	NA	0.0911	0.44	<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).

OBG
Part of Ramboll