



# 2018 Annual Groundwater Monitoring and Corrective Action Report

*Coleto Creek Primary Ash Pond - Fannin, Texas*

Prepared for:

**Coleto Creek Power, LLC**

Submitted by:

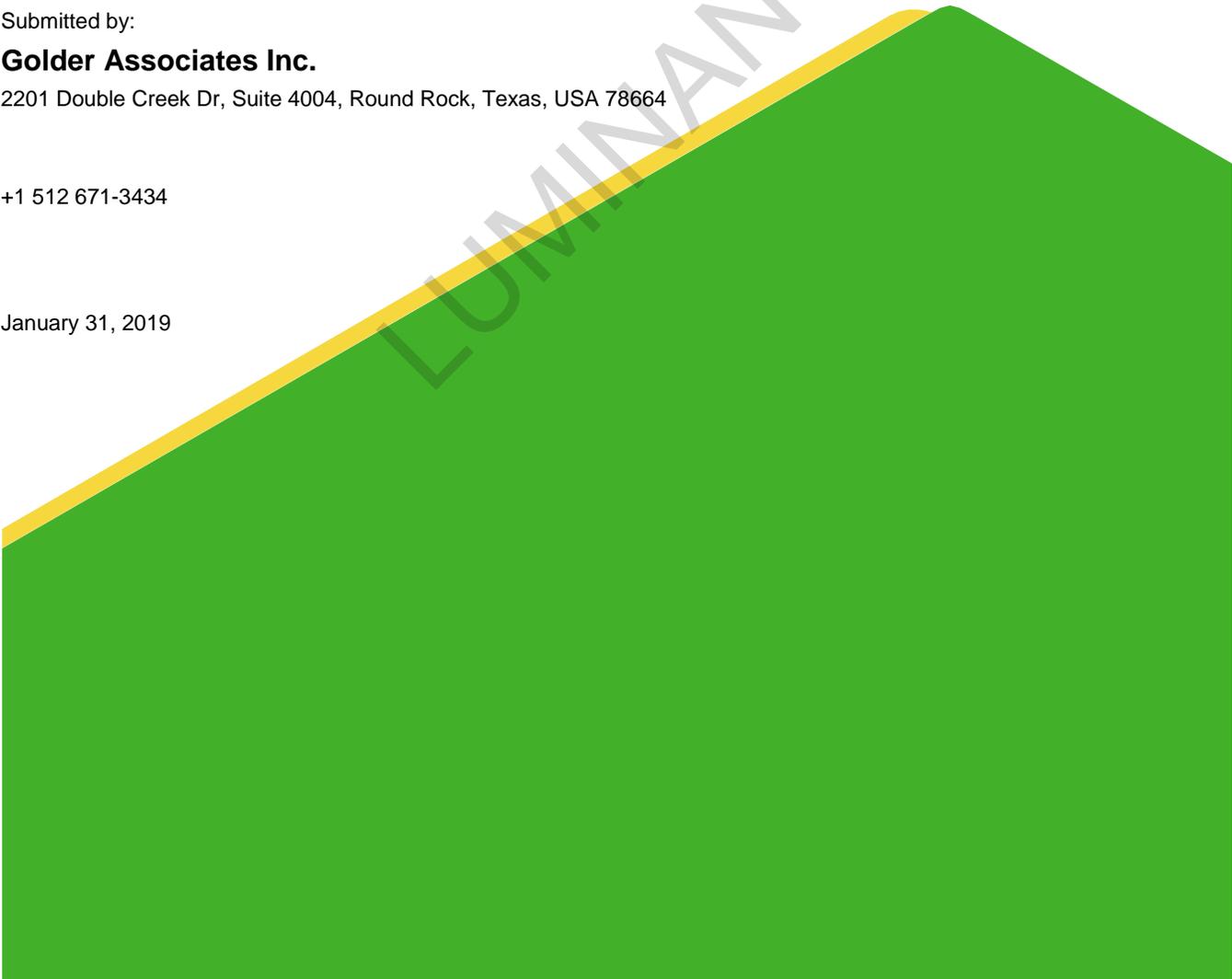
**Golder Associates Inc.**

2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664

+1 512 671-3434

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## **ACRONYMS AND ABBREVIATIONS**

CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
NA	Not Applicable
OBG	O'Brien & Gere Engineers, Inc.
SSI	Statistically Significant Increase
SSL	Statistically Significant Levels
USEPA	United States Environmental Protection Agency

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## 1.0 INTRODUCTION

Golder Associates, Inc. (Golder) has prepared this report on behalf of Coletto Creek Power, LLC to satisfy annual groundwater monitoring and corrective action reporting requirements of the Coal Combustion Residuals (CCR) Rule for the Primary Ash Pond at the Coletto Creek Power Station in Fannin, Texas. The CCR units and CCR monitoring well network are shown on Figure 1.

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per 40 CFR 257.90(e) of the CCR Rule, the report should 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); and
- (5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

## 2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

O'Brien & Gere Engineers, Inc. (OBG) collected the initial Detection Monitoring Program groundwater samples from the Primary Ash Pond CCR monitoring well network in November 2017. OBG completed an evaluation of those data in 2018 to identify statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

**Detection Monitoring Program Summary**

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
11/07-08/2017	Appendix III	Yes	May 9, 2018

Alternate source evaluations were inconclusive for one or more of the SSIs. Consequently, an Assessment Monitoring Program was initiated and established for the Primary Ash Pond CCR units in 2018 in accordance with 40 CFR § 257.94(e)(2).

Assessment Monitoring groundwater samples were collected from the CCR groundwater monitoring network in 2018, as required by the CCR Rule. OBG collected the initial 2018 Assessment Monitoring Program groundwater samples in June 2018. All CCR groundwater monitoring wells were sampled for Appendix III and Appendix IV constituents at that time. The second 2018 Assessment Monitoring Program sampling event was conducted by Golder in September 2018. During the second sampling event, all CCR wells were sampled for all Appendix III parameters and for Appendix IV parameters that were detected during the first semi-annual sampling event, as required by 40 CFR § 257.95(d)(1). The 2018 Assessment Monitoring Program sampling dates and parameters are summarized in the following table:

**Assessment Monitoring Program Summary**

Sampling Dates	Parameters	SSIs/SSLs
06/19-25/2018	Appendix III	Not Applicable
	Appendix IV	
09/18/2018	Appendix III	To Be Determined
	Appendix IV	

The statistical background values and Groundwater Protection Standards (GWPSs) are summarized in Tables 1 and 2, respectively. Appendix III and Appendix IV analytical data are summarized in Tables 3 and 4, respectively.

The analytical data from the 2018 Assessment Monitoring sampling events were evaluated using procedures described in the Statistical Analysis Plan (OBG, 2017) to identify SSIs of Appendix III parameters over background concentrations and statistically significant levels (SSLs) of Appendix IV parameters over GWPSs. Since the Assessment Monitoring Program data evaluation was completed in January 2019, the results of that evaluation will be presented in the 2019 Annual Groundwater Monitoring and Corrective Action Report.

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### 3.0 KEY ACTIONS COMPLETED IN 2018

Assessment Monitoring Program groundwater monitoring events were completed in June and September 2018. Statistical background values were established for Appendix III parameters and are summarized in Table 1. GWPSs were established for Appendix IV parameters and are summarized in Table 2. Analytical results for the groundwater samples collected in 2018 are summarized in Table 3 (Appendix III parameters) and Table 4 (Appendix IV parameters). A map showing the CCR units and all upgradient and downgradient monitoring wells is provided as Figure 1.

No CCR wells were installed or decommissioned in 2018.

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## 4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the CCR groundwater monitoring program in 2018.

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## 5.0 KEY ACTIVITIES PLANNED FOR 2019

The following key activities are planned for 2019:

- Continue the Assessment Monitoring Program in accordance with 40 CFR § 257.95.
- Complete statistical evaluation of Appendix IV analytical data from the downgradient wells and compare results to GWPSs to determine whether an SSL has occurred.
- If an SSL is identified, notification will be prepared as required under 40 CFR § 257.95(g) and will be placed in the operating record per 40 CFR § 257.105(h)(8), and will be subsequently placed on the public website per 40 CFR § 257.107(d). Potential alternate sources (i.e., a source other than the CCR unit caused the SSL or that the SSL resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is identified to be the cause of the SSL, a written demonstration will be completed within 90 days of SSL detection and included in the 2019 Annual Groundwater Monitoring and Corrective Action Report.
- If an alternate source 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.

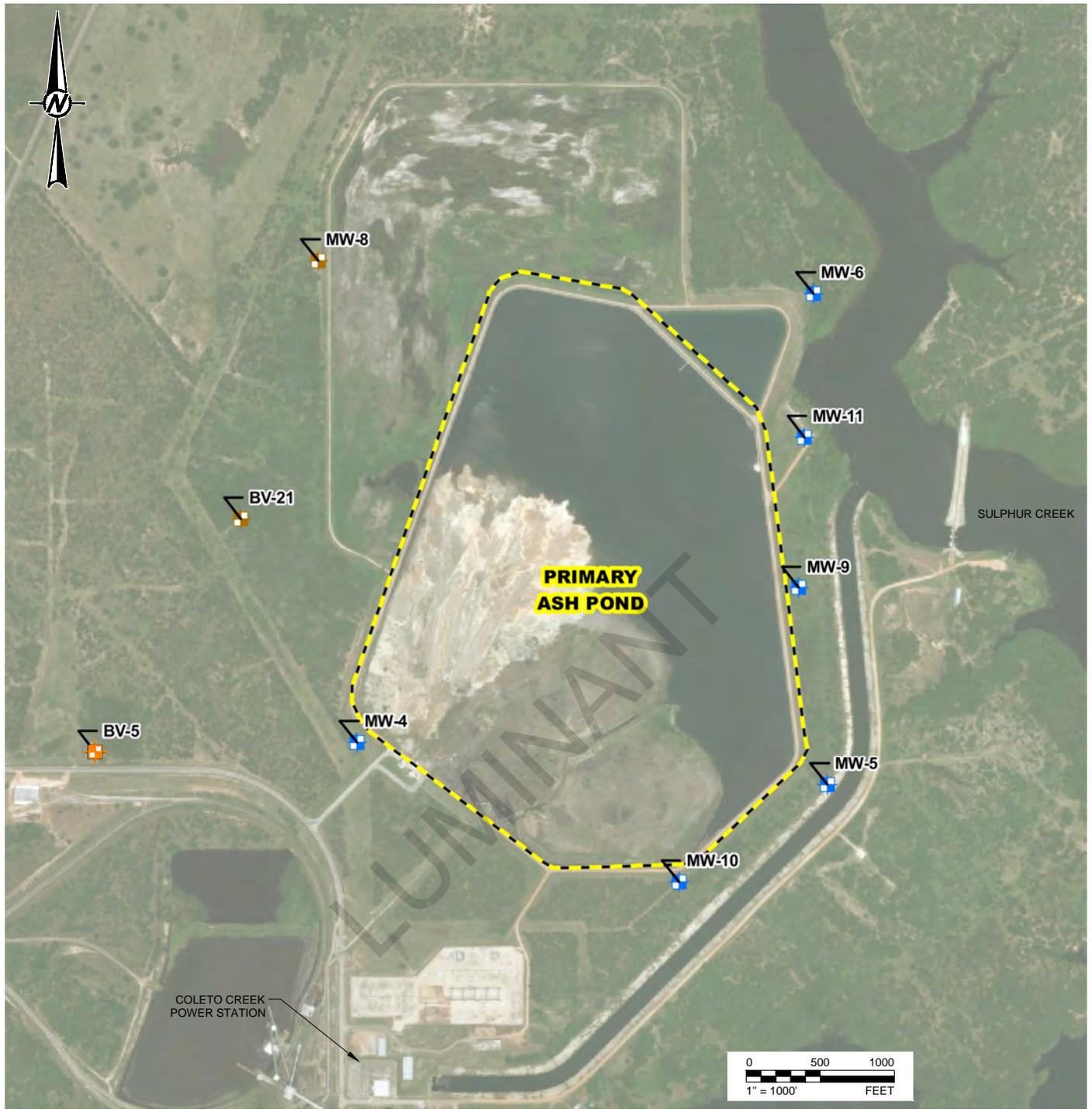
## 6.0 REFERENCES

O'Brien and Gere Engineers, Inc. (OBG), 2017. Statistical Analysis Plan, Coletto Creek Power Station.

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**FIGURES**

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**LEGEND**

-  DOWNGRADIENT MONITORING WELL LOCATION
-  UPGRADIENT MONITORING WELL LOCATION
-  CCR MONITORING UNIT

CLIENT  
**COLETO CREEK POWER LP**

PROJECT  
**COLETO CREEK POWER STATION  
 FANNIN, TEXAS**

TITLE  
**DETAILED SITE PLAN - COLETO CREEK PRIMARY ASH POND**

CONSULTANT	YYYY-MM-DD	2019-01-14
	DESIGNED	AJD
	PREPARED	AJD
	REVIEWED	WV
	APPROVED	WV

PROJECT NO.  
**18106453**

REV.  
**0**

FIGURE  
**1**

**TABLES**

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**Table 1**  
**Statistical Background Values**  
**Coletto Creek Primary Ash Pond**

<b>Parameter</b>	<b>Statistical Background Value</b>
Boron (mg/L)	1.26
Calcium (mg/L)	143
Chloride (mg/L)	118
Fluoride (mg/L)	0.61
field pH (s.u.)	6.51 7.33
Sulfate (mg/L)	148
Total Dissolved Solids (mg/L)	966

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**Table 2**  
**Groundwater Protection Standards**  
**Coletto Creek Primary Ash Pond**

<b>Parameter</b>	<b>Groundwater Protection Standard</b>
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.128
Barium (mg/L)	2
Beryllium (mg/L)	0.004
Cadmium (mg/L)	0.005
Chromium (mg/L)	0.10
Cobalt (mg/L)	0.0499
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

**Table 3**  
**Appendix III Analytical Results**  
**Coletto Creek Primary Ash Pond**

Sample Location	Date Sampled	B	Ca	Cl	Fl	field pH	SO <sub>4</sub>	TDS
<b>Upgradient Wells</b>								
BV-5	06/19/18	1.18	56.4	112	0.97	7.1	147	775
	09/18/18	1.27	86.2	145	0.667	6.53	146	904
BV-21	06/25/18	0.543	69.3	38.4	0.62	6.9	38.4	380
	09/18/18	0.624	72.1	33.3	0.479	6.64	36.4	416
MW-8	06/25/18	1.25	80.3	65.9	0.52	6.9	95.2	565
	09/18/18	1.29	76.5	53.7	0.402	6.70	94.8	543
<b>Downgradient Wells</b>								
MW-4	06/21/18	0.267	92.5	104	0.6	7.1	159	665
	09/18/18	0.28	91.8	102	0.582	6.63	155	720
MW-5	06/25/18	0.119	114	140	0.56	6.8	183	820
	09/18/18	0.146	114	136	0.493	6.70	183	824
MW-6	06/22/18	0.0171	76.6	70.7	0.41	7.3	107	490
	09/18/18	2.09	70.8	72.5	0.353 J	6.97	114	505
MW-9	06/21/18	2.94	46.9	71.5	1.5	7.4	35.7	370
	09/18/18	2.79	51.7	71.4	1.1	6.99	49.1	394
MW-10	06/22/18	8.47	60.2	76.7	0.88	7.4	84.4	550
	09/18/18	8.45	51.9	81.4	0.759	6.98	95.1	577
MW-11	06/21/18	1.07	69.6	44.3	0.96	7.4	61.4	355
	09/18/18	1.12	39.3	44.6	0.754	7.00	44.4	354

Notes:

1. All concentrations in mg/L except pH, which is in standard units.
2. J - concentration is below sample quantitation limit; result is an estimate.

**Table 4  
Appendix IV Analytical Results  
Coletto Creek Primary Ash Pond**

Sample Location	Date Sampled	Sb	As	Ba	Be	Cd	Cr	Co	Fl	Pb	Li	Hg	Mo	Se	Th	Ra 226	Ra 228	Ra 226/228 Combined
<b>Upgradient Wells</b>																		
BV-5	06/19/18	<0.0025	0.0106	0.0336	<0.001	<0.001	0.0022 J	0.0513 J	0.97	<0.00074 J	0.016	<0.0002	0.0139	<0.005	<0.0015	0.327	<1.680	2.01
	09/18/18	NA	0.00949	0.0436	NA	NA	0.00228 J	0.0487	0.667	0.000390 J	0.0206	NA	0.0102	NA	NA	0.302	<0.608	0.91
BV-21	06/25/18	<0.0025	0.0697	0.104	<0.001	<0.001	<0.005	0.00682	0.62	<0.00074 J	0.00513 J	<0.0002	0.00428 J	<0.005	<0.0015	0.267	<1.417	1.68
	09/18/18	NA	0.0625	0.109	NA	NA	<0.00200	0.0064	0.479	0.000555 J	0.00624 J	NA	0.00450 J	NA	NA	<0.31	<0.528	<0.838
MW-8	06/25/18	<0.0025	0.0101	0.0632	<0.001	<0.001	<0.005	0.029	0.52	0.0011	0.0107	<0.0002	0.017	<0.005	<0.0015	<0.234	<1.204	<1.44
	09/18/18	NA	0.00896	0.0582	NA	NA	<0.00200	0.0237	0.402	<0.000300	0.0117	NA	0.0178	NA	NA	<0.281	<0.558	<0.84
<b>Downgradient Wells</b>																		
MW-4	06/21/18	<0.0025	0.00843	0.0591	<0.001	<0.001	<0.005	0.00711	0.60	<0.00072 J	0.0175	<0.0002	<0.005	<0.005	<0.0015	0.370	1.705	2.08
	09/18/18	NA	0.00793	0.0577	NA	NA	<0.00200	0.00673	0.582	<0.000300	0.019	NA	<0.00200	NA	NA	1.610	<0.543	2.15
MW-5	06/25/18	<0.0025	0.00998	0.0733	<0.001	<0.001	<0.005	<0.005	0.56	<0.001	0.0182	<0.0002	<0.005	<0.005	<0.0015	<0.251	<1.369	<1.62
	09/18/18	NA	0.00945	0.0697	NA	NA	<0.00200	<0.00300	0.493	<0.000300	0.0195	NA	<0.00200	NA	NA	<0.282	<0.606	<0.89
MW-6	06/22/18	<0.0025	0.00861	0.0912	<0.001	<0.001	<0.005	<0.005	0.41	<0.001	0.00924 J	<0.0002	0.00837	<0.005	<0.0015	<0.309	<1.243	<1.55
	09/18/18	NA	0.008	0.0828	NA	NA	<0.00200	<0.00300	0.353 J	0.000349 J	0.0107	NA	0.0274	NA	NA	<0.196	1.06	1.256
MW-9	06/21/18	<0.0025	0.0104	0.10	<0.001	<0.001	<0.005	<0.005	1.5	<0.00072 J	<0.01	<0.0002	0.0617	<0.005	<0.0015	0.608	<1.303	1.91
	09/18/18	NA	0.0103	0.0985	NA	NA	<0.00200	<0.00300	1.1	<0.000300	0.00639 J	NA	0.0502	NA	NA	0.618	<0.638	1.26
MW-10	06/22/18	<0.0025	0.0154	0.0692	<0.001	<0.001	<0.005	<0.005	0.88	<0.00095 J	0.0122	<0.0002	0.134	<0.005	<0.0015	<0.212	<1.192	<1.40
	09/18/18	NA	0.014	0.0446	NA	NA	<0.00200	<0.00300	0.759	<0.000300	0.0141	NA	0.125	NA	NA	0.151	<0.848	0.999
MW-11	06/21/18	<0.0025	0.0367	0.0805	<0.001	<0.001	<0.005	<0.005	0.96	0.00241	0.0135	<0.0002	0.00465 J	<0.005	<0.0015	<0.234	<1.312	<1.55
	09/18/18	NA	0.0382	0.0645	NA	NA	<0.00200	<0.00300	0.754	<0.000300	0.0139	NA	0.00445 J	NA	NA	<0.188	0.597	0.785

Notes:

1. All concentrations in mg/L except Ra 226/228 Combined, which is in pCi/L.
2. J - concentration is below sample quantitation limit; result is an estimate.
3. Non-detect Ra isotope results were assigned a value equal to the minimum detectable concentration.
4. NA - Not analyzed.

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