2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT SOUTH ASH POND WINYAH GENERATING STATION

by Santee Cooper
Moncks Corner, South Carolina

January 2021

Table of Contents Page

List of Tables

List of Figures

1. Annual Groundwater Monitoring Report Summary

The South Carolina Public Service Authority (Santee Cooper) has prepared this 2020 Annual Groundwater Monitoring Corrective Action Report for South Ash Pond at the Winyah Generating Station (WGS). This 2020 Annual Report was prepared to comply with the United States Environmental Protection Agency (EPA) Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, 40 Code of Federal Regulations (CFR) Part 257, Subpart D dated April 17, 2015 (CCR Rule), specifically subsection § 257.90(e)(1) through (6).

In accordance with § 257.90(e)(6), an overview of the current status of the groundwater monitoring and corrective action programs for the CCR unit is provided below:

At the start of the current annual reporting period (January 1, 2020), South Ash Pond continued to operate under an assessment monitoring program in accordance with § 257.95, which was initiated on July 16, 2018. Statistically significant levels (SSLs) of Appendix IV constituents above the groundwater protection standards (GWPS) were not identified in any of the wells to date, including both the February and June 2020 sampling events. At the end of the current annual reporting period (December 31, 2020), the South Ash Pond remains in the assessment monitoring program. Because SSLs of Appendix IV constituents have not been identified, initiating and completing an assessment of corrective measures, holding a public meeting, selecting a remedy, and initiating remedial activities are not required.

To report on the activities conducted during the prior calendar year and document progress complying with the CCR Rule, the specific requirements listed in § 257.90(e)(1) through (5) are provided in the next section in bold/italic type followed by a short narrative stating how that specific requirement was met.

2. 40 CFR § 257.90 Applicability

2.1 40 CFR § 257.90(a)

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.

South Ash Pond at WGS is subject to the groundwater monitoring and corrective action requirements set forth by the EPA in the Code of Federal Regulations Title 40 (40 CFR) § 257.90 through § 257.98. This document satisfies the requirement under § 257.90(e) which requires the CCR Unit Owner/Operator to prepare an Annual Report.

2.2 40 CFR § 257.90(e) - SUMMARY

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 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 documents the activities completed in 2020 for South Ash Pond at WGS as required by the Groundwater Monitoring and Corrective Action regulations. Groundwater sampling and analysis was conducted per the requirements of § 257.93, and the status of the groundwater monitoring program, set forth in § 257.95, is provided in this report.

2.2.1 Status of the Groundwater Monitoring and Corrective Action Program

Statistically significant increases (SSI) of Appendix III constituents were identified downgradient of South Ash Pond, and the notification was provided on January 15, 2018. An alternate source demonstration (ASD) was conducted by Haley & Aldrich, Inc, and a report was provided to Santee Cooper in April 2018. The review by Haley & Aldrich did not identify contributing sources that could serve as an alternate source for the SSI's observed in the CCR well network for the WGS South Ash Pond. As a result, an assessment monitoring program was initiated as required by § 257.94(e)(2). The notification was placed in the facility's operating record as required by 257.106(h)(4).

As required by § 257.93(h)(2), a statistical evaluation of the detected Appendix IV constituents was conducted. The results of this evaluation determined that the detected Appendix IV constituents were not present at statistically significant levels (SSLs) above the GWPS. Therefore, this unit remained in assessment monitoring in 2020. The two sampling events in 2020 are consistent with prior sampling results and confirm that SSLs of the detected Appendix IV constituents above GWPS are not present for this unit, so the unit remains in assessment monitoring.

2.2.2 Key Actions Completed

The following key actions were completed in 2020:

- Prepared 2019 Annual Report including:
    - The Annual Report was placed in the facility's operating record pursuant to § 257.105(h)(1);
    - Pursuant to § 257.106(h)(1), the notification was sent to the relevant State Director within 30 days of the Annual Report being placed in the facility's operating record [§ 257.106(d)];
    - Pursuant to § 257.107(h)(1), the Annual Report was posted to the CCR Website within 30 days of the Annual Report being placed in the facility's operating record [§ 257.107(d)];
- Collected and analyzed two rounds of groundwater monitoring (February and June) (Table 1) in accordance with § 257.95(b) and § 257.95(d)(1) and recorded the concentrations in the facility's operating record as required by § 257.95(d)(1); and
- Completed statistical evaluations to determine if SSLs above GWPS were present for detected Appendix IV constituents in accordance with § 257.93(h)(2) (Appendix A).

2.2.3 Problems Encountered

Problems such as damaged wells or issues with sample collection or lack of sampling were not encountered at the South Ash Pond in 2020.

2.2.4 Actions to Resolve Problems

No problems needed resolution.

2.2.5 Project Key Activities for Upcoming Year

Key activities to be completed in 2021 include the following:

- Conduct semi-annual groundwater monitoring and subsequent statistical analysis as required by § 257.95.
- Complete statistical analysis of assessment monitoring analytical data to determine if SSLs of the detected Appendix IV constituents are present above GWPS.
- Prepare the 2021 annual report; place it in the record as required by § 257.105(h)(1), notify the state [§ 257.106(d)]; and post to website [§ 257.107(d)].

2.3 40 CFR § 257.90(e) - INFORMATION

At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

2.3.1 40 CFR § 257.90(e)(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 location of the CCR unit and associated upgradient and downgradient monitoring wells for South Ash Pond is presented as Figure 1. In addition, this information is presented in the CCR Groundwater Monitoring Plan, which was placed in the facility's operating record by October 17, 2017 as required by § 257.105(h)(2).

2.3.2 40 CFR § 257.90(e)(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;

Groundwater monitoring wells were not installed or decommissioned in 2020.

2.3.3 40 CFR § 257.90(e)(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 § 257.95(b) and § 257.95(d)(1), two independent samples from each background and downgradient monitoring well were collected and analyzed. 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 South Ash Pond is presented in

Table 1 of this report. In addition, in accordance with § 257.95(d)(3), Table 1 includes the groundwater protection standards established under § 257.95(d)(2).

2.3.4 40 CFR § 257.90(e)(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

As required by § 257.93(h) a statistical analysis of the Appendix III constituents was completed January 15, 2018. Baseline analytical data collected from background monitoring wells WBW-1 and WAP-1 were combined to develop Upper Tolerance Limits (UTLs). The UTLs for each Appendix III constituent were compared to the analytical results for the downgradient monitoring wells (WAP-2, WAP-3, WAP-12, and WAP-13). Constituents with analytical results exceeding the UTLs were identified as SSIs over background for the respective Appendix III constituent. This statistical analysis determined that SSIs of boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids were present downgradient of South Ash Pond. An evaluation of alternate sources was initiated and completed on April 16, 2018 as provided in § 257.94(e)(2). A source causing the SSI over background levels was not identified at that time, and to meet the requirements of 40 CFR § 257.95, an assessment monitoring program was initiated on July 16, 2018.

In assessment monitoring the sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the monitoring events of 2020 were compared to their respective GWPS (Appendix A). A sample concentration greater than the GWPS is considered to represent an SSL. Based on previous compliance sampling events and statistical evaluations, interwell comparisons were utilized for all downgradient wells and constituents. As required by § 257.93(h)(2), the statistical evaluation of the detected Appendix IV constituents determined that SSLs above the GWPS were not present at South Ash Pond, consistent with previous results. Therefore, this unit will remain in assessment monitoring in 2021.

2.3.5 40 CFR § 257.90(e)(5)

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

Other information including development of groundwater protection standards, recording groundwater monitoring results in the operating record, and an evaluation of alternate sources is discussed in preceding sections.

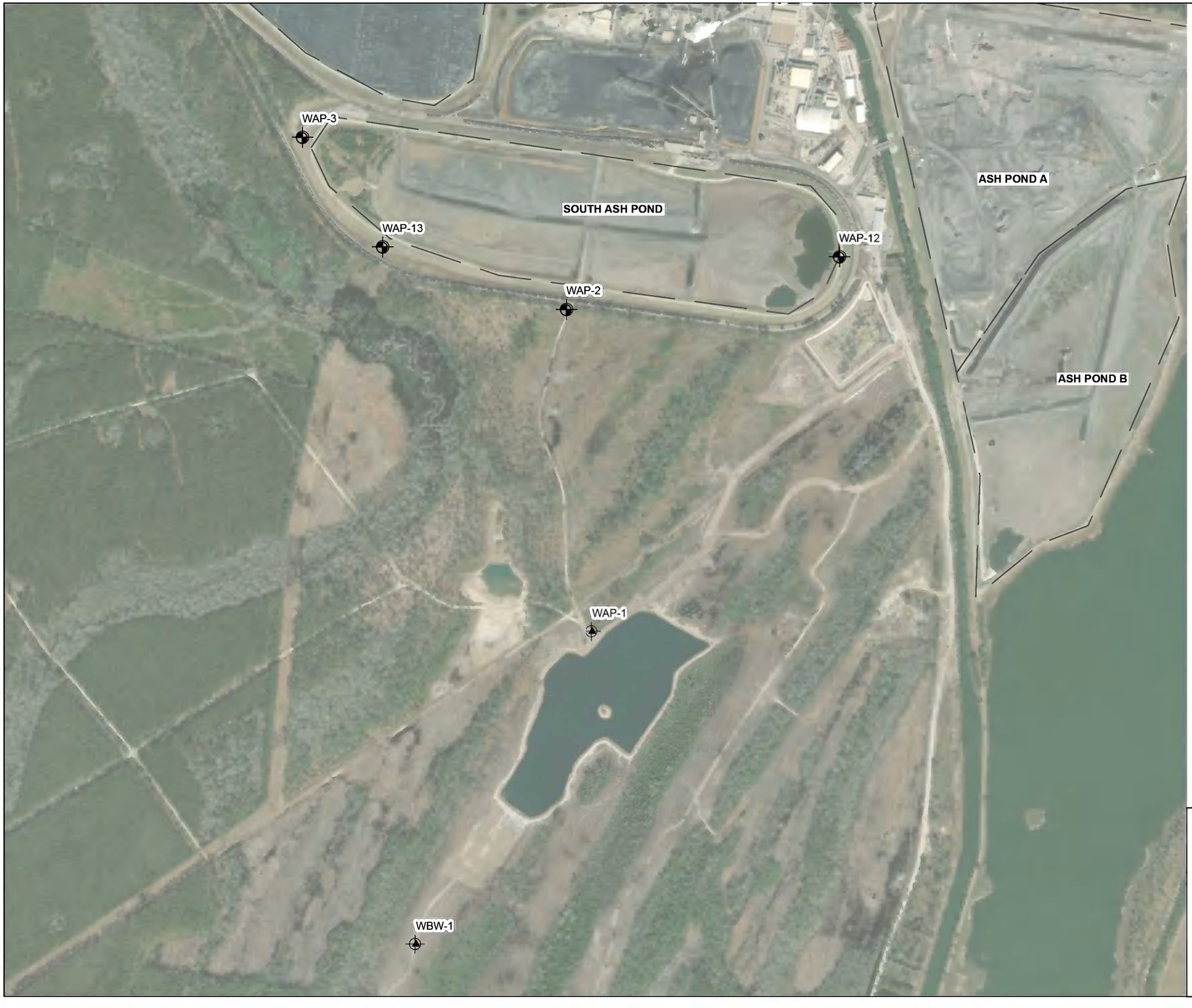
TABLES

TABLE 1 - Summary of Analytical Results
Winyah Generating Station South Ash Pond Assessment Monitoring

					Appendix III Constituents							Appendix IV Constituents																Field Parameters							
Well ID	Purpose	Date of Sample Event	Laboratory Sample ID Number		Boron	Calcium	Chloride	Fluoride	Sulfate	Total Dissolved Solids	pH	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride	Lead	Lithium	Mercury	Molybdenum	Radium 226	Radium 228	Radium 226/Radium 228 Combined Calculation	Selenium	Thallium	Depth to Groundwater	Groundwater Elevation	pH	Specific Conductivity	Temperature	Oxidation Reduction Potential	Turbidity	Dissolved Oxygen
				Unit	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	SU	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	ug/L	ug/L	Feet (btoc)	Feet (msl)	SU	uS	C	mv	NTU	ppm
				Method	EPA 6010D	EPA 6020B	EPA 300.0	EPA 300.0	EPA 300.0	SM 2540C		EPA 6020B	EPA 6020B	EPA 6020B	EPA 6020B	EPA 6020B	EPA 6020B	EPA 6020B	EPA 300.0	EPA 6020B	EPA 6010D	EPA 7470	EPA 6010D	EPA 903.1 Mod	EPA 904.0	EPA 903.1 Mo	EPA 6020B	EPA 6020B						SM2580		
				GWPS/US EPA MCL/RSL	----	----	----	4	----	----	—	6	10	2000	4	5	100	6	4	15	40	2	100	----	—	5	50	2	—	----	—	—	----	----	----	----
Site Background Wells																																				
WAP-1	Background	2/3/2020	AE65493		33	2.9	9.02	<0.10	15	27.5	4.69	<5.0	<5.0	47.1	<0.50	<0.50	<5.0	<0.50	<0.10	<1.0	<10	<0.20	<10	0.952	<3.00	0.952	<10.0	<1.0	5.2	24.24	4.69	80.5	20.4	-175	6.21	0.41
WAP-1	Background	6/2/2020	AE73494		26	2.4	8.63	<0.10	15.3	39.38	4.11	<5.0	<5.0	35.3	<0.50	<0.50	<5.0	<0.50	<0.10	<1.0	<10	<0.20	<10	0.774	0.519	1.29	<10.0	<1.0	5.01	24.43	4.11	81	22.39	115	0	0.79
WAP-1	**total samples**				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
WBW-1	Background	2/3/2020	AE65526		<15	<0.50	3.12	<0.10	5.34	<25	4.55	<5.0	<5.0	7.2	<0.50	<0.50	<5.0	<0.50	<0.10	<1.0	<10	<0.20	<10	0.291	1.15	1.45	<10.0	<1.0	5.37	26.6	4.55	35.6	18.4	431	6.29	0.47
WBW-1	Background	6/1/2020	AE73527		<15	<0.50	4.34	<0.10	5.18	<25	3.97	<5.0	<5.0	12.9	<0.50	<0.50	<5.0	<0.50	<0.10	<1.0	<10	<0.20	<10	-0.0735	0.808	<MDL	<10.0	<1.0	4.95	27.02	3.97	42	25.9	219	0	0.78
WBW-1	**total samples**				2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
South Ash Pond Wells																																				
WAP-2	Assessment	2/3/2020	AE65494			456	714	<0.10	165	1992	6.43	<5.0	<5.0	339	<0.50	<0.50	<5.0	<0.50	<0.10	<1.0	<10	<0.20	<10	2.69	2.33	5.02	<10.0	<1.0	3.13	20.56	6.43	3009	20.3	-85.6	6.19	0.65
WAP-2	Assessment	6/2/2020	AE73495		5800	475	760	<0.10	183	2928	6.37		<5.0	285		<0.50	<5.0		<0.10	<1.0				4.04	3.37	7.42	<10.0		2.87	20.82	6.37	3280	24.58	-47	1.5	0.73
WAP-2	**total samples**				1	2	2	2	2	2	2	1	2	2	1	2	2	1	2	2	1	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2
WAP-3	Assessment	2/3/2020	AE65495			138	106	0.13	42	511.2	6.25	<5.0	<5.0	56.4	<0.50	<0.50	<5.0	<0.50	0.13	<1.0	<10	<0.20	<10	0.624	0.773	1.4	<10.0	<1.0	6.37	13.06	6.25	756	18.7	18.7	9.46	0.52
WAP-3	Assessment	6/8/2020	AE73496		1700	141	125	0.17	26.5	645	6.19		<5.0	49.3		<0.50	<5.0		0.17	<1.0				0.921	2.88	3.8	<10.0		6.83	12.6	6.19	951	26.47	-23	0	0.64
WAP-3	**total samples**				1	2	2	2	2	2	2	1	2	2	1	2	2	1	2	2	1	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2
WAP-12	Assessment	2/3/2020	AE65505		5200	326	294	<0.10	1060	1982	4.98	<5.0	<5.0	26.9	<0.50	<0.50	<5.0	<0.50	<0.10	<1.0	<10	<0.20	<10	2.37	1.11	3.47	<10.0	<1.0	6.79	24.05	4.98	2615	23.1	-120	6.7	0.6
WAP-12	Duplicate	2/3/2020	AE65506		4700	328	294	<0.10	1060	1990		<5.0	<5.0	27.1	<0.50	<0.50	<5.0	<0.50	<0.10	<1.0	<10	<0.20	<10	1.29	0.917	2.2	<10.0	<1.0								
WAP-12	Assessment	6/3/2020	AE73506		4900	357	292	<0.10	1070	2056	4.8			26.6					<0.10					2.99	0.949	3.93			6.83	24.01	4.8	2960	24.17	70	1.3	0.82
WAP-12	Duplicate	6/3/2020	AE73507		5000	354	299	<0.10	1060	2115				26.1					<0.10					1.94	0.78	2.72										
WAP-12	**total samples**				4	4	4	4	4	4	2	2	2	4	2	2	2	2	4	2	2	2	2	4	4	4	2	2	2	2	2	2	2	2	2	2
WAP-13	Assessment	2/4/2020	AE65507		3700	410	623	<0.10	76.2	2098	6.45	<5.0	<5.0	275	<0.50	<0.50	<5.0	<0.50	<0.10	<1.0	<10	<0.20	<10	1.23	0.979	2.21	<10.0	<1.0	5.53	16.44	6.45	2837	16.7	-87.2	8.68	0.59
WAP-13	Assessment	6/8/2020	AE73508		3900	431	608	<0.10	80.1	2426	6.37			261					<0.10					1.28	1.82	3.1			5.66	16.31	6.37	2980	25.69	-83	0	0.76
WAP-13	**total samples**				2	2	2	2	2	2	2	1	1	2	1	1	1	1	2	1	1	1	1	2	2	2	1	1	2	2	2	2	2	2	2	2

All groundwater samples collected from the monitoring wells for Assessment Monitoring in 2020 for the constituents listed in Appendix III and Appendix IV of the EPA CCR Rule (40 CFR) were analyzed by South Carolina Certified laboratories: Santee Cooper Analytical Services (Certification # 08552), GEL Laboratories, LLC (Certification # 10120), Test America Laboratories Inc. Savannah (Certification # 98001), Test America Laboratories Inc. Pensacola (Certification #96026), Rogers & Callcot, Inc. (Certification # 23105001), and Pace Analytical Services LLC (Certification #99039).

FIGURES



LEGEND

- BACKGROUND WELL
- SOUTH ASH POND WELLS
- CCR UNIT BOUNDARY
- PROPERTY BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 710 1,420

SCALE IN FEET

SANTEE COOPER
WINYAH GENERATING STATION
GEORGETOWN, SOUTH CAROLINA

LOCATION OF SOUTH ASH POND GROUNDWATER MONITORING WELLS FOR CCR COMPLIANCE

DECEMBER 2020

FIGURE 1

Appendix A – Statistical Analysis

HALEY & ALDRICH, INC.
400 Augusta Street
Suite 130
Greenville, SC 29601
864.214.8750

TECHNICAL MEMORANDUM

June 18, 2020
File No. 132892-015

SUBJECT: 2020 Semi-annual Groundwater Assessment Monitoring Data
Statistical Evaluation
Winyah Generating Station
South Ash Pond

Pursuant to Title 40 Code of Federal Regulations (40 CFR) § 257.93 and 257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the February 2020 semi-annual assessment monitoring groundwater sampling events for the Winyah Generating Station (WGS) South Ash Pond. The statistical evaluation discussed in this memorandum was conducted to determine if Appendix IV groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant level (SSL) above background or upgradient wells consistent with the requirements in 40 CFR § 257.95.

Utilizing interwell evaluations, data from the groundwater sampling events for the downgradient monitoring wells were compared to the Groundwater Protection Standard (GWPS) established from the background dataset for the upgradient monitoring well (WAP-1 and WBW-1) for detected Appendix IV constituents. GWPS for each of the Appendix IV constituents have been set equal to the highest value of the maximum contaminant level, regional screening level, or background concentration. The Rule requires statistical evaluation of groundwater monitoring data to determine whether or not there is a statistically significant increase (SSI) above background values for each Appendix IV constituent and if one or more constituents are detected at SSLs above the GWPS. The results of the groundwater assessment monitoring statistical evaluation are discussed below and provided in Table I.

Statistical Evaluation of Appendix IV Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residual (CCR) unit (40 CFR §257.93(f) (1-4)). The statistical method used for these evaluations, tolerance limit (TL), was certified by Haley & Aldrich, Inc. on October 14, 2017. The TL method, as determined applicable for this sampling event, was used to evaluate potential SSLs above background. Background levels for each constituent listed in Appendix IV were computed as upper tolerance limits (UTL), and a minimum 95 percent confidence coefficient and 95 percent coverage. The groundwater sampling result from each compliance well was compared to the corresponding background UTL to determine if a SSL existed.

STATISTICAL EVALUATION

An interwell evaluation was used to determine SSLs. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The parametric TL methods were used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a tolerance interval is called the UTL. Depending on the data distribution, parametric or non-parametric TL procedures are used to evaluate groundwater monitoring data using this method. Parametric TLs utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the TL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UTL.

These statistical evaluations were conducted using the background dataset for all detected Appendix IV constituents using parametric TL. If an Appendix IV constituent concentration from the February 2020 semi-annual sampling event was above the GWPS, the lower confidence limit (LCL) for the downgradient well constituent was used to evaluate if a SSL was present. The LCL is the lower end of the confident interval range, which is an estimated concentration range intended to contain the true mean or median of the population from which the sample is drawn. The confidence interval range is designed to locate the true population mean or median with a high degree of statistical confidence, or conversely, with a low probability of error.

The UTLs were calculated from the background well dataset using Chemstat software after testing for outlier sample results that would warrant removal from the dataset based on likely error in sampling or measurement. Both visual and statistical outlier tests for the background data were performed using Chemstat and U.S. Environmental Protection Agency's ProUCL 5.1 software, and a visual inspection of the data was performed using box plots and distribution plots for the downgradient sample data. No sample data were identified as outliers that warranted removal from the dataset.

BACKGROUND DISTRIBUTIONS

The groundwater analytical results for each sampling event from the background sample location (WAP-1 and WBW-1) were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset was evaluated to determine the method for UTL calculation. Per the document *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009,* background concentrations were updated for the February 2020 semi-annual sampling event based on statistical evaluation of analytical results collected through February 2020.

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the February 2020 semi-annual assessment monitoring event were compared to their respective background UTLs and GWPS (Tables I). A sample concentration greater than the GWPS is considered to represent a SSL. Based on previous compliance sampling event and statistical evaluations, interwell comparisons were utilized for all downgradient wells and constituents. Based on these statistical evaluations no SSLs above GWPS were identified at the South Ash Pond, consistent with previous results.

Tables:

Table I – Summary of Assessment Monitoring Statistical Evaluation – February 2020

TABLES

Winyah South Ash Pond

Assessment Monitoring Statistical Analysis Summary

Prepared: June 16, 2020

																		Inter-well Analysis					
Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	Mean	50th Percentile (Median)	95th Percentile	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/RSL	Report Result Unit	Detection Exceedances (Y/N)	Number of Detection Exceedances	Number of Non-Detection Exceedances	Outlier Presence	Outlier Removed	Trend	Distribution Well*	February 2020 Concentration	Detect?	Upper Tolerance Limit	GWPS (Higher of MCL/RSL or Background Limit)	Exceedance above Background at Individual Well	SSL
CCR Appendix-IV: Antimony, Total (mg/L)																									
WBW-1	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA			0.025	0.025		
WAP-01	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA							
WAP-02	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-03	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-L2	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-L3	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA	0.005	N			N	FALSE
CCR Appendix-IV: Arsenic, Total (mg/L)																									
WBW-1	0/13	100%	0.003-0.005	0.00469	0.005	0.005		5.641E-07	0.0007511	0.1601	0.01	mg/L	N	0	0	NA	NA	NA	NA			0.005	0.010		
WAP-01	0/15	100%	0.003-0.005	0.00473	0.005	0.005		4.952E-07	0.0007037	0.1487	0.01	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/14	100%	0.003-0.005	0.00471	0.005	0.005		5.275E-07	0.0007263	0.1541	0.01	mg/L	N	0	0	No	No	NA	NA	0.005	N			N	FALSE
WAP-03	0/14	100%	0.003-0.005	0.00471	0.005	0.005		5.275E-07	0.0007263	0.1541	0.01	mg/L	N	0	0	No	No	NA	NA	0.005	N			N	FALSE
WAP-12	5/12	58%	0.003-0.005	0.00532	0.005	0.007144	0.0082	0.000001421	0.001192	0.2242	0.01	mg/L	N	0	0	No	No	Stable	Normal	0.005	N			N	FALSE
WAP-L3	2/12	83%	0.003-0.005	0.00511	0.005	0.007385	0.0103	0.000003268	0.001808	0.3539	0.01	mg/L	Y	1	0	Yes	No	NA	NA	0.005	N			N	FALSE
CCR Appendix-IV: Barium, Total (mg/L)																									
WBW-1	L3/13	0%	-	0.0128	0.0147	0.0157	0.016	0.000009504	0.003083	0.24	2	mg/L	N	0	0	No	No	Stable	Non-parametric			0.094	2.000		
WAP-01	L5/15	0%	-	0.0297	0.0232	0.0667	0.094	0.0006045	0.02459	0.8271	2	mg/L	N	0	0	Yes	No	Stable							
WAP-02	L5/15	0%	-	0.298	0.311	0.3627	0.369	0.007399	0.08602	0.2885	2	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.339	Y			N	FALSE
WAP-03	L5/15	0%	-	0.0751	0.0771	0.1161	0.121	0.0007527	0.02743	0.3654	2	mg/L	N	0	0	No	No	Stable	Normal	0.056	Y			N	FALSE
WAP-L2	L3/13	0%	-	0.0437	0.0465	0.05802	0.0627	0.0001276	0.01129	0.2585	2	mg/L	N	0	0	No	No	Stable	Normal	0.027	Y			N	FALSE
WAP-L3	L3/13	0%	-	0.262	0.261	0.328	0.34	0.00152	0.03899	0.1489	2	mg/L	N	0	0	No	No	Stable	Normal	0.275	Y			N	FALSE
CCR Appendix-IV: Beryllium, Total (mg/L)																									
WBW-1	0/11	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA	NA			0.001	0.004		
WAP-01	0/11	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/11	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-03	0/11	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-L2	1/11	91%	0.0005-0.0005	0.000514	0.0005	0.000575	0.00065	2.045E-09	0.00004523	0.08805	0.004	mg/L	N	0	0	No	No	Stable	Non-parametric	0.0005	N			N	FALSE
WAP-L3	0/11	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
CCR Appendix-IV: Cadmium, Total (mg/L)																									
WBW-1	0/12	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.005	mg/L	N	0	0	NA	NA	NA	NA			0.001	0.005		
WAP-01	0/14	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.005	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/14	100%	0.0005-0.002	0.000607	0.0005	0.001025		1.607E-07	0.0004009	0.6603	0.005	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-03	0/14	100%	0.0005-0.002	0.000607	0.0005	0.001025		1.607E-07	0.0004009	0.6603	0.005	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-L2	0/12	100%	0.0005-0.002	0.000625	0.0005	0.001175		1.875E-07	0.000433	0.6928	0.005	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-L3	0/12	100%	0.0005-0.002	0.000625	0.0005	0.001175		1.875E-07	0.000433	0.6928	0.005	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
CCR Appendix-IV: Chromium, Total (mg/L)																									
WBW-1	0/12	100%	0.005-0.005	0.005	0.005	0.005		1.478E-20	1.216E-10	2.432E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA			0.0050	0.100		
WAP-01	0/14	100%	0.005-0.005	0.005	0.005	0.005		1.251E-20	1.118E-10	2.237E-08	0.1	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/14	100%	0.005-0.01	0.00536	0.005	0.00675		0.000001786	0.001336	0.2494	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-03	0/14	100%	0.005-0.01	0.00536	0.005	0.00675		0.000001786	0.001336	0.2494	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-L2	0/12	100%	0.005-0.01	0.00542	0.005	0.00725		0.000002083	0.001443	0.2665	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-L3	0/12	100%	0.005-0.01	0.00542	0.005	0.00725		0.000002083	0.001443	0.2665	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.005	N			N	FALSE
CCR Appendix-IV: Cobalt, Total (mg/L)																									
WBW-1	0/13	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA			0.0006	0.006		
WAP-01	1/13	92%	0.0005-0.0005	0.000507	0.0005	0.000536	0.00059	6.231E-10	0.00002496	0.04924	0.006	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/12	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-03	5/12	58%	0.0005-0.0005	0.00085	0.0005	0.002115	0.0025	4.164E-07	0.0006453	0.7594	0.006	mg/L	N	0	0	No	No	Stable	Non-parametric	0.0005	N			N	FALSE
WAP-L2	4/12	67%	0.0005-0.0005	0.00062	0.0005	0.001101	0.0015	8.361E-08	0.0002892	0.4668	0.006	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.0005	N			N	FALSE
WAP-13	7/12	42%	0.0005-0.0005	0.000621	0.00058	0.0009395	0.00111	3.164E-08	0.0001779	0.2866	0.006	mg/L	N	0	0	No	No	Stable	Non-parametric	0.0005	N			N	FALSE
CCR Appendix-IV: Fluoride (mg/L)																									
WBW-1	1/14	93%	0.1-0.1	0.1	0.1	0.1	0.1	2.135E-18	1.461E-09	1.461E-08	4	mg/L	N	0	0	No	No	NA	Non-parametric			0.140	4.00		
WAP-01	2/14	86%	0.1-0.1	0.105	0.1	0.1335	0.14	0.0001654	0.01286	0.1225	4	mg/L	N	0	0	No	No	NA							
WAP-02	1/14	93%	0.1-0.1	0.103	0.1	0.114	0.14	0.0001143	0.01069	0.1039	4	mg/L	N	0	0	No	No	Stable	Non-parametric	0.10	N			N	FALSE
WAP-03	8/14	43%	0.1-0.1	0.139	0.125	0.2135	0.22	0.002044	0.04521	0.3263	4	mg/L	N	0	0	No	No	Stable	Non-parametric	0.13	Y			N	FALSE
WAP-L2	1/14	93%	0.1-0.1	0.104	0.1	0.121	0.16	0.0002571	0.01604	0.1538	4	mg/L	N	0	0	No	No	Stable	Non-parametric	0.10	N			N	FALSE
WAP-L3	4/14	71%	0.1-0.1	0.121	0.1	0.2035	0.21	0.001546	0.03931	0.3257	4	mg/L	N	0	0	No	No	Stable	Non-parametric	0.10	N			N	FALSE
CCR Appendix-IV: Lead, Total (mg/L)																									
WBW-1	0/12	100%	0.001-0.01	0.002	0.001	0.005875		0.000006682	0.002585	1.292	0.015	mg/L	N	0	0	NA	NA	NA	Non-parametric			0.0100	0.015		
WAP-01	4/14	71%	0.001-0.01	0.0022	0.001145	0.006464	0.00456	0.000006043	0.002458	1.116	0.015	mg/L	N	0	0	Yes	No	Stable							
WAP-02	0/14	100%	0.001-0.0025	0.00129	0.001	0.0025		3.352E-07	0.0005789	0.4503	0.015	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-03	0/14	100%	0.001-0.0025	0.00129	0.001	0.0025		3.352E-07	0.0005789	0.4503	0.015	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-L2	0/12	100%	0.001-0.0025	0.00133	0.001	0.0025		3.788E-07	0.0006155	0.4616	0.015	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-L3	0/12	100%	0.001-0.0025	0.00133	0.001	0.0025		3.788E-07	0.0006155	0.4616	0.015	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
CCR Appendix-IV: Lithium, Total (mg/L)																									
WBW-1	0/13	100%	0.01-0.01	0.01	0.01	0.01		7.228E-20	2.688E-10	2.688E-08	0.04	mg/L	N	0	0	NA	NA	NA	Non-parametric			0.012	0.040		
WAP-01	1/13	92%	0.01-0.01	0.0101	0.01	0.01064	0.0116	1.969E-07	0.0004438	0.04384	0.04	mg/L	N	0	0	No	No	NA							
WAP-02	3/12	75%	0.01-0.01	0.0102	0.01	0.011	0.011	1.515E-07	0.0003892	0.03829	0.04	mg/L	N	0	0	No	No	NA	Non-parametric	0.010	N			N	FALSE
WAP-03	0/12	100%	0.01-0.01	0.01	0.01	0.01		5.914E-20	2.432E-10	2.432E-08	0.04	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-L2	0/12	100%	0.01-0.05	0.0133	0.01	0.028		0.0001333	0.01155	0.866	0.04	mg/L	N	0	1	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-L3	6/12	50%	0.01-0.01	0.0347	0.011	0.14	0.151	0.002518	0.05018	1.444	0.04	mg/L	Y	2	0	No	No	Decreasing	Non-parametric	0.010	N			N	FALSE

Winyah South Ash Pond

Assessment Monitoring Statistical Analysis Summary

Prepared: June 16, 2020

CCR Appendix-IV: Mercury, Total (mg/L)																								
WBW-1	0/11	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA			0.0002	0.0020		
WAP-01	0/11	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/11	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.0002	N			N	FALSE
WAP-03	0/10	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.0002	N			N	FALSE
WAP-12	0/11	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.0002	N			N	FALSE
WAP-L3	0/10	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.0002	N			N	FALSE
CCR Appendix-IV: Molybdenum, Total (mg/L)																								
WBW-1	0/13	100%	0.01-0.05	0.0131	0.01	0.026		0.0001231	0.01109	0.8484	0.1	mg/L	N	0	0	NA	NA	NA	NA			0.050	0.10		
WAP-01	0/13	100%	0.01-0.01	0.01	0.01	0.01		7.228E-20	2.688E-10	2.688E-08	0.1	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/11	100%	0.01-0.01	0.01	0.01	0.01		4.337E-20	2.083E-10	2.083E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-03	0/11	100%	0.01-0.01	0.01	0.01	0.01		4.337E-20	2.083E-10	2.083E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-L2	0/11	100%	0.01-0.01	0.01	0.01	0.01		4.337E-20	2.083E-10	2.083E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-L3	0/11	100%	0.01-0.01	0.01	0.01	0.01		4.337E-20	2.083E-10	2.083E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
CCR Appendix-IV: Radium-226 & 228 (pCi/L)																								
WBW-1	7/13	46%	4-4	3.41	4	4.306	4.33	1.724	1.313	0.3848	5	pCi/L	N	0	0	No	No	Stable				5.97	6.0		
WAP-01	8/13	38%	4-4	3.72	4	5.832	5.97	2.316	1.522	0.4089	5	pCi/L	Y	2	0	Yes	No	Stable	Non-parametric						
WAP-02	L3/14	7%	4-4	6.21	6	7.882	8.35	1.428	1.195	0.1923	5	pCi/L	Y	L3	0	No	No	Stable	Normal	5.020	Y			N	FALSE
WAP-03	9/13	31%	4-4	3.43	4	4.448	4.64	1.899	1.378	0.4016	5	pCi/L	N	0	0	Yes	No	Stable	Non-parametric	1.400	Y			N	FALSE
WAP-L2	L3/13	0%	-	5.17	5.38	6.584	6.71	1.269	1.127	0.2178	5	pCi/L	Y	7	0	No	No	Stable	Normal	3.470	Y			N	FALSE
WAP-L3	L0/13	23%	4-4	4.3	4.13	6.134	6.35	1.478	1.216	0.2827	5	pCi/L	Y	3	0	No	No	Stable	Normal	2.210	Y			N	FALSE
CCR Appendix-IV: Selenium, Total (mg/L)																								
WBW-1	0/12	100%	0.01-0.02	0.0117	0.01	0.02		0.00001515	0.003892	0.3336	0.05	mg/L	N	0	0	NA	NA	NA	NA			0.020	0.050		
WAP-01	0/14	100%	0.01-0.02	0.0114	0.01	0.02		0.00001319	0.003631	0.3177	0.05	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/14	100%	0.005-0.02	0.0111	0.01	0.02		0.00001607	0.004009	0.3621	0.05	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-03	0/14	100%	0.005-0.02	0.0111	0.01	0.02		0.00001607	0.004009	0.3621	0.05	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-12	0/12	100%	0.005-0.02	0.0112	0.01	0.02		0.00001875	0.00433	0.3849	0.05	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-L3	0/12	100%	0.005-0.02	0.0112	0.01	0.02		0.00001875	0.00433	0.3849	0.05	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
CCR Appendix-IV: Thallium, Total (mg/L)																								
WBW-1	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA			0.001	0.002		
WAP-01	0/11	100%	0.0001-0.001	0.000918	0.001	0.001		7.364E-08	0.0002714	0.2955	0.002	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-03	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-L2	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-L3	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE

HALEY & ALDRICH, INC.
400 Augusta Street
Suite 130
Greenville, SC 29601
864.214.8750

TECHNICAL MEMORANDUM

October 21, 2020
File No. 132892-015

SUBJECT: 2020 Semi-annual Groundwater Assessment Monitoring Data
Statistical Evaluation
Winyah Generating Station
South Ash Pond

Pursuant to Title 40 Code of Federal Regulations (40 CFR) § 257.93 and 257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the June 2020 semi-annual assessment monitoring groundwater sampling events for the Winyah Generating Station (WGS) South Ash Pond. The statistical evaluation discussed in this memorandum was conducted to determine if Appendix IV groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant level (SSL) above background or upgradient wells consistent with the requirements in 40 CFR § 257.95.

Utilizing interwell evaluations, data from the groundwater sampling events for the downgradient monitoring wells were compared to the Groundwater Protection Standard (GWPS) established from the background dataset for the upgradient monitoring well (WAP-1 and WBW-1) for detected Appendix IV constituents. GWPS for each of the Appendix IV constituents have been set equal to the highest value of the maximum contaminant level, regional screening level, or background concentration. The Rule requires statistical evaluation of groundwater monitoring data to determine whether or not there is a statistically significant increase (SSI) above background values for each Appendix IV constituent and if one or more constituents are detected at SSLs above the GWPS. The results of the groundwater assessment monitoring statistical evaluation are discussed below and provided in Table I.

Statistical Evaluation of Appendix IV Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residual (CCR) unit (40 CFR §257.93(f) (1-4)). The statistical method used for these evaluations, tolerance limit (TL), was certified by Haley & Aldrich, Inc. on October 14, 2017. The TL method, as determined applicable for this sampling event, was used to evaluate potential SSLs above background. Background levels for each constituent listed in Appendix IV were computed as upper tolerance limits (UTL), and a minimum 95 percent confidence coefficient and 95 percent coverage. The groundwater sampling result from each compliance well was compared to the corresponding background UTL to determine if a SSL existed.

STATISTICAL EVALUATION

An interwell evaluation was used to determine SSLs. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The parametric TL methods were used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a tolerance interval is called the UTL. Depending on the data distribution, parametric or non-parametric TL procedures are used to evaluate groundwater monitoring data using this method. Parametric TLs utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the TL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UTL.

These statistical evaluations were conducted using the background dataset for all detected Appendix IV constituents using parametric TL. If an Appendix IV constituent concentration from the June 2020 semi-annual sampling event was above the GWPS, the lower confidence limit (LCL) for the downgradient well constituent was used to evaluate if a SSL was present. The LCL is the lower end of the confident interval range, which is an estimated concentration range intended to contain the true mean or median of the population from which the sample is drawn. The confidence interval range is designed to locate the true population mean or median with a high degree of statistical confidence, or conversely, with a low probability of error.

The UTLs were calculated from the background well dataset using Chemstat software after testing for outlier sample results that would warrant removal from the dataset based on likely error in sampling or measurement. Both visual and statistical outlier tests for the background data were performed using Chemstat and U.S. Environmental Protection Agency's ProUCL 5.1 software, and a visual inspection of the data was performed using box plots and distribution plots for the downgradient sample data. No sample data were identified as outliers that warranted removal from the dataset.

BACKGROUND DISTRIBUTIONS

The groundwater analytical results for each sampling event from the background sample location (WAP-1 and WBW-1) were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset was evaluated to determine the method for UTL calculation. Per the document *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009,* background concentrations were updated for the February 2020 semi-annual sampling event based on statistical evaluation of analytical results collected through February 2020.

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the June 2020 semi-annual assessment monitoring event were compared to their respective background UTLs and GWPS (Table I). A sample concentration greater than the GWPS is considered to represent a SSL. Based on previous compliance sampling event and statistical evaluations, interwell comparisons were utilized for all downgradient wells and constituents. Based on these statistical evaluations SSLs above GWPS were not identified at the South Ash Pond, consistent with previous results and as a result the South Ash Pond will remain in assessment monitoring.

Tables:

Table I – Summary of Assessment Monitoring Statistical Evaluation – June 2020

TABLES

Winyah South Ash Pond

Assessment Monitoring Statistical Analysis Summary

Prepared: October 21, 2020

																		Inter-well Analysis					
Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	Mean	50th Percentile (Median)	95th Percentile	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/RSL	Report Result Unit	Detection Exceedances (Y/N)	Number of Detection Exceedances	Number of Non-Detection Exceedances	Outlier Presence	Outlier Removed	Trend	Distribution Well*	June 2020 Concentration	Detect?	Upper Tolerance Limit	GWPS (Higher of MCL/RSL or Background Limit)	Exceedance above Background at Individual Well	SSL
CCR Appendix-IV: Antimony, Total (mg/L)																									
WBW-1	0/12	100%	0.005-0.025	0.00667	0.005	0.014		0.00003333	0.005774	0.866	0.006	mg/L	N	0	1	NA	NA	NA	NA			0.025	0.025		
WAP-01	0/12	100%	0.005-0.025	0.00667	0.005	0.014		0.00003333	0.005774	0.866	0.006	mg/L	N	0	1	NA	NA	NA							
WAP-02	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-03	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-12	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-13	0/11	100%	0.005-0.025	0.00682	0.005	0.015		0.00003636	0.00603	0.8844	0.006	mg/L	N	0	1	NA	NA	NA	NA	NS	N			Y	FALSE
CCR Appendix-IV: Arsenic, Total (mg/L)																									
WBW-1	0/14	100%	0.003-0.005	0.00471	0.005	0.005		5.275E-07	0.0007263	0.1541	0.01	mg/L	N	0	0	NA	NA	NA	NA			0.005	0.010		
WAP-01	0/16	100%	0.003-0.005	0.00475	0.005	0.005		4.667E-07	0.0006831	0.1438	0.01	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/15	100%	0.003-0.005	0.00473	0.005	0.005		4.952E-07	0.0007037	0.1487	0.01	mg/L	N	0	0	No	No	NA	NA	0.005	N			N	FALSE
WAP-03	0/15	100%	0.003-0.005	0.00473	0.005	0.005		4.952E-07	0.0007037	0.1487	0.01	mg/L	N	0	0	No	No	NA	NA	0.005	N			N	FALSE
WAP-12	5/12	58%	0.003-0.005	0.00532	0.005	0.007144	0.0082	0.000001421	0.001192	0.2242	0.01	mg/L	N	0	0	No	No	Stable	Normal	0.005	N			N	FALSE
WAP-13	2/12	83%	0.003-0.005	0.00511	0.005	0.007385	0.0103	0.000003268	0.001808	0.3539	0.01	mg/L	Y	1	0	Yes	No	NA	NA	0.005	N			N	FALSE
CCR Appendix-IV: Barium, Total (mg/L)																									
WBW-1	14/14	0%	-	0.0129	0.01385	0.01568	0.016	0.000008773	0.002962	0.2305	2	mg/L	N	0	0	No	No	Stable	Non-parametric			0.094	2.000		
WAP-01	16/16	0%	-	0.0301	0.0241	0.06475	0.094	0.0005661	0.02379	0.7911	2	mg/L	N	0	0	Yes	No	Stable							
WAP-02	16/16	0%	-	0.297	0.3105	0.3623	0.369	0.006917	0.08317	0.2797	2	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.285	Y			N	FALSE
WAP-03	16/16	0%	-	0.0735	0.07705	0.1157	0.121	0.000744	0.02728	0.3713	2	mg/L	N	0	0	No	No	Stable	Normal	0.049	Y			N	FALSE
WAP-12	14/14	0%	-	0.0425	0.0463	0.05763	0.0627	0.0001386	0.01177	0.2772	2	mg/L	N	0	0	No	No	Stable	Normal	0.027	Y			N	FALSE
WAP-13	14/14	0%	-	0.262	0.261	0.327	0.34	0.001403	0.03746	0.1431	2	mg/L	N	0	0	No	No	Stable	Normal	0.261	Y			N	FALSE
CCR Appendix-IV: Beryllium, Total (mg/L)																									
WBW-1	0/12	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA	NA			0.0005	0.004		
WAP-01	0/12	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/11	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-03	0/11	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-12	1/11	91%	0.0005-0.0005	0.000514	0.0005	0.000575	0.00065	2.045E-09	0.00004523	0.08805	0.004	mg/L	N	0	0	No	No	Stable	Non-parametric	NS	N			Y	FALSE
WAP-13	0/11	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.004	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
CCR Appendix-IV: Cadmium, Total (mg/L)																									
WBW-1	0/13	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.005	mg/L	N	0	0	NA	NA	NA	NA			0.001	0.005		
WAP-01	0/15	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.005	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/15	100%	0.0005-0.002	0.0006	0.0005	0.00095		0.00000015	0.0003873	0.6455	0.005	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-03	0/15	100%	0.0005-0.002	0.0006	0.0005	0.00095		0.00000015	0.0003873	0.6455	0.005	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-12	0/12	100%	0.0005-0.002	0.000625	0.0005	0.001175		1.875E-07	0.000433	0.6928	0.005	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
WAP-13	0/12	100%	0.0005-0.002	0.000625	0.0005	0.001175		1.875E-07	0.000433	0.6928	0.005	mg/L	N	0	0	NA	NA	NA	NA	0.0005	N			N	FALSE
CCR Appendix-IV: Chromium, Total (mg/L)																									
WBW-1	0/13	100%	0.005-0.005	0.005	0.005	0.005		1.807E-20	1.344E-10	2.688E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA			0.0050	0.100		
WAP-01	0/15	100%	0.005-0.005	0.005	0.005	0.005		7.744E-21	8.8E-11	1.76E-08	0.1	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/15	100%	0.005-0.01	0.00533	0.005	0.0065		0.000001667	0.001291	0.2421	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-03	0/15	100%	0.005-0.01	0.00533	0.005	0.0065		0.000001667	0.001291	0.2421	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-12	0/12	100%	0.005-0.01	0.00542	0.005	0.00725		0.000002083	0.001443	0.2665	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.005	N			N	FALSE
WAP-13	0/12	100%	0.005-0.01	0.00542	0.005	0.00725		0.000002083	0.001443	0.2665	0.1	mg/L	N	0	0	NA	NA	NA	NA	0.005	N			N	FALSE
CCR Appendix-IV: Cobalt, Total (mg/L)																									
WBW-1	0/14	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.006	mg/L	N	0	0	NA	NA	NA				0.0006	0.006		
WAP-01	1/14	93%	0.0005-0.0005	0.000506	0.0005	0.0005315	0.00059	5.786E-10	0.00002405	0.0475	0.006	mg/L	N	0	0	NA	NA	NA	NA						
WAP-02	0/12	100%	0.0005-0.0005	0.0005	0.0005	0.0005		0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-03	5/12	58%	0.0005-0.0005	0.00085	0.0005	0.002115	0.0025	4.164E-07	0.0006453	0.7594	0.006	mg/L	N	0	0	No	No	Stable	Non-parametric	NS	N			Y	FALSE
WAP-12	4/12	67%	0.0005-0.0005	0.00062	0.0005	0.001101	0.0015	8.361E-08	0.0002892	0.4668	0.006	mg/L	N	0	0	Yes	No	Stable	Non-parametric	NS	N			Y	FALSE
WAP-13	7/12	42%	0.0005-0.0005	0.000621	0.00058	0.0009395	0.00111	3.164E-08	0.0001779	0.2866	0.006	mg/L	N	0	0	No	No	Stable	Non-parametric	NS	N			Y	FALSE
CCR Appendix-IV: Fluoride (mg/L)																									
WBW-1	1/15	93%	0.1-0.1	0.1	0.1	0.1	0.1	1.983E-18	1.408E-09	1.408E-08	4	mg/L	N	0	0	No	No	NA	Non-parametric			0.140	4.00		
WAP-01	2/15	87%	0.1-0.1	0.105	0.1	0.133	0.14	0.0001552	0.01246	0.119	4	mg/L	N	0	0	No	No	NA							
WAP-02	1/15	93%	0.1-0.1	0.103	0.1	0.112	0.14	0.0001067	0.01033	0.1006	4	mg/L	N	0	0	No	No	Stable	Non-parametric	0.10	N			N	FALSE
WAP-03	9/15	40%	0.1-0.1	0.141	0.13	0.213	0.22	0.001964	0.04431	0.315	4	mg/L	N	0	0	No	No	Stable	Non-parametric	0.17	Y			N	FALSE
WAP-12	1/15	93%	0.1-0.1	0.104	0.1	0.118	0.16	0.00024	0.01549	0.149	4	mg/L	N	0	0	No	No	Stable	Non-parametric	0.10	N			N	FALSE
WAP-13	4/15	73%	0.1-0.1	0.119	0.1	0.203	0.21	0.001464	0.03826	0.3206	4	mg/L	N	0	0	No	No	Stable	Non-parametric	0.10	N			N	FALSE
CCR Appendix-IV: Lead, Total (mg/L)																									
WBW-1	0/13	100%	0.001-0.01	0.00192	0.001	0.0055		0.000006202	0.00249	1.295	0.015	mg/L	N	0	0	NA	NA	NA	Non-parametric			0.0100	0.015		
WAP-01	4/15	73%	0.001-0.01	0.00212	0.001	0.006192	0.00456	0.000005708	0.002389	1.125	0.015	mg/L	N	0	0	Yes	No	Stable							
WAP-02	0/15	100%	0.001-0.0025	0.00127	0.001	0.0025		3.167E-07	0.0005627	0.4443	0.015	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-03	0/15	100%	0.001-0.0025	0.00127	0.001	0.0025		3.167E-07	0.0005627	0.4443	0.015	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-12	0/12	100%	0.001-0.0025	0.00133	0.001	0.0025		3.788E-07	0.0006155	0.4616	0.015	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-13	0/12	100%	0.001-0.0025	0.00133	0.001	0.0025		3.788E-07	0.0006155	0.4616	0.015	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
CCR Appendix-IV: Lithium, Total (mg/L)																									
WBW-1	0/14	100%	0.01-0.01	0.01	0.01	0.01		5.004E-20	2.237E-10	2.237E-08	0.04	mg/L	N	0	0	NA	NA	NA	Non-parametric			0.012	0.040		
WAP-01	1/14	93%	0.01-0.01	0.0101	0.01	0.01056	0.0116	1.829E-07	0.0004276	0.04228	0.04	mg/L	N	0	0	No	No	NA							
WAP-02	3/12	75%	0.01-0.01	0.0102	0.01	0.011	0.011	1.515E-07	0.0003892	0.03829	0.04	mg/L	N	0	0	No	No	NA	Non-parametric	NS	N			Y	FALSE
WAP-03	0/12	100%	0.01-0.01	0.01	0.01	0.01		5.914E-20	2.432E-10	2.432E-08	0.04	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-12	0/12	100%	0.01-0.05	0.0133	0.01	0.028		0.0001333	0.01155	0.866	0.04	mg/L	N	0	1	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-13	6/12	50%	0.01-0.01	0.0347	0.011	0.14	0.151	0.002518	0.05018	1.444	0.04	mg/L	Y	2	0	No	No	Decreasing	Non-parametric	NS	N			Y	FALSE

Winyah South Ash Pond

Assessment Monitoring Statistical Analysis Summary

Prepared: October 21, 2020

CCR Appendix-IV: Mercury, Total (mg/L)																							
WBW-1	0/12	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA			0.0002	0.0020		
WAP-01	0/12	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/11	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-03	0/10	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-12	0/11	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-13	0/10	100%	0.0002-0.0002	0.0002	0.0002	0.0002		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
CCR Appendix-IV: Molybdenum, Total (mg/L)																							
WBW-1	0/14	100%	0.01-0.05	0.0129	0.01	0.024		0.0001143	0.01069	0.8315	0.1	mg/L	N	0	0	NA	NA	NA				0.050	0.10		
WAP-01	0/14	100%	0.01-0.01	0.01	0.01	0.01		5.004E-20	2.237E-10	2.237E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA						
WAP-02	0/11	100%	0.01-0.01	0.01	0.01	0.01		4.337E-20	2.083E-10	2.083E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-03	0/11	100%	0.01-0.01	0.01	0.01	0.01		4.337E-20	2.083E-10	2.083E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-12	0/11	100%	0.01-0.01	0.01	0.01	0.01		4.337E-20	2.083E-10	2.083E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
WAP-13	0/11	100%	0.01-0.01	0.01	0.01	0.01		4.337E-20	2.083E-10	2.083E-08	0.1	mg/L	N	0	0	NA	NA	NA	NA	NS	N			Y	FALSE
CCR Appendix-IV: Radium-226 & 228 (pCi/L)																							
WBW-1	7/14	50%	0-4	3.17	4	4.304	4.33	2.423	1.557	0.4913	5	pCi/L	N	0	0	No	No	Stable				5.97	6.0		
WAP-01	9/14	36%	4-4	3.55	4	5.82	5.97	2.561	1.6	0.4509	5	pCi/L	Y	2	0	Yes	No	Stable	Non-parametric						
WAP-02	14/15	7%	4-4	6.29	6.15	7.846	8.35	1.423	1.193	0.1895	5	pCi/L	Y	14	0	No	No	Stable	Normal	7.420	Y			N	FALSE
WAP-03	10/14	29%	4-4	3.46	4	4.432	4.64	1.763	1.328	0.384	5	pCi/L	N	0	0	Yes	No	Stable	Non-parametric	3.800	Y			N	FALSE
WAP-12	14/14	0%	-	5.08	5.12	6.574	6.71	1.282	1.132	0.2227	5	pCi/L	Y	7	0	No	No	Stable	Normal	3.930	Y			N	FALSE
WAP-13	11/14	21%	4-4	4.21	4.065	6.116	6.35	1.467	1.211	0.2874	5	pCi/L	Y	3	0	No	No	Stable	Normal	3.100	Y			N	FALSE
CCR Appendix-IV: Selenium, Total (mg/L)																							
WBW-1	0/13	100%	0.01-0.02	0.0115	0.01	0.02		0.0000141	0.003755	0.3255	0.05	mg/L	N	0	0	NA	NA	NA				0.020	0.050		
WAP-01	0/15	100%	0.01-0.02	0.0113	0.01	0.02		0.00001238	0.003519	0.3105	0.05	mg/L	N	0	0	NA	NA	NA							
WAP-02	0/15	100%	0.005-0.02	0.011	0.01	0.02		0.000015	0.003873	0.3521	0.05	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-03	0/15	100%	0.005-0.02	0.011	0.01	0.02		0.000015	0.003873	0.3521	0.05	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-12	0/12	100%	0.005-0.02	0.0112	0.01	0.02		0.00001875	0.00433	0.3849	0.05	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
WAP-13	0/12	100%	0.005-0.02	0.0112	0.01	0.02		0.00001875	0.00433	0.3849	0.05	mg/L	N	0	0	NA	NA	NA	NA	0.010	N			N	FALSE
CCR Appendix-IV: Thallium, Total (mg/L)																							
WBW-1	0/12	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA				0.001	0.002		
WAP-01	0/12	100%	0.0001-0.001	0.000925	0.001	0.001		6.75E-08	0.0002598	0.2809	0.002	mg/L	N	0	0	NA	NA	NA	NA						
WAP-02	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-03	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-12	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE
WAP-13	0/11	100%	0.001-0.001	0.001	0.001	0.001		0	0	0	0.002	mg/L	N	0	0	NA	NA	NA	NA	0.001	N			N	FALSE

NS=Not sampled