Hart Exhibit 38
Docket No. E-7, Sub

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Sep 21 2020

(SFH) what is on back page?

Ash Basin Groundwater Summaries

November 4, 2013

+ assessments?

- table of receptor statuses & actions (w/ timeline?)
- table of closure statutes & timeline.
- tie closure costs/time to GW impacts/receptors?
  eg, MSS, RBSS, Cokerville, BSS, & USF since first plan
- table of the bottom ash actions w/ dates
- dep. item on dewatering of USF – pros/cons
- deep info from Baker Plant
- receptors & WHE GW issues around ADJT complex?

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Plant Summary	Exceedance of primary standards	Exceedance of secondary standards	Active regulatory interest	Potential receptors	Corrective Action
Indiana					
Cayuga	✓	✓		✓	✓
Edwardsport IGCC					✓
Gallagher Cell A and Secondary	✓	✓			
Gallagher Pond B Ash Basin		✓			
Gibson East Ash Pond System	✓	✓		✓	✓
Gibson North Ash Pond	✓	✓			
Wabash River Station		✓			
Ohio & Kentucky					
W. C. Beckjord Ash Pond A		✓		✓	✓
W. C. Beckjord C & C Extension		✓			
East Bend		✓			
Miami Fort		✓			
North Carolina & South Carolina					
Allen Steam Station	✓	✓	✓		
Asheville Plant	✓	✓	✓	✓	
Belews Creeks (NC)		✓	✓		
Buck Steam Station (NC)	✓	✓	✓		
Cape Fear Plant	✓	✓	✓		
Cliffside Steam Station (NC)		✓	✓		
Dan River Steam Station (NC)	✓	✓	✓		
Lee Plant	✓	✓	✓		
WS Lee Steam Station (SC)	✓	✓	✓		
Marshall Steam Station (NC)		✓	✓		
Mayo Plant	✓	✓	✓	✓	
Riverbend Steam Station (NC)		✓	✓		
Robinson Plant	✓				
Roxboro Plant		✓	✓		
Sutton Plant	✓	✓	✓	✓	
Weatherspoon Plant		✓	✓		

Note: "Primary standards" includes boron.

[redacted]

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[redacted]

✓	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
✓	Potential receptors
✓	Corrective Action

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Site: Cayuga Station

Facility: Primary and Secondary Ash Basins

Parameters/Concentrations/Standards: There has been one exceedance of a primary standard for selenium in one of the ash pond monitoring wells. There have been multiple exceedances of secondary standards in 4 monitoring wells. The secondary standard exceedances are for sulfate and total dissolved solids (TDS). Boron, which does not have a groundwater standard or drinking water limit in Indiana, has a concentration greater than 2 mg/L in each of the ash pond monitoring wells.

Receptors: There were three residential receptors and one industrial facility with elevated boron concentrations as well as elevated concentrations of secondary standards. The industrial well has other contaminant issues resulting from their operations and is not used as a drinking water source.

Mitigation Completed: There were three residential receptors with elevated boron concentrations as well as elevated concentrations of secondary standards. One of the residences has been demolished, and the other two were connected to a municipal water supply.

Status & Schedule:

• Cease sluicing of ash to Ash Disposal Area #1	January 2015
• Begin placement of structural fill to establish final cover slope	May 2015
• Reduce Normal Pool Elevation of Primary Ash Settling Basin from ~EL 509 to ~EL 487	January 2017
• Begin construction of final cover system	May 2017
• Complete placement of structural fill to establish final cover slope	November 2023
• Complete construction of final cover system	November 2024
• Submittal of closure certification for Ash Disposal Area #1	March 2025

Comments: An ash pond closure plan has been approved by the Indiana Department of Environmental Management (IDEM). Groundwater modeling has predicted that pond closure activities will address the ash pond related impact.

[redacted]

	Exceedance of primary standards
	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
✓	Corrective Action

Site: Edwardsport IGCC

Facility: Primary and Secondary Basins

Parameters/Concentrations/Standards: There are no groundwater monitoring wells at the Edwardsport IGCC. This is a voluntary program in Indiana and with the plan several years ago to clean out the basins and convert to water treatment ponds, groundwater monitoring wells were not installed.

Receptors: The only known receptor is the White River.

Mitigation Completed: None

Status & Schedule:

Comments: During construction of the IGCC the Legacy Edwardsport Ash Basins were cleaned out and a liner installed for the use of water treatment at the IGCC. If this system went away then we would probably be required to go back and fulfill the IDEM requirements for ash pond closure. IDEM was aware of our intentions from the beginning.

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✓	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Gallagher Generating Station

Facility: Cell A and Secondary Ash Basin

Parameters/Concentrations/Standards: Exceedances of the Indiana groundwater standards have been detected at the compliance boundary in multiple wells. These exceedances are for iron, manganese, pH, sulfate and TDS (secondary standards) and arsenic (primary standards).

Receptors: The only known receptor is the Ohio River. Groundwater migration into the Ohio River is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk.

Mitigation Completed: None

Status & Schedule:

Comments: Gallagher Station has evaluated ash pond closure options, clean closure and cap in place. Final decision will be made once the ELG and CCR Rules are finalized. Through this process we have evaluated the potential water treatment pond needs in the future.

	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

Site: Gallagher Generating Station

Facility: Pond B Ash Basin

Parameters/Concentrations/Standards: Exceedances of the Indiana groundwater standards have been detected at the compliance boundary in multiple wells. These exceedances are for iron, manganese, pH, sulfate and TDS (secondary standards). There are no exceedances of primary standards at Gallagher Pond B Ash Basin.

Receptors: The only known receptor is the Ohio River. Groundwater migration into the Ohio River is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk.

Mitigation Completed: None

Status & Schedule:

Comments: The Gallagher Landfill is constructed over Pond B ash basin and semi-annual ground water monitoring is conducted as compliance with the Gallagher Landfill RWS I FP 22-01 Permit.

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✓	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
✓	Potential receptors
✓	Corrective Action

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Site: Gibson Station

Facility: East Ash Pond System

Parameters/Concentrations/Standards: There have been exceedances of the USEPA primary MCL for arsenic in 10 of the 32 monitoring wells, although some of these exceedances may be naturally occurring. There have been multiple exceedances of secondary MCLs for chloride, iron, manganese, sulfate, pH, and total dissolved solids. Boron (which does not have an MCL or drinking water limit in Indiana) has a concentration greater than 2 mg/L in 25 of the 32 ash pond monitoring wells.

Receptors: There were residential receptors with elevated boron concentrations that have been connected to a municipal water supply.

Mitigation Completed: The East Ash Pond System consists of 3 cells. One cell has been closed by capping in place and a second is being capped. One cell remains active and receives sluiced ash. There were residential receptors with elevated boron concentrations that have been connected to a municipal water supply.

Status & Schedule:

- Submittal of partial closure certification for Cell 3 January 2014 (already complete ahead of schedule)
- Cell 1 closure will occur between 2014 and 2017
- Cell 2 closure originally scheduled between 2017 to 2020 but may close ahead of schedule

Comments: An ash pond closure plan has been approved by the Indiana Department of Environmental Management (IDEM). Groundwater modeling has predicted that pond closure activities will address the ash pond related impact

[redacted]

✓	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Gibson Station

Facility: North Ash Pond

Parameters/Concentrations/Standards: There have been exceedances of the USEPA primary standards for arsenic in the single down gradient monitoring well, although the arsenic may be naturally occurring. There have been exceedances of secondary standards for iron, manganese, sulfate, and total dissolved solids. Boron (which does not have an MCL or drinking water limit in Indiana) has a concentration greater than 2 mg/L in the down gradient monitoring well.

Receptors: The only known receptor is the Wabash River. Groundwater migration into the Wabash River is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk.

Mitigation Completed: None

Status & Schedule:

Comments: This pond will stop receiving fly ash but will continue to receive bottom ash starting in late 2013 when Gibson's dry fly ash handling system is commissioned.

[redacted]

	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

Site: Wabash River Station Generating Station

Facility: Primary, Secondary and South (lined) Ash Basin

Parameters/Concentrations/Standards: Exceedances of the Indiana groundwater standards have been detected at the compliance boundary in multiple wells. These exceedances are for iron, manganese, and TDS (secondary standards). There are no exceedances of primary standards at Wabash River Station.

Receptors: The only known receptor is the Wabash River. Groundwater migration into the Wabash River is insignificant relative to the volume/flow of the river; therefore there are no environmental or health risk

Mitigation Completed: None

Status & Schedule:

Comments: Wabash River Station has evaluated ash basin closure options, either clean closure or cap in place. Final decision will be made once the ELG and CCR Rules are finalized

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Ohio/Kentucky

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	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
✓	Potential receptors
✓	Corrective Action

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Site: W.C. Beckjord Station

Facility: Ash Pond A

Parameters/Concentrations/Standards: Exceedances of the OH groundwater standards have been detected within the ash pond boundary and inside the compliance boundary in multiple wells. These exceedances are for sulfate, and pH (secondary standards). There have been exceedances of primary standards for selenium at two wells in the Ash Pond A groundwater monitoring network. The two wells which had exceedances for selenium are either inside the ash pond or just at the ash pond boundary. Groundwater from the area around these wells is not at risk for reaching the drinking water receptors mentioned below because it is located within the capture zone of the interceptor well.

Receptors: There are drinking water receptors just north of this ash basin. The Pierce Union Batavia drinking water wells which feed the public water system in the area border the Beckjord Station property. Sulfate was found above the secondary drinking water standard in the public drinking water wells in the late 80's. The sulfate contamination was attributed to the Beckjord Station Ash Pond A. There is no environmental or health risk to the public drinking water wells since mitigation has been completed for this site to address the sulfate contamination. There is also groundwater migration into the Ohio River, but it is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk related to migration to the Ohio River.

Mitigation Completed: In the late 80's and early 90's, after sulfate levels were found to be above secondary drinking water standards in public drinking water wells bordering Beckjord Station property, a four phase study was done to confirm that the sulfate contamination could be attributed to Ash Pond A. A mitigation plan was put in place which included an interceptor well and a groundwater monitoring network which continues to be monitored quarterly. The interceptor well has successfully been intercepting the groundwater migrating from the Ash Pond A area before it reaches the public drinking water wells. The discharge from the interceptor well is through an NPDES permitted outfall. No sulfate levels above secondary standards have been detected beyond the interceptor well since the well has been installed.

Status & Schedule.

Comments: Quarterly groundwater monitoring reports are submitted to the state and the county for review. Periodic meetings are held with the state and county to keep them informed of the monitoring program and of projects involving maintenance to the interceptor well. Both the county and state are satisfied with the program.

[redacted]

	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: W.C. Beckjord Station

Facility: Ash Ponds C & C Extension

Parameters/Concentrations/Standards: Exceedances of the OH groundwater standards have been detected at the compliance boundary in multiple wells. These exceedances are for iron, manganese, sulfate, TDS and pH (secondary standards). There are no exceedances of primary standards at these particular ash ponds at Beckjord Station to-date.

Receptors: There are no direct drinking water receptors for this ash basin complex. Groundwater migration into the Ohio River is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk.

Mitigation Completed: None needed

Status & Schedule:

Comments: There is no regulatory agency or public interest in this monitoring program to date.

[redacted]

	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: East Bend Station

Facility: Ash Pond

Parameters/Concentrations/Standards: Exceedances of the KY groundwater standards have been detected at the compliance boundary in multiple wells. These exceedances are for chloride, iron, manganese, sulfate and TDS (secondary standards). There are no exceedances of primary standards at this ash pond at East Bend Station to-date.

Receptors: There are no direct drinking water receptors for this ash basin complex. Groundwater migration into the Ohio River is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk.

Mitigation Completed: At Kentucky Department of Environmental Protection's (KDEP) request, a human health and environmental risk assessment was completed several years ago and found no risk to human health or the environment under the current conditions. The deed to specific parcels of property at East Bend Station was modified to prohibit the installation of residential drinking water wells on the property in the future.

Status & Schedule:

Comments: One well in particular exhibits an upward trend for key indicator parameters such as chloride and sulfate. While there is no environmental or human health risk identified, actions are under way to reverse the upward trends. KDEP has been notified and has not indicated they are interested in taking any action to elevate the issue at this time.

	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Miami Fort Station

Facility: Ash Ponds A and B

Parameters/Concentrations/Standards: Exceedances of the OH groundwater standards have been detected at the compliance boundary in multiple wells. These exceedances are for chloride, iron, manganese, sulfate, TDS and pH (secondary standards). There have been exceedances of the primary standard for arsenic. This has been in one well, and it has been clearly defined as a "site condition" issue and not a condition related to the ash ponds.

Receptors: There are no direct drinking water receptors for this ash basin complex. Groundwater migration into the Ohio River is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk.

Mitigation Completed: None needed.

Status & Schedule:

Comments: There is no regulatory agency or public interest in this monitoring program to-date. The Ohio EPA was approached about the arsenic exceedance and accepts that it is not related to the ash pond based on additional data gathered with their input.

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North Carolina/South Carolina

[redacted]

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✓	Exceedance of primary standards
✓	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Allen Steam Station (NC)

Facility: Ash Basin System

Parameters/Concentrations/Standards: Exceedances of NC groundwater standards have been detected in multiple compliance boundary wells. These exceedances are for boron, iron, manganese, nickel and pH.

Boron exceedances have been consistently detected in one well (AB-9S), and that well is located inside of the 500-foot compliance boundary. Model projections indicate the concentrations would still exceed the State standard at the compliance boundary. The boron concentrations have remained relatively steady and only slightly above the State standard (historical exceedances range from 708-735 µg/L. State standard is 700 µg/L)

Nickel exceedances have also been consistently detected in one well (AB-14D), and the concentrations have been trending downward toward the State standard. The most recent sampling event indicated a nickel concentration of 104 µg/L, the lowest concentration since monitoring began (historical exceedances range from 104-544 µg/L; State standard is 100 µg/L). Groundwater in this well may be affected by identified off-site scrap metal deposited adjacent to the well

Exceedances for iron, manganese and pH are widespread, but these parameters only have federal secondary MCLs

Receptors: The only known receptor is the Catawba River/Lake Wylie. Groundwater migration into the Catawba River is insignificant relative to the volume/flow of the river therefore there is no environmental or health risk.

There are some neighbors on the west side of the ash basin in close proximity to the waste boundary, but there has been no evidence of impacts from the ash basin.

Mitigation Completed: None

Status & Schedule: On August 16, 2013, NCDENR filed a complaint alleging violations at several Duke coal-fired stations, including Allen Steam Station, related to ash basin seepage and groundwater monitoring data that show some concentrations above groundwater standards. A consent order between NCDENR and Duke is likely to be reached in the months ahead.

Comments: No federal MCL exists for boron or nickel. Only federal secondary MCLs exist for iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances.

[redacted]

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[redacted]

✓	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
✓	Potential receptors
	Corrective Action

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Site: Asheville Plant

Facility:
Two separate ash basins with one compliance boundary monitoring network consisting of 3 background wells and 8 compliance wells. Monitoring began in fall 2010 and is current through July 2013.

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at multiple wells during multiple events for primary standard chromium, nitrate, selenium and thallium. The chromium exceedances were at one background well and one compliance well. The nitrate exceedance was a one-time event at one well. The selenium and thallium exceedances are more problematic The remaining exceedances are for boron, chloride, iron, manganese, sulfate, total dissolved solids (TDS) and pH (secondary standards).

Receptors: Development around the Plant is on municipal water. However, a receptor survey identified five private wells sidegradient from the Plant. Groundwater flow is toward the French Broad River. Testing completed above and below the Asheville Plant in the river shows no environmental or health risk. As of October 23, 2013, DENR Asheville Regional Office required the company to supply water to the residence at 38 Bear Leah Trail due to high iron and manganese results at the well at this address. The company voluntarily agreed to also supply water to 40 Bear Leah Trail (both residences owned by same owner). Both of these residences are sidegradient from the Plant.

Actions Completed: Actions completed per DENR Asheville Regional Office include a groundwater receptor survey within ½ mile from ash basin compliance boundary and a groundwater Site Conceptual Model. The results of both have been submitted to DENR Asheville Regional Office.

Status & Schedule:

Comments: Asheville Plant is the target of recent state enforcement action resulting from a threatened CWA citizen suit. The DENR letter dated October 23, 2013 requires the company to prepare a work plan and submit to DENR within 45 days from the date of the letter (by December 7, 2013).

	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Belews Creek Steam Station (NC)

Facility: Ash Basin

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at the compliance boundary in multiple wells. The exceedances are mostly iron and manganese. All of the wells including the background have low pH. There have also been historical exceedances of chromium (January 2011) in the deep background well and thallium (September 2012) in a network well. Recent sampling events have demonstrated no exceedances of these parameters. The well with thallium exceedance appears to be flowing towards the ash basin (rather than away).

The Belews Creek Ash Basin began an approved NCDENR assessment with the May 2013 sampling event. Assessment completion is expected in November 2013.

Receptors: The Belews Creek Ash Basin groundwater generally flows towards an unnamed tributary that flows northward to the Dan River. Currently there is no environmental or health risk.

Mitigation Completed: None

Status & Schedule: Assessment suspension was requested on September 30, 2013 until the outcome of pending litigation is realized. As of October 25, 2013 no return communication has been received from NCDENR.

Comments: Only federal secondary MCLs exist for TDS, iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances.

Duke

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✓	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Buck Steam Station (NC)

Facility: Additional Primary, Old Primary and Secondary Ash Basins

Parameters/Concentrations/Standards: Exceedances of NC groundwater standards have been detected in multiple compliance boundary wells. These exceedances are for boron, chromium, iron, manganese, sulfate, TDS and pH.

Boron exceedances have been consistently detected in one well (MW-11D), and concentrations have remained steady (historical exceedances range from 1,130-1,290 µg/L; State standard is 700 µg/L).

Chromium exceedances were historically detected in one well, but the last exceedance was in November 2011.

Sulfate exceedances have been consistently detected in one well (MW-10D), and concentrations have remained relatively steady (historical exceedances range from 320-380 mg/L; State standard is 250 mg/L).

TDS exceedances have been consistently detected in one well (MW-10D), and concentrations are generally increasing, with the most recent sampling event detecting the highest historical concentration (historical exceedances range from 561-660 mg/L. State standard is 500 mg/L).

Exceedances for iron, manganese and pH are widespread, but these parameters only have federal secondary MCLs.

Receptors: The only known receptor is the Yadkin River. Groundwater migration into the Yadkin River is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk.

There are some neighbors to the southeast of the old primary and secondary ash basins in close proximity to the waste boundary, but there has been no evidence of impacts from the ash basin.

Mitigation Completed: None

Status & Schedule: On August 16, 2013, NCDENR filed a complaint alleging violations at several Duke coal-fired stations, including Buck Steam Station, related to ash basin seepage and groundwater monitoring data that show some concentrations above groundwater standards. A consent order between NCDENR and Duke is likely to be reached in the months ahead.

Comments: HDR has been selected for conceptual site closure of the Buck ash basin system. Site investigation will be ongoing during Fall 2013, and it is anticipated that ash basin closure activities would begin during 2014.

Chromium is currently below the State standard. No federal MCL exists for Boron. Only federal secondary MCLs exist for sulfate, TDS, iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances. Only iron, manganese and pH are being detected above 2L standards in wells located between the ash basins and residences.

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✓	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

Site: Cape Fear Plant

Facility: Five separate ash basins with one compliance boundary monitoring network consisting of 2 background wells and 11 compliance wells. Monitoring began in fall 2010 and is current through June 2013.

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at multiple wells during multiple events for primary standards. One exceedance at one well for arsenic and cadmium (not same well and not same sampling event). One background well and one compliance well had an exceedance for antimony during the December 2010 sampling event (first event, believed artifact from well installation). Compliance well CMW-3 consistently above standard for selenium. The remaining exceedances are for boron, iron, manganese, sulfate, total dissolved solids (TDS) and pH (secondary standards).

Receptors: The only known receptor is the Cape Fear River. Testing completed above and below the Cape Fear Plant in the river shows no environmental or health risk.

Actions Completed: None

Status & Schedule:

Comments: The entire Cape Fear Plant has recently closed (coal units and combustion turbine units). Field investigations for ash basin closure began in summer 2013.

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	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Cliffside Steam Station (NC)

Facility: Active Ash Basin

Parameters/Concentrations/Standards: Exceedances of NC groundwater standards have been detected in multiple compliance boundary wells. These exceedances are for chromium, iron, manganese, sulfate, TDS and pH.

Chromium concentrations were historically detected in two wells, but the only exceedances were detected during the initial sampling event in April 2011.

Sulfate exceedances were historically detected in one well (MW-23D), but the last exceedance of the State standard was in December 2012.

TDS exceedances have been consistently detected in one well (MW-23D), and concentrations are increasing, with the most recent sampling event detecting the highest historical concentration (historical exceedances range from 590-820 mg/L; State standard is 500 mg/L).

Exceedances for iron, manganese and pH are widespread, but these parameters only have federal secondary MCLs.

Receptors: The only known receptor is the Broad River. Groundwater migration into the Broad River is insignificant relative to the volume/flow of the river, therefore there is no environmental or health risk.

Mitigation Completed: None

Status & Schedule: On August 16, 2013, NCDENR filed a complaint alleging violations at several Duke coal-fired stations, including Cliffside Steam Station, related to ash basin seepage and groundwater monitoring data that show some concentrations above groundwater standards. A consent order between NCDENR and Duke is likely to be reached in the months ahead.

Comments: Chromium and sulfate are currently below their State standards. Only federal secondary MCLs exist for TDS, iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances.

✓	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Dan River Steam Station (NC)

Facility: Primary and Secondary Ash Basins

Parameters/Concentrations/Standards: Exceedances of NC groundwater standards have been detected in multiple compliance boundary wells. These exceedances are for antimony, arsenic, boron, iron, manganese, sulfate, TDS and pH.

Antimony exceedances have been historically detected in two wells and currently in one well (MW-22D). The current antimony exceedances in MW-22D appear to be decreasing and are only slightly above the State standard (the last two concentrations were 1.06 µg/L; the interim maximum allowable concentration (IMAC) for antimony is 1.0 µg/L). Reliability of antimony concentrations is uncertain since the antimony IMAC of 1.0 µg/L is the same as the laboratory detection limit of 1.0 µg/L.

Arsenic exceedances have been consistently detected in one well (MW-21S), and concentrations appear to be generally decreasing, with the lowest historical concentration measured during the most recent sampling event (historical exceedances range from approximately 21-45 µg/L; State standard is 10 µg/L).

Boron exceedances have been detected in two wells (MW-22D and MW-22S), and the timing of exceeding concentrations is intermittent. Boron exceedances in MW-22D have fluctuated above and below the State boron standard of 700 µg/L, with 3 of the last 5 sampled concentrations in excess of the standard. MW-22S experienced its first boron exceedance (903 µg/L) during the most recent sampling event in May 2013.

Sulfate exceedances have been consistently detected in one well (MW-21D), and concentrations have remained relatively steady (historical exceedances range from 310-350 mg/L; State standard is 250 mg/L).

TDS exceedances have been consistently detected in one well (MW-21D), and concentrations appear to be steady or slightly increasing (historical exceedances range from 643-770 mg/L, State standard is 500 mg/L).

Exceedances for iron, manganese and pH are widespread, but these parameters only have federal secondary MCLs.

Receptors: The only known receptor is the Dan River. Groundwater migration into the Dan River is insignificant relative to the volume/flow of the river, therefore there is no environmental or health risk.

Mitigation Completed: None

Status & Schedule: On August 16, 2013, NCDENR filed a complaint alleging violations at several Duke coal-fired stations, including Dan River Steam Station, related to ash basin seepage and groundwater monitoring data that show some concentrations

above groundwater standards. A consent order between NCDENR and Duke is likely to be reached in the months ahead.

Comments: AMEC has been selected for conceptual site closure of the Dan River ash basin system. Site investigation will be ongoing during Fall 2013, and it is anticipated that ash basin closure activities would begin during 2014.

Arsenic concentrations are currently above the federal primary MCL in MW-22D. While antimony concentrations are above the State IMAC, they are well below the federal primary MCL. No federal MCL exists for Boron. Only federal secondary MCLs exist for sulfate, TDS, iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances. Only iron manganese and pH are being detected above 2L standards in wells located between the ash basins and residences.

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✓	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Lee Plant (NC)

Facility: The 'active' ash basin compliance monitoring network consists of 2 background wells and 6 compliance wells. Monitoring began in fall 2010 and is current through June 2013. The three inactive ash basins have a separate compliance monitoring network that consists of 1 background well and 4 compliance wells. Monitoring began in fall 2011 and is current through June 2013.

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at multiple wells during multiple events for the active ash basin for primary standards. Well CMW-10 has had chromium exceedances while well CMW-6 consistently exceeds the arsenic standard (50 fold). This well was approximately 80 feet from the ash basin. The company purchased additional property to obtain the full 500 foot compliance boundary and installed a replacement well. However the replacement well consistently exceeds the arsenic standard by a factor of 2.5. The remaining exceedances are for boron, iron, manganese and pH (secondary standards).

Exceedances of the NC groundwater standards have been detected at multiple wells during multiple events for the inactive ash basins. The exceedances are for boron, iron, manganese, total dissolved solids (TDS) and pH (secondary standards). There are no exceedances of primary standards at the inactive ash basins.

Receptors: The only known receptor is the Neuse River. Testing completed above and below the Lee Plant in the river shows no environmental or health risk.

Actions Completed: None

Status & Schedule:

Comments: The coal units at Lee Plant have recently closed. Field investigations for ash basin closure began in summer 2013.

✓	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: WS Lee Steam Station (SC)

Facility: Primary and Secondary Ash Basins

Parameters/Concentrations/Standards: Exceedances of State MCLs have been detected in multiple NPDES wells. These exceedances are for iron, manganese, and pH.

Exceedances for iron, manganese and pH are widespread, but these parameters only have federal secondary MCLs.

Receptors: The only known receptor is the Saluda River. Groundwater migration into Saluda River is insignificant relative to the volume/flow of the river; therefore there is no environmental or health risk.

Mitigation Completed: None

Status & Schedule:

Comments: Although there is no MCL for boron in South Carolina, boron concentrations in three of the wells are in excess of the North Carolina groundwater standard for boron. Only federal secondary MCLs exist for iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances.

	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Marshall Steam Station (NC)

Facility: Ash Basin

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at the compliance boundary in multiple wells. The exceedances are mostly iron and manganese. All of the wells except one have had consistent low pH levels. One well pair (deep and shallow) have had exceedances of the 2L standards for boron, sulfate, and TDS. The trend in this well pair is generally decreasing for boron, sulfate, and TDS

Exceedances for iron, manganese and pH are widespread, but these parameters only have federal secondary MCLs.

Receptors: The only known receptor is Lake Norman. Groundwater migration into Lake Norman is insignificant relative to the volume/flow of the lake: therefore there is no current environmental or health risk.

Mitigation Completed: None

Status & Schedule: A suspension of the proposed Assessment Work Plan was requested on September 11, 2013 until the outcome of pending litigation is realized. As of October 25, 2013 no return communication has been received from NCDENR.

Comments: Only federal secondary MCLs exist for TDS, iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances.

Marshall Steam Station Ash Basin has an assessment work plan pending (submitted April 10, 2013) with NCDENR. The assessment will move forward when NCDENR provides notification.

✓	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
✓	Potential receptors
	Corrective Action

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Site: Mayo Plant

Facility: One ash basin with a compliance boundary monitoring network consisting of 2 background wells and 8 compliance wells. Monitoring began in fall 2010 and is current through July 2013.

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at multiple wells during multiple events for primary standards. One exceedance at one well for cadmium and thallium (not same well but the sampling event). Both background wells and one compliance well had exceedances for chromium. The remaining exceedances are for iron, manganese, total dissolved solids (TDS) and pH (secondary standards).

Receptors: Groundwater movement is toward Mayo Creek, distant from the ash basin. There are no known receptors between the ash basin and Mayo Creek.

Actions Completed: None

Status & Schedule:

Comments: The Mayo monofill is scheduled to open 1st quarter 2014. After which, no ash (bottom or fly) will go to the Mayo ash basin. The ash basin is scheduled to remain open for treatment of other Plant wastewater streams.

	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Riverbend Steam Station (NC)

Facility: Primary and Secondary Ash Basins

Parameters/Concentrations/Standards: Exceedances of NC groundwater standards have been detected in multiple compliance boundary wells. These exceedances are for iron, manganese, and pH.

Exceedances for iron, manganese and pH are widespread, but these parameters only have federal secondary MCLs.

Receptors: The only known receptor is Mountain Island Lake. Groundwater migration into Mountain Island Lake is insignificant relative to the volume/flow of the lake, therefore there is no environmental or health risk.

Mitigation Completed: None

Status & Schedule: A consent order has been signed between NCDENR and Duke to address ash basin seepage and exceedances of State groundwater standards. The interveners in the case are currently reviewing the consent order. The enforcement actions outlined in the consent order take effect once the judge presiding over the case grants approval, which is likely to occur after the first of the year

Comments: Riverbend is the target of recent state enforcement action resulting from a threatened CWA citizen suit.

Only federal secondary MCLs exist for iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances.

✓	Exceedance of primary standards
	Exceedance of secondary standards
	Active regulatory interest
	Potential receptors
	Corrective Action

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Site: Robinson Plant

Facility: One ash basin with a compliance boundary monitoring network consisting of 1 background well and 2 downgradient wells. Monitoring began in 1995 and is current through July 2013.

Parameters/Concentrations/Standards: Exceedances of the SC groundwater standards have been detected at multiple wells during multiple events for primary standards for arsenic and chromium. Arsenic exceedances have been observed in downgradient well MW-2 while chromium exceedances have been observed only in the background well. The remaining exceedances are for sulfate, total dissolved solids (TDS) and pH (secondary standards).

Receptors: Groundwater movement is toward Lake Robinson. There are no known receptors between the ash basin and Lake Robinson.

Actions Completed: None

Status & Schedule:

Comments: The only coal fired unit at Robinson has recently closed. There is a separate inactive ash basin at this site which does not have a groundwater monitoring network. Recent correspondence with DHEC established a date of March 17, 2017 by which the company must have completed the ash pond investigation for closure.

	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
	Potential receptors
	Corrective Action

Site: Roxboro Plant

Facility: Two ash basins with a compliance boundary monitoring network consisting of 1 background well and 7 compliance wells. Monitoring began in fall 2010 and is current through July 2013.

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at multiple wells during multiple events for primary standard chromium. This includes one background well and three compliance wells. The remaining exceedances are for iron, manganese, sulfate, total dissolved solids (TDS) and pH (secondary standards).

Receptors: Groundwater movement is toward Hyco Lake. There are no known receptors between the ash basins and Hyco Lake.

Actions Completed: None

Status & Schedule:

Comments: The Roxboro monofill receives Plant fly ash for disposal along with excess gypsum. The on-site monofill is being developed over the east ash basin to effectively cap and close this ash basin. The west ash basin is active and receives Plant bottom ash.

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Sutton / CF?

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✓	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
✓	Potential receptors
	Corrective Action

Site: Sutton Plant

Facility: Two ash basins with a compliance boundary monitoring network consisting of 2 background wells and 15 compliance wells. Monitoring began in summer 2012 and is current through June 2013.

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at multiple wells during multiple events for primary standard antimony arsenic, cadmium, lead, selenium and thallium The arsenic, cadmium and lead exceedances were only one time events (not same well, not same sampling event). The antimony exceedances were at one well in two separate events (out of three total). The selenium and thallium exceedances are more problematic. The remaining exceedances are for boron, iron, manganese, sulfate, total dissolved solids (TDS) and pH (secondary standards).

Receptors: The Cape Fear Public Utility Authority (CFPUA) has two wells on property adjacent to Sutton Plant. These two wells are approximately 2,500 feet from the ash basin compliance boundary. There are other non-potable wells used for industrial purposes which affect groundwater movement in the area of the ash basins (two separate concrete batch mix plants and the Sutton Plant). In October 2013, the company and the CFPUA agreed to a two year project to connect the area served by these two groundwater wells to the rest of the Wilmington, NC area drinking water system After which, all CFPUA wells adjacent to Sutton Plant will be abandoned The majority of the funding for this project came from the company

Actions Completed: Because of the boron plume at Sutton Plant, a two phase investigation was completed per DENR Wilmington Regional Office. The first phase consisted of the installation of nested temporary monitoring wells The second phase consisted of the installation of 13 permanent monitoring wells in fall 2011. Many of these monitoring wells were incorporated into the present monitoring network

Status & Schedule:

Comments: Sutton Plant coal fired units will close in fall 2013. Groundwater monitoring at this site began in the early 1990's. However, the wells were either inside the compliance boundary near the ash basins or very distant from the ash basins Monitoring of many of these wells was discontinued in summer 2012 when the present monitoring network began. Boron has been detected above NC standard at the property line

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	Exceedance of primary standards
✓	Exceedance of secondary standards
✓	Active regulatory interest
-	Potential receptors
	Corrective Action

Site: Weatherspoon Plant

Facility: The ash basin compliance boundary monitoring network consists of 1 background well and 3 compliance wells. Monitoring began in fall 2010 and is current through June 2013.

Parameters/Concentrations/Standards: Exceedances of the NC groundwater standards have been detected at the compliance boundary in multiple wells. These exceedances are for iron, manganese, and pH (secondary standards). There was an exceedance of primary standard thallium in the background well at Weatherspoon

Receptors: The only known receptor is the cooling pond at the site. There is no environmental or health risk.

Actions Completed: The coal fired units at Weatherspoon have closed. The ash basin field investigations have been completed and a closure design is nearly completed

Status & Schedule:

Comments: Submittal for ash basin closure to DENR for review and approval is expected in November 2013. Time frame for DENR review and approval is not known as this will be the first ash basin closure in the state. Once approval from DENR is received, time frame to complete closure is expected to be 1-5 years.

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Antimony is well below its federal primary MCL of 6.0 µg/L. Arsenic is in excess of its federal primary MCL of 10 µg/L (same as State standard for arsenic). No federal MCL exists for boron. Only federal secondary MCLs exist for sulfate, TDS, iron, manganese and pH. It is strongly believed that naturally occurring conditions contribute significantly to iron, manganese and pH exceedances.

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2012

[redacted]

I/A

Hart Exhibit 39
Docket No. E-7, Sub 1214

Plant Retirement
Comprehensive Program Plan

Revision Number: 1

Revision Date: 10/31/12

Program Manager: Issa Zarzar

Member of: Outage And Maintenance Services

Revision Summary

Date	Revision Summary
10/31/2012	Update program to include new retired facilities at legacy Progress Energy and legacy Duke Energy and incorporate best practices from both organizations.

Request for Approval

Purpose: ◉ Annual Review

○ Revision

Authorization to spend $35 million in 2013. Estimated total program cost is $300 million to $400 million* (which includes cost for fossil unit dismantlement and ash pond closure). Execute commitments in 2013 that will obligate future year spending estimated at $7.5 to $10 million.

Next key semi-annual approval expected in: May 2013. Expected program final completion date: 2020.

Strategy: Fossil units will be decommissioned and demolished to grade-level.
Ash pond closure will incorporate a cap and monitor strategy.

Designated Sites: Buck, Buzzard Roost, Cape Fear, Cliffside, Dan River, Lee (NC), Lee (SC), Morehead City, Riverbend, Robinson, Sutton, and Weatherspoon.

Baseline Assumptions:

- Closure facilities are listed in Table 1. Facilities in Florida and Midwest are not reflected at this time and could be added at a later date.
- No impacts to dismantlement and ash pond closure strategy due to new regulations
- Sites will be restored to an environmentally neutral state
- Preliminary cost estimates: Dismantlement ($6M per site on average) and Ash Pond Closure ($100K-300K/acre)
- A portion of the demolition cost may be offset by investment recovery from scrap metal

Notes or Exceptions:

- CT Peaker units at designated sites will remain operational
- Cooling ponds will be maintained

* Financial View

Approval Required

This CPP requires approval by the: Energy Supply Executive Governance Committee

Approvals

The parties signing below indicate by their signature that they, or the body they represent below, have reviewed the CPP and either recommend approval of or approve the above Request for Approval.

Action	Name [Type / Print]	Reviewing Position	Signature	Date
Recommend Approval	Issa Zarzar	Program Manager		11-29-2012
Recommend Approval	Randy Herrin	Department GM		11-29-2012
Recommend Approval	Paul Draovitch	Vice President		11-29-2012
Approval	Charlie Gates	Senior Vice President		11/29/12
Approval	Jeff Lyash	Executive Vice President		11/29/12

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1. Executive Summary

The Plant Retirement Comprehensive Program Plan (CPP) provides the overall plan for the retirement of coal-fired units, combustion turbine units, and ash ponds at designated Duke Energy Carolina, henceforth referred to as Company, sites. The Program provides the benchmarking, planning and execution of the strategy for retiring fossil units and ensures alignment with corporate strategy.

The Plant Retirement Program assumes the following:

- Fossil units will be decommissioned and demolished to grade-level.
- Environmental cleanup will include asbestos abatement, known hazardous and non-hazardous waste removal and chemical removal.
- The projects will include the restoration of remaining operating unit functionality due to decoupling existing site interfaces which are presently integrated into the coal-fired units.
- Ash pond closure will incorporate a cap and monitor strategy.
- The investment recovery strategy incorporates investment from the sale of inventory, assets and scrap metal.
- The rate recovery approach is to include the recovery of dismantlement costs for non-nuclear generation assets as part of the overall depreciation expense that is included in the cost of service rate request during the 2012 PEC and 2013 DEC rate cases.
- The roadmap and processes established are modeled to incorporate additional plant retirements and ash pond closures as dictated by corporate strategy.
- Program will utilize designated plant resources for decommissioning tasks and ash pond closure where applicable.

2. Program Overview

Designated units are being retired to ensure compliance with state and federal regulations and as part of the Company's fleet modernization strategy. The designated coal-fired units are non-scrubbed units and would require additional environmental controls to meet operational compliance beyond 2015. The Program is not expected to be limited to these sites. As the need arises, other plant retirements and ash ponds may be added.

The schedule of proposed dates for plant retirements is below in Table 1.

Table 1 – Proposed Plant Retirement Dates

Plant	Summer Capacity (MW)	In-Service Date of First Unit	Proposed/Retirement Date
Weatherspoon Units 1-3	171	1949	October 2011
Cliffside Units 1-4	198	1940	October 2011
Dan River Units 1-3	276	1949	April 2011
Buck Units 3 & 4***	113	1941	May 2011
Lee (NC) Units 1-3	397	1951	September 2012
Lee (NC) Old CTs	75		October 2012
Cape Fear**	316	1956	October 2012
Robinson Unit 1	177	1960	October 2012
Buzzard Roost CTs	196		October 2012
Buck Old CTs	62		October 2012
Dan River Old CTs	48		October 2012
Lee (SC) Old CTs	90	1968	January 2007
Riverbend Old CTs	64		October 2012
Cape Fear 2B CT	11		October 2012
Morehead City CT	12		October 2012
Sutton Units 1-3	575	1954	December 2013
Buck Units 5 & 6	256	1953	April 2015*
Riverbed Units 4 - 7****	454	1952	April 2015*
Lee (SC) 1-2 Coal Units and Material Handling	180	1951	April 2015

***Potential for early retirement**
****The Cape Fear project will include the dismantlement of inactive units (Units 1 & 2 CC, Unit 3 & 4 turbines and the boilers 1- 8) on the site. The in-service date for the first unit on-site is 1923.**
*****The Buck project will include the dismantlement of inactive units (Units 1 & 2) on the site.**
******The Riverbend project will include the dismantlement of inactive units (Units 1-3) on the site.**

The Plant Retirement Program provides the planning, design and execution of the scope and tasks necessary to restore the retired plant sites to a safe and environmentally neutral state. The Plant Retirement Program engages business units across the enterprise to ensure effective alignment of plant retirement initiatives with corporate strategy, public policy, legislative and regulatory initiatives and to

identify gaps in a timely manner. These efforts provide Duke Energy with a proactive approach to managing the retirement of fossil units.

The Plant Retirement Program seeks concurrence to proceed with executing a retirement strategy for the designated coal-fired units and ash ponds on the basis of the following elements:

1. Coal-fired and CT units will be decommissioned to a safe and environmentally neutral state,
2. Coal-fired and CT units will be demolished to grade-level, and
3. Ash ponds will be closed with a cap and monitor strategy.

Proposed funding requirements are estimated at $35 million for 2013. Pending approval to proceed, a detailed Project Execution Plan will be developed for each designated site.

3. Program Drivers

a. Legislative and Regulatory Expectations

Since 1990, federal and state environmental regulations have gradually been changing the landscape for coal-fired electric power generation. The Clean Air Act Amendments of 1990 brought the first 'cap and trade' program intended to significantly reduce emissions of NO_x and SO_2 through cascading limits on power plants. Other air emission reduction programs followed, including the North Carolina Clean Smokestacks Act that required the investment of over $2.8 billion by the Company to retrofit additional air pollution controls on several facilities. Recently, the environmental regulations and new initiatives that will impact cooling water systems, wastewater discharge temperature and chemical content, coal combustion residuals management and air emissions are on the horizon. The collective effects of these regulatory changes represent significant additional costs to the affected facilities.

The Company has been tracking these developments for years, and has made a number of strategic decisions to prepare for the future, taking into account the capacity, age, regulatory uncertainty, cost of upgrades, potential for repowering and other site-specific factors at each facility. As a result, some plants were selected to receive upgraded air pollution control and/or wastewater treatment systems, some sites are being repowered with new natural gas-fired plants as part of the fleet modernization program and still others, smaller - older plants, have been slated for retirement. These actions are all part of building the Company's balanced solution and ensuring a state-of-the-art power system for the future.

In accordance with Commission Order Approving Plan dated January 28, 2010, in Docket No. E-2 Sub 960, PEC was ordered to "retire additional coal-fired generating capacity reasonably proportionate to the amount of incremental gas-fired generating capacity authorized by the Lee certificate above 400MW". The commitment to retire Weatherspoon, Lee, Cape Fear and Sutton coal-fired units represents about 30 percent of legacy Progress's coal-fired power generation fleet in North Carolina. It results in emission reductions, including carbon dioxide, sulfur dioxide, nitrogen oxides, mercury and other pollutants. Legacy DEC had similar agreements with the state for the issue of air permits for approval of Cliffside 6, Buck CC and Dan River CC. These agreements resulted in the required retirement of Cliffside 1-4, Buck 3 & 4 and Dan River 1-3.

b. Environmental Expectations

In older plants, the removal of asbestos-containing material (ACM) in some areas will be a major effort, involving significant expense and requiring completion before workers can safely begin equipment salvage and demolition activities. If the ACM is not disposed of properly then ongoing cost associated with ACM management will increase significantly. During decommissioning other known chemicals and materials will be removed and disposed or recycled. Any laboratory chemicals or inventories of metal-cleaning chemicals, which cannot be completely used before shutdown, will be sent for reuse at other company facilities, sold, or disposed properly. Freon, batteries and residual oils (i.e., used lubricants, fuel, etc.) will also be reused, recycled, or disposed of. Older plants such as Weatherspoon, Cape Fear, Lee and Sutton have instrumentation and pressure-vapor lighting that contain mercury, or light ballasts and electrical equipment that contain polychlorinated biphenyls (PCBs) at regulated concentrations. The mercury and PCBs will be removed and disposed, or the equipment containing these compounds will be disposed properly. During decommissioning, light bulbs and florescent lighting will be removed and disposed per local and state regulatory requirements. Lead paint is an issue for many older plants. Identification and removal of lead contamination will be required before workers can safely begin equipment salvage and demolition activities in some areas. All these and other solid, hazardous and universal wastes will need to be addressed during decommissioning to minimize environmental risks.

In addition to the above mentioned environmental drivers, clean up of fuel oil lines and addressing ash pond closure will also alleviate potential long term liability associated with Dam Safety, fugitive dust and ground water contamination.

c. Business Strategy - Fleet Modernization

The Fleet Modernization Program encompasses a range of strategic investment opportunities in fossil generation at Company sites and/or through partnerships with other companies. One driver for fleet modernization is the aging assets on the fleet, most of the units included in the initial Program scope are more than 50 years old. In addition to the age of the facilities, the Company considered the investments that would be needed to address known and expected regulations on carbon dioxide, nitrogen oxides, sulfur dioxide, mercury, particulates and other emissions; increasing costs of storing coal ash; and other factors. These retirements and new generation are part of a long-term strategy to modernize the fossil fleet with cleaner coal and natural gas, while continuing to invest in renewable and energy efficiency programs.

d. Recovery Mechanisms

Recovery of dismantlement costs for non-nuclear generation assets will be part of the overall depreciation expense the Company includes in its cost of service rate request during the 2012 and 2013 rate cases. Terminal Net Salvage (TNS) for generation assets is the estimated cost for the dismantlement of the plant offset by the estimated salvage value to be recovered. In the case of the Company's generating assets in the Carolinas, the TNS represents a net expense for the Company that will need to be recovered from rate payers. The net expense represented by TNS will increase the depreciation expense included in the cost of service rate request. There are other components to the overall depreciation expense that will also be included in the cost of service rate request, but those components of depreciation expense do not relate to TNS, or to the dismantlement costs of non-nuclear generation assets.

e. Initiatives and Study Projects

The Plant Retirement Program is structured to support initiatives and study projects on an on-going basis as the need arises. Currently the Program is supporting the study of the Crystal River 1 & 2 Coal Units Retirement. The Program is also supporting planning efforts for future Company ash pond closure at non-designated sites.

4. Program Strategy

The Plant Retirement Program strategy encompasses retiring the fossil units to a safe and environmentally neutral state by performing decommissioning activities on equipment and systems and demolishing the units to grade-level. The Program approach for ash ponds is to close the pond with a cap and monitor strategy. The Program approach is to establish a framework to ensure sustainability that is adaptable to the entire Energy Supply.

The Plant Retirement Program strategy to demolish the units to grade-level was derived after a study to retire Lee Plant was conducted by URS Corporation in 2010. The Company approach was to utilize the Lee study as a roadmap to determine a plant retirement strategy to retire the designated units. The study researched three options for retiring the units and three options for closing the ash ponds. The three options for retiring the units were: (1) retire the units and perform the minimal scope of work to bring the units to a safe and environmentally neutral state, (2) retire the units by performing all tasks necessary to bring the units to a safe and environmentally neutral state and demolition the site to grade level or two-feet below grade (Brownfield) and (3) retire the units by performing all tasks necessary to bring the units to a safe and environmentally neutral state and demolish the site to a Greenfield state. The three options for ash ponds were: (1) do nothing and continue to maintain ponds, (2) cap the ponds and provide on-going monitoring and (3) close ash ponds to a Greenfield state by treating the ponds as a hazardous waste (empty ponds and dispose of waste at a landfill).

These options were reviewed with the PEC Utility Portfolio Strategy Team (UPST) on March 29, 2011. The options to demolish the designated sites to grade level and to cap and monitor the ash ponds were recommended and approval was granted to develop a charter for a program based on the recommended scope. The Plant Retirement Program charter (see Attachment A) was presented and approved at the April 26, 2011 Monthly Business Review (MBR) meeting. At the April 29, 2011 Finance Committee meeting, $560 thousand was requested and approved to proceed with the fleet-wide non-nuclear dismantlement study. (Note: $195 thousand will be charged to Capital Cost of Removal for design of the four designated sites and $365 thousand will be deferred and charged to regulatory asset.

The expected results of the strategy are to minimize risk to the Company from safety and environmental concerns, minimize on-going O&M costs, and promote the company as a community and environmental steward.

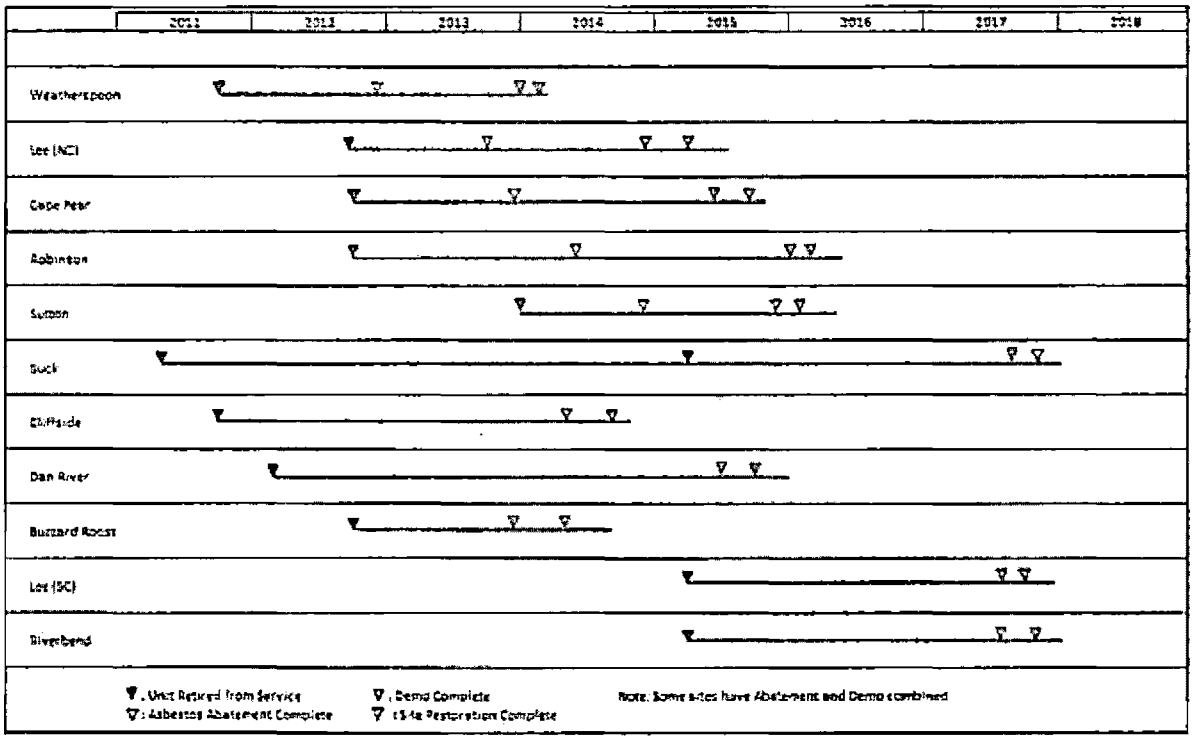
a. Fossil Units Retirement Strategy

The strategy to decommission and demolish was derived and recommended after review of the URS Lee Plant Demolition Study and benchmarking with the Bartow Dismantlement project and the EPRI Plant Closure Interest Group. The Program strategy was recommended as the best approach to minimize safety and environmental concerns such as hazardous and universal waste, ACM, chemicals, PCB, and lead-based paint. As ACM and lead-based paint deteriorates the cost for future abatement significantly grows. There is a regulation requirement for proper disposal of chemicals. If structures are allowed to

remain on-site after retiring the units, on-going maintenance cost would be required to maintain the site in a safe and secure manner.

There is a three stage approach to implementing the strategy: (1) Decommissioning, (2) Demolition and (3) Site Restoration. The Decommissioning stage involves performing shutdown activities (such as washing boilers and precipitators, vacuuming and clinker blasting), environmental clean-up (such as removing hazardous waste, universal waste and chemicals and asbestos abatement), plant interface modifications (such as relocating relays and rerouting piping and wiring) and transferring and selling inventory and assets. See the proposed Decommissioning schedule in Chart 1. The Demolition phase involves dismantling the site to an environmentally neutral state (deconstruction of equipment and buildings to grade level. The Site Restoration involves restoring the site to grade-level, filling in basements (based on site designs) and backfilling and seeding.

Chart 1: Proposed Plant Decommissioning Schedule



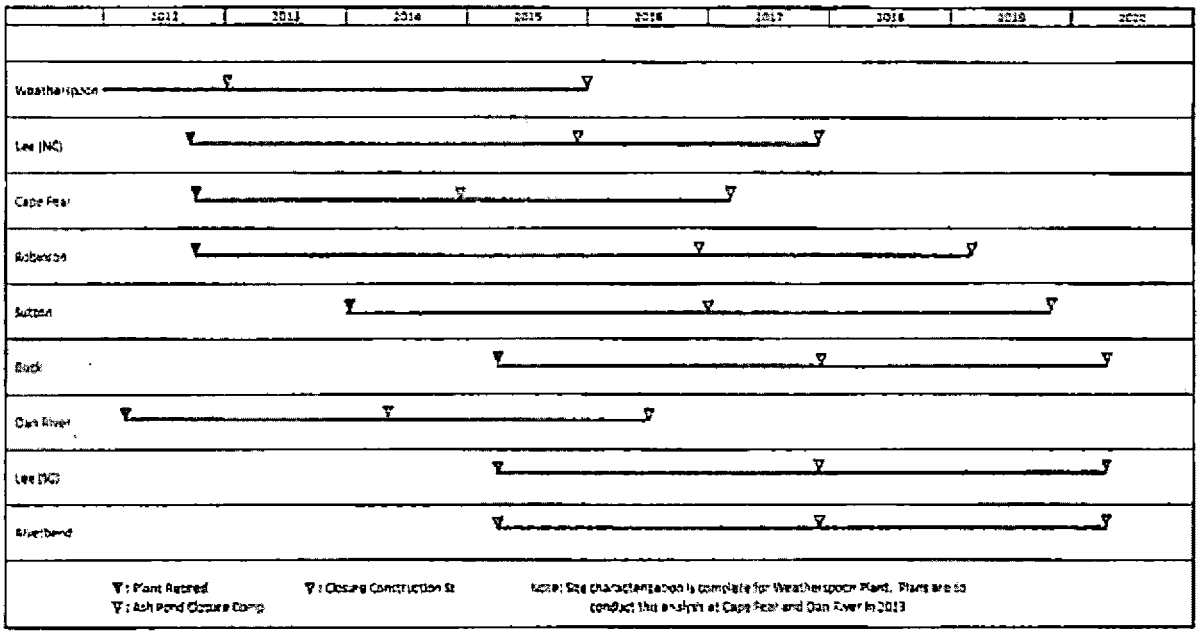
b. Ash Pond Closure Strategy

Over the next several years the Company will retire designated fossil units and close ash ponds. At non-designated coal-fired plants there is a strategy to transition from wet ash handling to dry ash handling systems. Chart 2 below shows a proposed Ash Pond Closure schedule; however, until a design and schedule are approved durations cannot be confirmed. Currently federal and state regulatory programs do not specifically address the decommissioning and closure of ash ponds, but state regulations provide some options for closure framework.

The recommended strategy is to cap the ash pond and monitor. The strategy does not address lay of land ash disposal areas. An engineering design is currently being conducted for ash pond closure at Weatherspoon based on the recommended strategy. The conceptual design will be utilized to further define scope, cost, and schedule of ash pond closures. After approval on the strategy from regulating agencies, design efforts will proceed for closing the Weatherspoon ash pond.

The Weatherspoon ash pond closure activities will be self-performed utilizing trained fuel handling operations personnel and existing equipment for pond grading. The project will be supplemented with engineering, QA and liner/specialty contractors. Future ash pond closures will be managed similar to Weatherspoon. However grading services may be contracted depending on in-house resource availability.

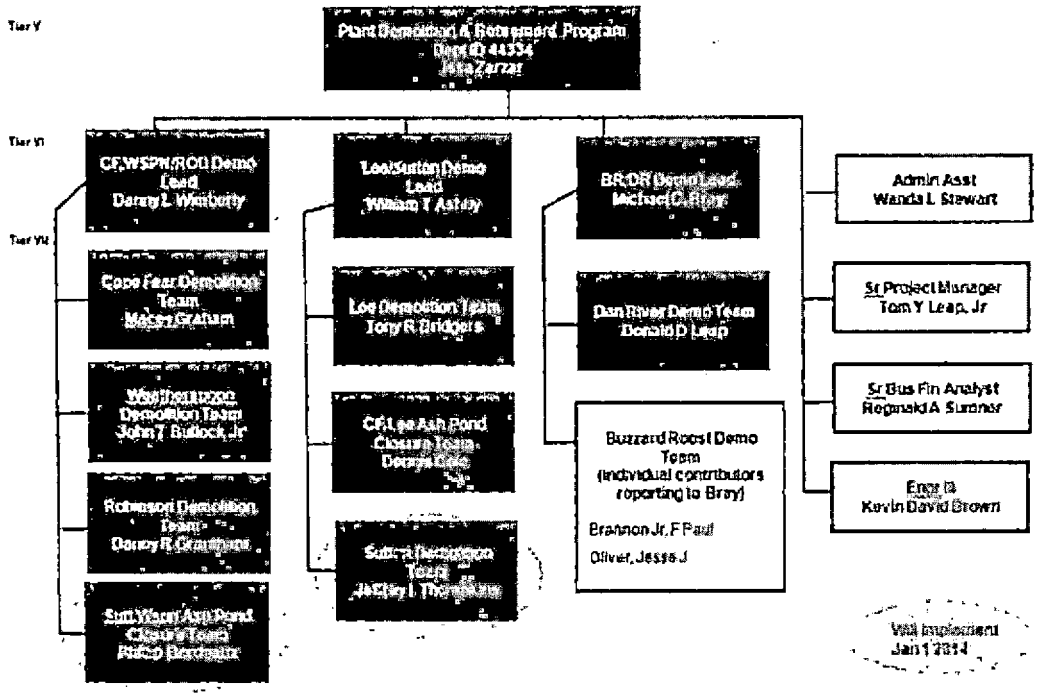
Chart 2: Proposed Ash Pond Closure Schedule



c. Organizational Design

The initial organizational design was developed based on benchmarking efforts and as a means to utilize the knowledge and technical skills of designated site personnel. Chart 3 below displays the Proposed Organization Chart. The Plant Retirement Program has established a Support Team that engages business units across the enterprise to ensure effective alignment of plant retirement strategies with corporate strategy, public policy, legislative and regulatory initiatives and identify gaps. The Program will allow flexibility to add additional designated sites subject to approval of associated CPP revisions.

Chart 3: Proposed Plant Retirement Program Organization Chart



d. Benchmarking Strategy

The Plant Retirement Program is participating in benchmarking efforts with the Bartow Dismantlement Project, the EPRI Plant Closure User Group, and the Fossil Decommissioning Network Group, where benchmarking is being conducted with other utilities. The benchmarking involves sharing strategy, best practices and lessons learned. The Plant Retirement Program will continue to support benchmarking efforts.

e. Permit Strategy

The permitting strategy is to retain site permits and plans, such as the Title V permit, the NPDES permit, and the SPCC plan and seek renewal for sites that currently are not slated for repowering. Once required the air permits will be closed and the any needed site NPDES permit or SPCC plan will be updated Regulatory agencies may question the renewal of full permits in light of retiring the coal units; however, if existing permits are renewed then on-going report submittals will be required regardless of the operating status of the units. A specific strategy and execution will be evaluated for each designated site based on on-going operational needs of the sites. The strategy also incorporates the requirements for permits and approvals that are needed for decommissioning and demolition activities.

f. Contract Strategy

The contracting and procurement strategy was designed to mitigate overall risks to the Program projects with particular focus on asbestos abatement and demolition contractors. The primary factors considered when developing the strategy were safety, cost, current market conditions, environmental

concerns, resource availability (both internal and external), and overall risk. The Program will pursue opportunities to bundle contract services across multiple sites including engineering services.

The current plan is for the Company to competitively bid the engineering, asbestos abatement, ash vacuuming/wash down and demolition contractors to qualified vendors.

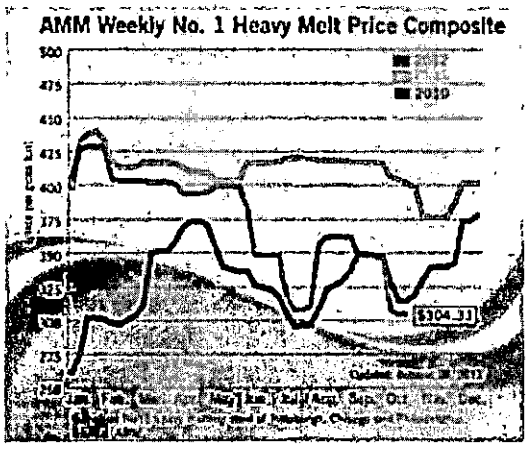
g. Investment Recovery Strategy

The investment recovery strategy focuses on optimizing the use of inventory and assets at the designated sites. The Plant Retirement Program has collaborated with Supply Chain to develop and execute the investment recovery strategy. The initial focus for inventory is to ramp down the inventory levels prior to the retirement dates by evaluating min/max quantities and terminating automatic re-order and vendor managed processes. Inventory and assets will be marketed internally for redeployment options. Inventory and assets will be assessed for whether there is a business need to transfer them to other non-designated sites. Inventory and assets will be marketed externally if there is no need for internal redeployment.

Recovery Seeker, a web-based investment recovery product, provided by Pacific Exchange, will be utilized by the Company to list and market inventory and assets internally and externally. There is a public site and a private client site associated with the product. The Recovery Seeker tool provides the Program the opportunity to optimize value gained and traceability of decommissioned assets and inventory through use of the product.

The strategy for the sale of scrap metal is to incorporate the sale of scrap into the demolition contract. The demolition cost is primarily driven by the potential investment recovery from scrap metal. The amount of ferrous and non-ferrous will be assessed for each site. The Program will also evaluate options to market scrap metal (such as condenser tubes) directly. Due to variability in the market, the investment recovery amount from scrap metal may vary. Chart 4 below, shows how the steel scrap metal market has varied from January 2010 to October 2012.

Chart 4: American Metal Market Steel Scrap Price



h. Communications Strategy

A comprehensive communication plan has been developed for the program. The scope of this plan includes a high-level communications template to follow as units retire, as well as general communications that should be considered at each site as decommissioning follows. Corporate Communications will work closely with the appropriate decommissioning project managers, station managers, district managers and others to coordinate this effort. Because each site and community is unique, more specific plans may need to be developed that follow this general outline.

i. Records Management Disposition Strategy

Records related to station decommissioning or retirement are governed by the various regulatory agencies as well as the operational needs of the Corporation. The objective of this document is to ensure the management of all records is based on regulatory requirements, industry standards and sound business practice. A Job Aid (FHG-ISC-JA-0007 Rev. 000) was developed to establish a standard process, provide direction, guidance and a framework to ensure records are effectively managed to final disposition. Disposition encompasses retaining records on-site, retaining records in off-site storage, retaining records electronically and/or destroying records. A "Records Disposition Template Action Plan" has been developed to capture focus areas for the disposition process. The final disposition of all records ensures compliance under the Plant Retirement Program Governance Policy PJM-SUBS-00055. The overall success of all records disposition is a shared responsibility within many workgroups and organizations.

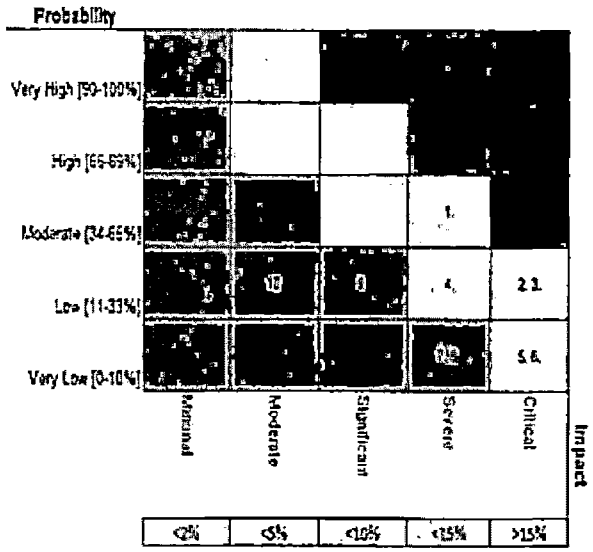
5. Program Analytics [Uncertainty, Sensitivity, Economics]

The Plant Retirement Program supports studies and initiatives that consider plants for retirement; however, the Program does not determine which sites are selected for retirement. The Program executes the necessary tasks to retire a plant once the selection has been approved. The Plant Retirement Program has utilized the URS Lee Study and benchmarking to assess the Program strategy and risks and to develop baseline assumptions for retiring plants. The Program strategy has been aligned with corporate strategy to minimize risk to the Company from safety and environmental concerns and to promote the Company as a community steward. Economic Analysis was not performed to arrive at the Program strategy as the least cost option due to factoring in the safety and environmental risk of abandoning the unit in-place. Future alternatives will be evaluated as needed on a project by project basis.

The identified risks and expected responses/plans are outlined below:

Program Risk

1 Investment Recovery from Scrap Metal
2 Demolition Safety
3 First Time Evolution Risk
4 Unforeseen Environmental Issues
5 Regulatory
6 Infrastructure Degradation
7 Impact of Demolition on Existing Plant/Systems
8 Program Environmental Approach
9 Asbestos Abatement
10 Site Security



1. Investment Recovery from Scrap Metal

Impact to:

Cost	☑	Schedule	n/a	Performance	n/a	Environmental	n/a	Safety	n/a

Risk: Demolition contractor cost is primarily based on the investment recovery potential from scrap metal. Over the past few years the steel scrap metal price has been volatile, ranging from $260/Ton to $440/Ton (based on American Metal Market pricing 10/26/2012). The amount of recoverable ferrous and non-ferrous metals is also a variable. Investment recovery from scrap metal is based on the demolition contractor risk tolerance.

Trend: Current Ranking: Yellow Prior CPP Ranking: N/A

Response/Plan: The Program estimate for demolition contractor costs is based on the Bartow demolition extrapolation and from other recent demolition projects. Allowing the contractor a time period for the disposition of scrap metal will help alleviate some of their risk. The basis for the demo contractor estimates in the CPP is $300/Ton of scrap ferrous metal. The strategy fordemolition is to establish partnerships with the top teir demolition contractors and bid each project to these vendors. This is anticipated to yield a 15% cost benefit. The plan is to go to contract by end of 1st quarter 2013 for Cliffside and Weatherspoon. Given current trends in the scrap metals market, it is anticipated that major price changes in future markets will occur. The Program will continue to monitor price fluctuations and adjust risk accordingly.

2. Demolition and Abatement Safety

Impact to:

Cost	n/a	Schedule	n/a	Performance	n/a	Environmental	n/a	Safety	☑

Risk: Due to the nature of this type of work, greater emphasis is placed on safety to prevent any event that would impact the health and safety of employees and contractors.

Trend: Current Ranking: Yellow Prior CPP Ranking: N/A

Response/Plan: Contractor and employees have site specific safety plans and when needed JHAs are being developed. JHAs are developed and reviewed by corporate safety for major activities such as asbestos abatement and demolition. Site specific safety plans will be developed. This includes site specific engineered drop plan with a third party review. Lessons learned from the Weatherspoon abatement efforts will be applied, specifically related to heat stress.

3. First Time Evolution Risk

Impact to:

Cost	n/a	Schedule	n/a	Performance	n/a	Environmental	n/a	Safety	☑

Risk: During dismantlement, many new activities will be performed. These first time evolutions could pose a significant safety risk if not mitigated.

Trend: Current Ranking: Yellow Prior CPP Ranking: N/A

Response/Plan: Site specific safety plans have been developed. This includes contractor safety evaluations, dismantlement specific PJB, and specific JHAs.

4. Unforeseen Environmental

Impact to:

Cost	☑	Schedule	☑	Performance	n/a	Environmental	☑	Safety	n/a

Risk: Site contamination associated with past operations may be discovered or exacerbated through decommissioning/demolition activities.

Response/Plan: Contamination of soil and/or groundwater from petroleum products, PCBs and/or coal storage areas is known or can be anticipated at each of the designated sites. Ground disturbance or excavation below grade could result in discovery of stained soil or other indicators of impacts. Such discovery would cause project delays and additional expense to investigate and manage the areas. To mitigate this potential impact, project plans reflect minimal below grade excavation, limited to removal of high risk elements such as underground fuel piping that will no longer be needed. An environmental plan will be developed for the demolition process and the plan will specify actions to be taken in the event of any unanticipated discovery, including suspect hazardous materials or products. Contractor personnel will be trained regarding project objectives and plans for minimization of site disturbance.

Risk: Legacy issues not fully addressed during site decommissioning/demolition may necessitate future expenditures for investigation and cleanup.

Response/Plan: There are active investigations and/or clean-up projects at several retired stations to address site contamination from past operations. These investigations primarily involve petroleum contamination from leaking tanks or underground piping. The existing soil and groundwater contamination issues for which the agency notice has already been made will be coordinated with the Plant Retirement Program and funded through Remediation. If undocumented issues are discovered by the Plant Retirement Program then conditions will be reported to Remediation upon discovery. The Plant Retirement Program will be responsible for emergency response activities for undocumented soil and groundwater issues. At a mutually agreeable juncture assessment and/or corrective action would be transferred to Remediation.

In addition, ash ponds on the sites will no longer be needed for management of coal combustion residuals. Closure of the ash ponds will likely be required to address groundwater contamination issues being evidenced by recently required groundwater monitoring programs at the sites. If these legacy issues remain on site following decommissioning/demolition it is possible that ongoing investigation/remediation work will lead to discovery of additional issues on or under the demolition site (for example, contamination of groundwater beneath the coal storage area). There is risk that additional expenditures will be incurred in the future to resolve subsurface issues not addressed during demolition.

Trend: Current Ranking: Yellow Prior CPP Ranking: N/A

5. Regulatory

Impact to:

Cost	☑	Schedule	☑	n/a	Performance	n/a	Environmental	☑	n/a	Safety	n/a

Risk: NC environmental regulations do not specifically address DENR's role regarding decommissioning/demolition of facilities; there are some permit or notification actions that may trigger DENR to assert oversight to a greater degree than supported by the regulations.

Response/Plan: DENR may exercise its option to become involved in the decommissioning/demolition process through minor permit modifications, notifications or assertion of jurisdiction over impacted groundwater, site contamination or changes to the operation of a permitted facility. Public announcement of plant closures could also attract the attention of DENR, which may want to ensure that environmental issues are addressed before the Company permanently ceases operations. DENR oversight of decommissioning/demolition could significantly increase the time and cost required to complete environmental aspects of the work. A plan will be developed for communication with DENR regarding the decommissioning/demolition projects. A strategy of providing information without agreeing to oversight could satisfy DENR needs without triggering schedule/cost risks on this issue.

Risk: Federal and state regulations are pending for the disposition of ash ponds. Reclassification of ash as a hazardous material would significantly impact cost of closure. Any regulations that would require additional closure measures than the planned cap and monitor would have cost impacts.

Response/Plan: Monitor rulemaking and influence outcome to the extent possible. Collaborate with ESS on the proposal for the cap and monitor strategy. This is an issue for the entire company and industry, not just retiring plants.

Trend: Current Ranking: Yellow Prior CPP Ranking: N/A

6. Infrastructure Degradation

Impact to:

Cost	n/a	Schedule	n/a	Performance	n/a	Environmental	n/a	Safety	☑

Risk: If the existing infrastructure degrades, before demolition activities begin, to a point that facilities will fail, then a significant safety risk could be realized.

Trend: Current Ranking: Yellow Prior CPP Ranking: N/A

Response/Plan: Site specific safety walk-downs will be conducted and an engineering assessment of current site conditions will be performed. This risk will be included in the contractor safety evaluations, dismantlement specific PJB, and specific JHAs.

7. Impacting Operations of other units/systems on-site

Impact to:

Cost	☑	Schedule	n/a	Performance	☑	Environmental	n/a	Safety	n/a

Risk: This risk is associated with the existing Combustion Turbine (CT's), Combined Cycle (CC) plants, and Transmission/Switchyard at the designated sites. Currently most of the infrastructure (i.e. fire water, telecommunication, service water, potable water, power supply, waste treatment, instrument air, relays and breaker control and monitoring) associated with these CT's are interfaced through the designated coal fired units. If decentralization of the CT's is not performed completely, then there is possible impact on CT operations and additional project cost would be incurred in dealing with these issues. Also, during dempolition, the operating units need to be secured.

Trend: Current Ranking: Green Prior CPP Ranking: N/A

Response/Plan: A support team is formed that encompasses IT, CT operations, Transmission, Plant operations, Supply Chain, and Engineering. This team is leading the effort in evaluating all the CT unit needs. Several engineering studies are underway to address all infrastructure separation concerns. All cost associated with identified work to support this effort are included in the CPP. Also, during demolition, the team will develop a detailed risk and drop plan with 3rd party review. Incorporate lessons learned from Bartow Demo.

8. Program Environmental Approach

Impact to:

Cost	☑	Schedule	n/a	Performance	n/a	Environmental	☑	Safety	n/a

Risk: If the program environmental approach in dealing with regulatory agencies is inconsistent and does not take into account a programmatic approach, then significant cost could be incurred. Then early decisions could impact later decisions.

Trend: Current Ranking: Green Prior CPP Ranking: N/A

Response/Plan: The environmental approach for site retirement and ash pond closure will be developed by a team comprised of subject matter experts from strategic engineering, environmental, and plant retirement.

9. Asbestos Abatement

Impact to:

Cost	☑	Schedule	n/a	Performance	n/a	Environmental	☑	Safety	☑

Risk: Asbestos abatement is a major portion of the Environmental cleanup scope. The abatement includes the removal of ACM (such as thermal system insulation (TSI), transite and mastic/roofing material) and disposal. The quantity and type of ACM drives the scope and cost of abatement. If additional ACM scope is identified beyond estimated quantities the cost for abatement could be impacted significantly. State and federal refulations require proper disposal of ACM.

Trend: Current Ranking: Green Prior CPP Ranking: N/A

Response/Plan: Asbestos mapping and surveying will be performed at each designated site. The asbestos surveying includes reviewing prior abatement records, identifying the types of ACM on-site and performing sampling. The asbestos mapping involves marking and estimating the quantity of ACM. The estimated quantities will be provided to bidders; however, bidders will perform site walk downs and develop their own estimates. (ACM) will be abated prior to demolition to address and alleviate risk associated with ACM.

10. Site Security risk

Impact to:

Cost	n/a	Schedule	n/a	Performance	n/a	Environmental	n/a	Safety	☑

Risk: If site security is compromised during decommissioning and demolition activities, then an environmental, safety, or theft event could occur.

Trend: Current Ranking: Green Prior CPP Ranking: N/A

Response/Plan: Will provide site security during decommissioning and implement security measures as identified by corporate security

6. .Annual Funding Requirements, Authorizations and Gate Reviews

The Plant Retirement Program, with concurrence of the strategic elements in this document, will develop required 2013 annual funding requirements, authorizations and gate reviews.

The total Program cost includes cost for fossil unit dismantlement and ash pond closure and is estimated to be $300 to $400 million. The Program has received authorization to spend $1.8 million in 2011, and $ 5.9 million in 2012 (Not including Legacy Duke). Legacy Duke will have spent approximately $6.4 million on plant retirement by the end of 2012 which includes Edwardsport demolition.

Table 3 below outlines the Program cost estimates for dismantlement and ash pond closure.

Table 3: Cost Estimates for Dismantlement and Ash Pond Closure

Decommissioning, Interface Projects, and Demolition

		2013	2014	2015	2016	2017	2018	Total
Legacy Progress Carolinas	Weatherspoon	$ 4,233,128	$ 25,000	$ -	$ -	$ -	$ -	$ 8,864,751
	Lee (NC)	$ 4,652,070	$ (1,493,067)	$ 553,126	$ -	$ -	$ -	$ 4,483,558
	Cape Fear	$ 5,810,601	$ 3,305,369	$ (1,936,083)	$ -	$ -	$ 25,000	$ 8,223,536
	Sutton	$ 645,611	$ 4,169,206	$ (1,664,273)	$ 595,917	$ -	$ -	$ 3,833,074
	Robinson	$ 1,871,725	$ 5,154,614	$ 6,531,110	$ 3,156,178	$ (990,000)	$ (4,178,351)	$ 12,038,987
	Morehead City (included with Lee)							
	Lee (NC) CTs ((included with Lee)							
	Total (w/o contingency)	$17,213,145	$10,961,122	$ 3,483,874	$ 3,752,093	$ (990,000)	$ (4,153,351)	$ 37,443,905
Legacy Duke Carolinas	Cliffside 1-4	$ 1,449,732	$ 535,860					$ 1,985,592
	Lee 1-2 (SC) and coal yard	$ 384,841	$ 44,905	$ 1,184,508	$ 723,543	$ 47,313	$ 48,097	$ 2,433,206
	Dan River 1-3 (Demolition)	$ 856,644	$ 1,802,783	$ 2,574,348	$ 1,363,920			$ 6,597,444
	Dan River CC (Replacement Water Supply)	$ 3,367,434	$ 8,328,133					$ 11,695,563
	Buck Demolition	$ 2,421,741	$ 910,962	$ 4,149,995	$ 2,037,481			$ 9,520,179
	Buck CC (Replacement Water Supply)	$ 471,420	$ 2,305,462	$ 9,301,387				$ 12,078,269
	Riverbend 4-7	$ 2,275,405	$ 1,000,031	$ 4,456,184	$ 6,041,456			$ 13,773,076
	Buzzard Roost CTs	$ 831,905						$ 831,905
	Buck CTs	$ 54,893	$ 428,688	$ 1,119,407	$ 42,169			$ 1,685,157
	Dan River CTs	$ 158,153	$ 43,912	$ 764,473	$ 521,941			$ 1,488,478
	Lee 4,5, and 6 (SC) CTs	$ 158,153	$ 43,912	$ 764,473	$ 521,941			$ 1,488,478
	Riverbend CTs	$ 158,153	$ 43,912	$ 764,473	$ 521,941			$ 1,488,478
	Total (w/o contingency)	$12,628,463	$15,488,515	$ 25,079,047	$ 11,774,391	$ 47,313	$ 48,097	$ 65,065,825

Ash Pond Closure

		2013	2014	2015	2016	2017	2018	2019	Total
Legacy Progress Carolinas	Weatherspoon	$ 1,911,836	$ 3,140,394	$ 1,850,000	$ -	$ -	$ -	$ -	$ 7,402,229
	Lee (NC)	$ 1,811,257	$ 5,167,265	$ 9,749,313	$ 10,064,190	$ 5,259,627	$ -	$ -	$ 32,051,651
	Cape Fear	$ 314,517	$ 876,719	$ 5,662,614	$ 10,835,842	$ 4,065,794	$ -	$ -	$ 21,205,496
	Sutton	$ -	$ 65,622	$ 179,867	$ 1,452,079	$ 5,000,000	$ 8,407,412	$ 4,250,000	$ 19,355,000
	Robinson	$ -	$ 200,000	$ 750,000	$ 3,661,674	$ 3,193,351	$ 4,203,351	$ -	$ 14,008,378
	Total (w/o contingency)	$ 4,037,610	$ 9,450,000	$ 17,791,823	$ 26,063,786	$19,518,772	$12,610,763	$ 4,250,000	$ 94,222,754
Legacy Duke Carolinas	Lee 1-2 (SC)		$ 910,836	$ 817,440	$ 18,637,882	$ 1,899,343			$ 22,265,501
	Dan River 1-3	$ 910,836	$ 817,440	$ 18,637,882	$ 1,899,343				$ 22,265,501
	Buck	$ 126,522	$ 3,215,160	$ 10,921,040	$ 19,306,251	$ 1,934,761			$ 35,503,734
	Riverbend 4-7		$ 126,522	$ 3,215,160	$ 10,921,040	$19,306,251	$ 1,934,761		$ 35,503,734
	Total (w/o contingency)	$ 1,037,358	$ 5,069,958	$ 33,591,522	$ 50,764,516	$23,140,355	$ 1,934,761	$ -	$115,538,470

7. Summary

The Plant Retirement Program CPP summarizes the overall plan for retiring coal-fired units and ash ponds at designated sites. The Program outlines the proactive strategy for Duke Energy to safely retire the designated units to an environmentally neutral state and close the ash ponds. The Program will continue to proactively and collaboratively engage various stakeholders to ensure effective alignment with corporate strategy, public policy, legislative and regulatory initiatives, and to identify gaps.

The Plant Retirement Program assumes the following:

- Fossil units will be decommissioned and demolished to grade-level.
- Environmental cleanup will include asbestos abatement, known hazardous and non-hazardous waste removal and chemical removal.
- The projects will include the restoration of remaining operating unit functionality to decoupling existing site interfaces which are presently integrated into the coal-fired units.
- Ash pond closure will incorporate a cap and monitor strategy.
- The investment recovery strategy incorporates investment from the sale of inventory, assets and scrap metal.
- The rate recovery approach is to include the recovery of dismantlement costs for non-nuclear generation assets as part of the overall depreciation expense that is included in the cost of service rate request during the 2012 rate case.
- The roadmap and processes established are modeled to incorporate additional plant retirements and ash pond closures as dictated by corporate strategy.
  Program will utilize designated plant resources for decommissioning tasks and ash pond closure where applicable.

Charter
[Plant Retirement Program]

Opportunity / Threat Statement:
In 2010 Progress Energy filed the integrated resource plan (IRP) with North Carolina Utilities Commission with plans to retire 11 coal-fired units at four North Carolina sites by the end of 2014. The Plant Retirement Program was developed to provide a structured approach for initiating, planning and executing the safe and environmentally neutral decommissioning and demolition of the units. The impacted sites are Cape Fear, Lee, Sutton and Weatherspoon.

Objective(s):
The Plant Retirement Program efforts include initiating and planning the strategy, cost estimates, and risk assessments associated with retiring a unit. Performing decommissioning and demolition of the units (existing components, equipment and structures) to grade-level and closing the ash ponds at impacted sites.

Scope: (Includes but not limited to)
1. Perform fleet-wide dismantlement studies.
2. Perform sites retirement assessments and risk evaluations (major areas include asbestos, hazardous and universal waste, and other environmental concerns).
3. Perform an ash pond closure engineering study (not including lay of land).
4. Perform engineering assessments as needed to support plant interface of existing CT units, Transmission and Distribution.
5. Prepare Project Execution plans for each site.
6. Prepare CPP and Governance Policy for approval.

Key Deliverables & Milestones	Due Date
Develop Plant Retirement Guidelines	6/30/2011
Submit Initial CPP and Governance Policy for Approval	8/30/2011
Prepare Model Project Execution Plan	9/1/2011
Issue Fleet-wide Dismantlement Studies	12/31/2013
Dismantlement Complete	12/31/2016
Ash Pond Closure Complete	12/31/2019

Comments
1. Ash Pond Closure – Based on cap ($100K/acre) and on-going monitoring($250K annual cost)
2. Environmental Clean-up – Place facility in an environmentally neutral state. No impact on existing remediation efforts.
3. Investment Recovery – market risks associated with scrap metal market volatility.
4. Explore common contractors for demolition and asbestos.

Funding Limit: [$K]

	Dismantlement	Ash Pond Closure
2011:	$1,888	$300
2012:	$6,417	$700
2013:	$10,894	$8,750
2014:	$4,819	$15,700
2015:	$102	$14,050
2016:	$440	$15,250
2017:		$12,000
2018:		$10,000
2019:		$4,250
Total	$24,560	$81,000

Approved By: [signature]

Date Approved: 6/6/11

Accepted By: [signature]

Revision #: 1

LEGEND

- DUKE PROPERTY BOUNDARY
- COMPLIANCE BOUNDARY
- COMPLIANCE BOUNDARY COINCIDENT WITH DUKE ENERGY PROPERTY BOUNDARY
- WASTE BOUNDARY
- ASH STORAGE AREA BOUNDARY
- VOLUNTARY GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2004/2005)
- VOLUNTARY WELL AT COMPLIANCE BOUNDARY (FIRST SAMPLED IN 2004)
- COMPLIANCE GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2011)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASEMAP MODIFIED FROM MARCH 15, 2013 SITE LAYOUT MAP PREPARED BY HDR. BASEMAP INCLUDES PROPERTY, WASTE, AND COMPLIANCE BOUNDARIES AND THE COMPLIANCE GROUNDWATER MONITORING WELL LOCATIONS.

N

APPROXIMATE
0 700 1,400
SCALE IN FEET

TITLE

SITE MAP

PROJECT

ALLEN STEAM STATION
GASTON COUNTY, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 2-11-20	REVISION NO. 0
JOB NO. DOJ-001	EXHIBIT 34A

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Page 1 of 1764 pages filed
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2/18/2020. ktm

Hart Exhibit 41A
Docket No. E-7, Sub 1214

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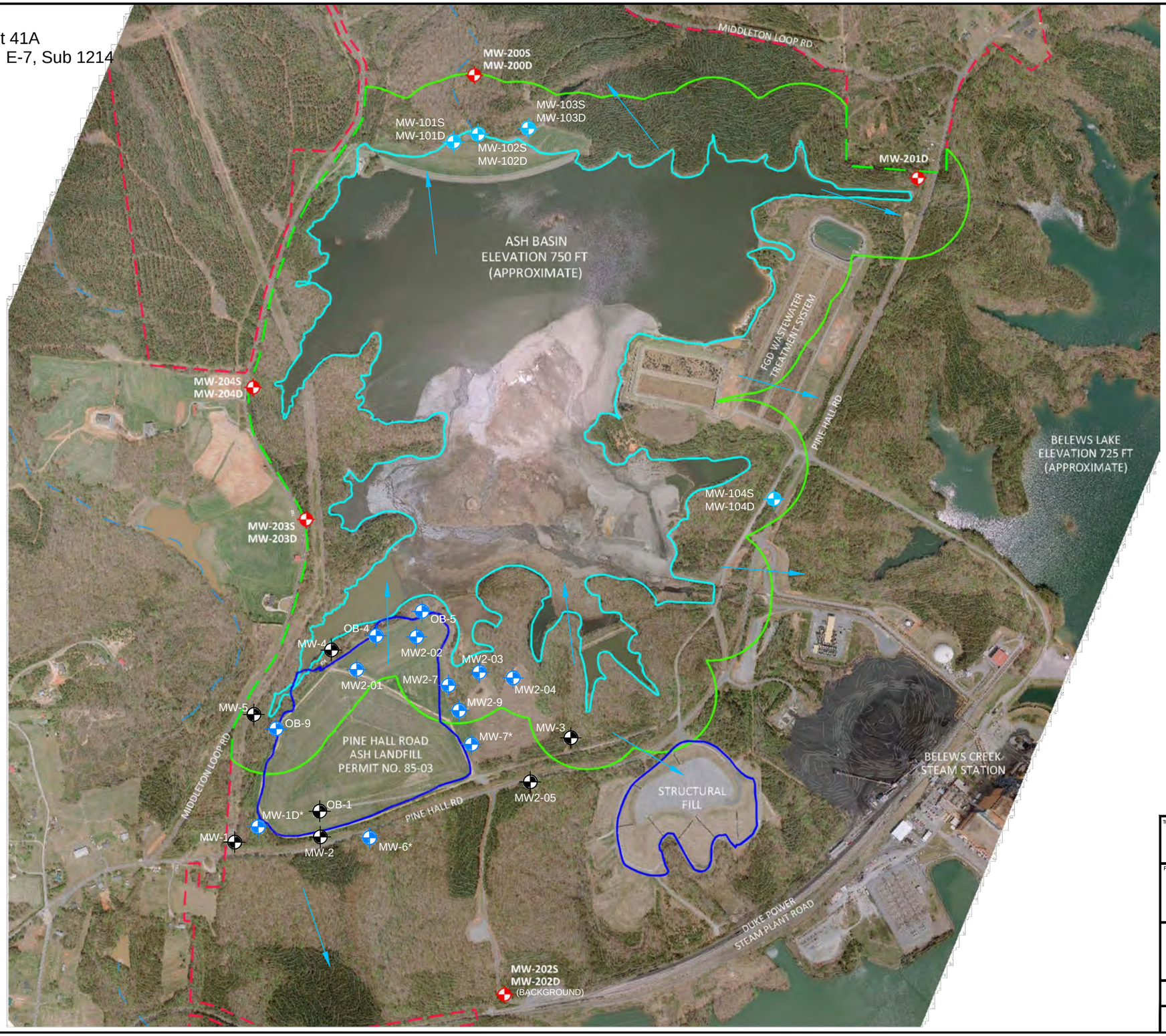

LEGEND

- DUKE PROPERTY BOUNDARY
- COMPLIANCE BOUNDARY
- COMPLIANCE BOUNDARY COINCIDENT WITH DUKE ENERGY PROPERTY BOUNDARY
- WASTE BOUNDARY
- ASH STORAGE AREA BOUNDARY
- LANDFILL GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 1989)
- LANDFILL GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2004/2005)
- VOLUNTARY GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2007)
- COMPLIANCE GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2011)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASEMAP MODIFIED FROM SEPTEMBER 25, 2014 SITE LAYOUT MAP PREPARED BY HDR. BASEMAP INCLUDES PROPERTY, WASTE, AND COMPLIANCE BOUNDARIES AND THE COMPLIANCE GROUNDWATER MONITORING WELL LOCATIONS.
2. * = LANDFILL MONITORING WELL MW-06 WAS FIRST SAMPLED IN 2000 AND MW-01D AND MW-07 WERE FIRST SAMPLED IN 2008.

N

APPROXIMATE
0 900 1,800
SCALE IN FEET

TITLE

SITE MAP

PROJECT

BELEWS CREEK STEAM STATION
STOKES COUNTY, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 2-12-20	REVISION NO. 0
JOB NO. DOJ-001	EXHIBIT 35A

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Hart Exhibit 41B

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filed in the docket
on 2/18/2020. ktm

LEGEND

- DUKE PROPERTY BOUNDARY
- COMPLIANCE BOUNDARY
- COMPLIANCE BOUNDARY COINCIDENT WITH DUKE ENERGY PROPERTY BOUNDARY
- WASTE BOUNDARY
- VOLUNTARY GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2006)
- VOLUNTARY GROUNDWATER MONITORING WELL AT COMPLIANCE BOUNDARY (FIRST SAMPLED IN 2006)
- COMPLIANCE GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2011)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASEMAP MODIFIED FROM SEPTEMBER 25, 2014 SITE LAYOUT MAP PREPARED BY HDR. BASEMAP INCLUDES PROPERTY, WASTE, AND COMPLIANCE BOUNDARIES AND THE COMPLIANCE GROUNDWATER MONITORING WELL LOCATIONS.

N

APPROXIMATE
0 600 1,200
SCALE IN FEET

TITLE

SITE MAP

PROJECT

BUCK FACILITY
ROWAN COUNTY, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 2-12-20	REVISION NO. 0
JOB NO. DOJ-001	EXHIBIT 36A

S:\AAA-Master Projects\NC AGs Office\Groundwater data\Buck\Site Map - Buck.dwg, 2/14/2020 5:16:06 PM, amckenzie

Hart Exhibit 42B

I/A

Page 1 of 1397 pages
filed in the docket
on 2/18/2020. ktm

Hart Exhibit 43A
Docket No. E-7, Sub 1214

I/A

LEGEND

- DUKE PROPERTY BOUNDARY
- COMPLIANCE BOUNDARY
- COMPLIANCE BOUNDARY COINCIDENT WITH DUKE ENERGY PROPERTY BOUNDARY
- WASTE BOUNDARY
- ASH STORAGE AREA BOUNDARY
- VOLUNTARY GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2008)
- COMPLIANCE GROUNDWATER MONITORING WELLS MW-20D THROUGH MW-25DR (FIRST SAMPLED IN 2011)
- COMPLIANCE GROUNDWATER MONITORING WELLS SAMPLED IN 2015
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASEMAP MODIFIED FROM SEPTEMBER 25, 2014 SITE LAYOUT MAP PREPARED BY HDR. BASEMAP INCLUDES PROPERTY, WASTE, AND COMPLIANCE BOUNDARIES AND THE COMPLIANCE GROUNDWATER MONITORING WELL LOCATIONS.
2. COMPLIANCE GROUNDWATER MONITORING WELLS MW-30 THROUGH MW-40 WERE NOT SAMPLED UNTIL 2015.

N

APPROXIMATE
0 800 1,600
SCALE IN FEET

TITLE

SITE MAP

PROJECT

CLIFFSIDE STEAM STATION
CLEVELAND & RUTHERFORD COUNTIES
NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 2-12-20	REVISION NO. 0
JOB NO. DOJ-001	EXHIBIT 37A

S:\AAA-Master Projects\NC AGs Office\Groundwater data\Cliffside\Site Map.dwg, 2/14/2020 5:26:58 PM, amckenzie

Hart Exhibit 43B

I/A

Page 1 of 2636 pages
filed in the docket
on 2/18/2020. ktm

OFFICIAL COPY

LEGEND

- DUKE PROPERTY BOUNDARY
- COMPLIANCE BOUNDARY
- COMPLIANCE BOUNDARY COINCIDENT WITH DUKE ENERGY PROPERTY BOUNDARY
- WASTE BOUNDARY
- ASH STORAGE AREA BOUNDARY
- VOLUNTARY GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 1993/1995)
- COMPLIANCE GROUNDWATER MONITORING WELL(FIRST SAMPLED IN 2011/2012)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASEMAP MODIFIED FROM SEPTEMBER 25, 2014 SITE LAYOUT MAP PREPARED BY HDR. BASEMAP INCLUDES PROPERTY, WASTE, AND COMPLIANCE BOUNDARIES AND THE COMPLIANCE GROUNDWATER MONITORING WELL LOCATIONS.
2. * = DEEP WELLS WERE NOT SAMPLED DURING VOLUNTARY MONITORING ACTIVITIES UNTIL 2008.
3. MW-12 WAS FIRST SAMPLED IN 1995.

N

APPROXIMATE
0 600 1,200
SCALE IN FEET

TITLE

SITE MAP

PROJECT

DAN RIVER STEAM STATION
EDEN COUNTY, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 2-12-20	REVISION NO. 0
JOB NO. DOJ-001	EXHIBIT 38A

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Hart Exhibit 44B

I/A

Page 1 of 1292 pages
filed in the docket
on 2/18/2020. ktm

LEGEND

- DUKE PROPERTY BOUNDARY
- COMPLIANCE BOUNDARY
- COMPLIANCE BOUNDARY COINCIDENT WITH DUKE ENERGY PROPERTY BOUNDARY
- WASTE BOUNDARY
- ASH STORAGE AREA BOUNDARY
- VOLUNTARY GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 1989/2000)
- VOLUNTARY GROUNDWATER MONITORING WELL AT COMPLIANCE BOUNDARY (FIRST SAMPLED IN 1989)
- LANDFILL GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2006)
- LANDFILL GROUNDWATER MONITORING WELL (FIRST SAMPLED 2003/2007)
- VOLUNTARY GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2007)
- COMPLIANCE GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2011)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASEMAP MODIFIED FROM DECEMBER 30, 2014 SITE LAYOUT MAP PREPARED BY HDR. BASEMAP INCLUDES PROPERTY, WASTE, AND COMPLIANCE BOUNDARIES AND THE COMPLIANCE GROUNDWATER MONITORING WELL LOCATIONS.
2. MW-4D WAS FIRST SAMPLED IN 2007.
3. MW-5 WAS FIRST SAMPLED IN 2000.

N

APPROXIMATE
0 900 1,800
SCALE IN FEET

TITLE

SITE MAP

PROJECT

MARSHALL STEAM STATION
CATAWBA COUNTY, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 2-12-20 REVISION NO. 0

JOB NO. DOJ-001 EXHIBIT 39A

S:\AAA-Master Projects\NC AGs Office\Groundwater data\Marshall\Site Map - Marshall.dwg, 2/14/2020 5:50:31 PM, amckenzie

Hart Exhibit 45B

I/A

Page 1 of 1740 pages
filed in the docket
on 2/18/2020. ktm

LEGEND

- DUKE PROPERTY BOUNDARY
- COMPLIANCE BOUNDARY
- COMPLIANCE BOUNDARY COINCIDENT WITH DUKE ENERGY PROPERTY BOUNDARY
- WASTE BOUNDARY
- ASH STORAGE AREA BOUNDARY
- VOLUNTARY GROUNDWATER MONITORING WELL (FIRST SAMPLED IN 2008)
- VOLUNTARY GROUNDWATER MONITORING WELL AT COMPLIANCE BOUNDARY (FIRST SAMPLED IN 2008)
- COMPLIANCE GROUNDWATER MONITORING WELL(FIRST SAMPLED IN 2010/2011)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASEMAP MODIFIED FROM MAY 31, 2013 MONITORING WELL LOCATION MAP PREPARED BY HDR. BASEMAP INCLUDES PROPERTY, WASTE, AND COMPLIANCE BOUNDARIES AND THE GROUNDWATER MONITORING WELL LOCATIONS.

N

APPROXIMATE
0 500 1,000
SCALE IN FEET

TITLE

SITE MAP

PROJECT

RIVERBEND STEAM STATION
GASTON COUNTY, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 2-12-20	REVISION NO. 0
JOB NO. DOJ-001	EXHIBIT 40A

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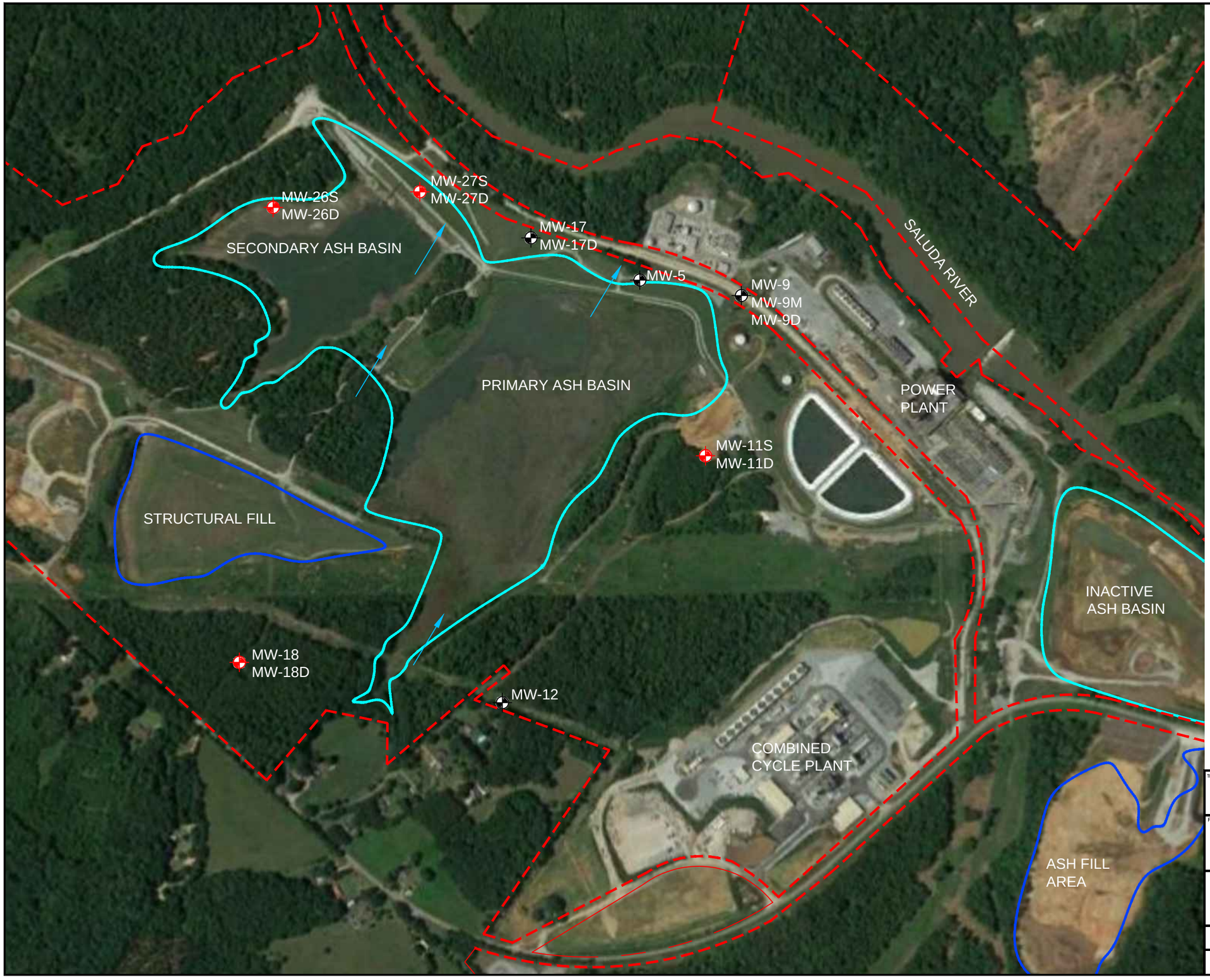
Hart Exhibit 46B

I/A

Page 1 of 1279 pages
filed in the docket
on 2/18/2020. ktm



LEGEND

- DUKE PROPERTY BOUNDARY
- WASTE BOUNDARY
- ASH STORAGE AREA BOUNDARY
- GROUNDWATER MONITORING WELL (FIRST SAMPLED PRIOR TO 2004)
- GROUNDWATER MONITORING WELL (FIRST SAMPLED PRIOR TO 2009)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. AERIAL OBTAINED FROM GOOGLE EARTH (2019).
2. MONITORING WELL LOCATIONS OBTAINED FROM THE ASH BASIN MONITORING WELL LOCATION MAP PROVIDED IN THE 2009 GROUNDWATER DATA SUBMITTAL TO DHEC.
3. BASEMAP FEATURES OBTAINED FROM THE SITE LAYOUT MAP PREPARED BY SYNTERRA AND PROVIDED IN THE JANUARY 10, 2020 SUPPLEMENT ASSESSMENT REPORT.
4. MONITORING WELLS MW-9M AND MW-9D WERE FIRST SAMPLED PRIOR TO 2009.

N

APPROXIMATE
0 500 1,000
SCALE IN FEET

TITLE

SITE MAP

PROJECT

W.S. LEE STEAM PLANT
ANDERSON COUNTY, SOUTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 2-12-20	REVISION NO. 0
JOB NO. DOJ-001	EXHIBIT 41

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DUKE POWER COMPANY
GROUNDWATER MONITORING REPORT

10/10/2004
TABLE 1

Facility: Lee Steam Station NPDES Permit #SC0002291 Part I, B
Site Reference: #00793 & 00128
Sample Date: September 14, 2004 (Field and Geochemistry Data)

Parameter	Units	Parameter Codes	Monitoring Well Identification				FIELD BLANK	SC R.61-68 MCL
			MW-5	MW-9	MW-17	MW-12		
Lab Certificate No.		00008	99005	99005	99005	99005	99005	
Field pH	Std. Units	00400	5.5	5.8	5.7	6.1		6.5-8.5*
Field Spec. Conductance	umho/cm	00095	549	637	254	80		
Temperature	C	00010	18	18	17	17		
Top Casing	msl-feet		694.92	689.79	694.33	752.03		
Depth to Water	feet		16.68	17.70	30.38	22.10		
Water Elevation	msl-feet	82545	678.24	672.09	663.95	729.93		
Well Depth	feet		34.74	39.72	34.69	41.44		
Arsenic	mg/l	01002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.050
Barium	mg/l	01007	0.033	0.14	0.026	0.016	<0.0050	2.0
Cadmium	mg/l	01027	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0050
Calcium	mg/l	00916	47	45	19	5.9	<0.030	
Chloride	mg/l	00940	4.5	3.8	5.4	7.0	0.10	
Chromium	mg/l	01034	<0.0010	<0.0010	<0.0010	0.0023	<0.0010	0.10
Copper	mg/l	01042	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	1.0*
Iron	mg/l	01045	0.022	21	0.012	0.14	<0.010	0.30*
Lead	mg/l	01051	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Magnesium	mg/l	00927	31	29	12	3.0	<0.030	
Manganese	mg/l	01055	0.20	13	0.019	0.0060	<0.0050	0.050*
Mercury	mg/l	71900	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.0020
Selenium	mg/l	01147	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.050
Silver	mg/l	01077	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.010*
Strontium	mg/l	01082	0.36	0.22	0.13	0.042	<0.0050	
Sulfate	mg/l	00945	244	273	87	0.25	<0.10	250*
Total Dissolved Solids	mg/l	03613	390	450	180	72		
Total Organic Carbon	mg/l	00680	0.30	0.81	0.26	0.12	<0.10	
Zinc	mg/l	01092	<0.020	<0.020	<0.020	<0.020	<0.020	5.0*

* SC R 61-68(O) Secondary Maximum Contaminant Level (MCL) for drinking water as reference only.

Authorized Release By: _____ **Date:** 10/14/04

DUKE POWER COMPANY
GROUNDWATER MONITORING REPORT

April 29, 2005
Table 1

Facility: Lee Steam Station NPDES Permit #SC0002291 Part I, B
Site Reference: #00793 & 00128
Sample Date: March 30, 2005 (Field and Geochemistry Data)

Certificate Codes:

Duke Power Lab #99005001
Duke Power Field #99046001
Prism Lab #99012001

Parameter	Units	Certificate Codes	Monitoring Well Identification				FIELD BLANK	SC R.61-68 MCL
			MW-5	MW-9	MW-17	MW-12		
Field pH	Std. Units	99046001	5.7	6.0	5.8	6.3		6.5-8.5*
Field Spec. Conductance	umho/cm	99046001	547	637	245	84		
Temperature	C	99046001	18	19	17	17		
Top Casing	msl-feet		694.92	689.79	694.33	752.03		
Depth to Water	feet		16.81	18.13	30.06	20.10		
Water Elevation	msl-feet		678.11	671.66	664.27	731.93		
Well Depth	feet		34.74	39.72	34.69	41.44		
Arsenic	mg/l	99005001	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.050
Barium	mg/l	99005001	0.034	0.13	0.026	0.019	<0.0050	2.0
Cadmium	mg/l	99005001	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0050
Calcium	mg/l	99005001	46	43	19	6.1	<0.030	
Chloride	mg/l	99005001	3.3	1.9	3.5	1.7	<0.10	
Chromium	mg/l	99005001	<0.0010	<0.0010	<0.0010	0.0027	<0.0010	0.10
Copper	mg/l	99005001	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	1.0*
Iron	mg/l	99005001	0.016	22	0.023	0.069	<0.010	0.30*
Lead	mg/l	99005001	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Magnesium	mg/l	99005001	30	28	12	3.0	<0.030	
Manganese	mg/l	99005001	0.19	12	0.023	0.015	<0.0050	0.050*
Mercury	mg/l	99005001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.0020
Selenium	mg/l	99005001	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.050
Silver	mg/l	99005001	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.010*
Strontium	mg/l	99005001	0.35	0.20	0.13	0.046	<0.0050	
Sulfate	mg/l	99005001	247	301	86	0.31	<0.10	250*
Total Dissolved Solids	mg/l	99012001	410	460	130	62		
Total Organic Carbon	mg/l	99005001	0.32	0.97	0.25	0.15	0.10	
Zinc	mg/l	99005001	<0.020	<0.020	<0.020	<0.020	<0.020	5.0*

* SC R 61-68(O) Secondary Maximum Contaminant Level (MCL) for drinking water as reference only.

Digitally signed by Timothy S. Hunsucker
DN: CN = Timothy S. Hunsucker, C = US, O = PC-EHS, OU = Chemical/Physical
Date: 2006.06.02 14:20:54 -04'00'

Authorized Release By: _____ **Date:** _____

Facility: Lee Steam Station NPDES Permit #SC0002291 Part I, B
Site Reference: #00793 & 00128
Sample Date: March 25, 2008 (Field and Geochemistry Data)

Certificate Codes:

Duke Power Lab #99005001
Duke Power Field #99046001

Parameter	Units	Certificate Codes	Monitoring Well Identification				FIELD BLANK	SC R.61-68 MCL
			MW-5	MW-9	MW-17	MW-12		
Field pH	Std. Units	99046001	5.4	5.7	5.5	5.7		6.5-8.5*
Field Spec. Conductance	umho/cm	99046001	493	443	235	91		
Temperature	C	99046001	17	18	17	15		
Top Casing	msl-feet		694.92	689.79	694.33	752.03		
Depth to Water	feet		16.89	19.22	29.99	22.43		
Water Elevation	msl-feet		678.03	670.57	664.34	729.60		
Well Depth	feet		34.74	39.72	34.69	41.44		
Arsenic	mg/l	99005001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	**0.010**
Barium	mg/l	99005001	0.023	0.052	0.023	0.017	< 0.005	**2.0**
Boron	mg/l	99005001	1.4	0.43	1.6	< 0.1	< 0.1	
Cadmium	mg/l	99005001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	**0.0050**
Calcium	mg/l	99005001	40	25	18	6.4	< 0.03	
Chloride	mg/l	99005001	4.7	2.9	3.9	2.8	< 0.1	**250***
Chromium	mg/l	99005001	< 0.001	< 0.001	< 0.001	0.0024	< 0.001	**0.10**
Copper	mg/l	99005001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	**1.0***
Fluoride	mg/l	99005001	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**4.0**
Iron	mg/l	99005001	< 0.01	22	< 0.01	0.120	< 0.01	**0.30***
Lead	mg/l	99005001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Magnesium	mg/l	99005001	28	18	12	3.2	< 0.03	
Manganese	mg/l	99005001	0.15	7.7	0.019	< 0.005	< 0.005	**0.050***
Mercury	mg/l	99005001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	**0.0020**
Nickel	mg/l	99005001	0.0040	0.0025	< 0.002	< 0.002	< 0.002	
Selenium	mg/l	99005001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	**0.050**
Silver	mg/l	99005001	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	**0.10***
Strontium	mg/l	99005001	0.29	0.10	0.11	0.047	< 0.005	
Sulfate	mg/l	99005001	180	160	78	0.21	< 0.1	**250***
Total Dissolved Solids	mg/l	99005001	400	330	190	100		**500***
Total Organic Carbon	mg/l	99005001	0.20	0.64	0.21	< 0.1	< 0.1	
Zinc	mg/l	99005001	< 0.005	0.0090	< 0.005	< 0.005	< 0.005	**5.0***

* SC R 61-68(O) Secondary Maximum Contaminant Level (MCL) for drinking water as reference only.

Facility: Lee Steam Station NPDES Permit #SC0002291 Part I, B
Site Reference: #00793 & 00128
Sample Date: March 9, 2009 (Field and Geochemistry Data)

Certificate Codes:

Duke Energy Lab #99005001
Duke Energy Field #99046001
Prism Lab #99012001

Parameter	Units	Certificate Codes	Monitoring Well Identification								SC R.61-68 MCL
			MW-5	MW-9	MW-9M	MW-9D	MW-11S	MW-11	MW-12	MW-17	
Field pH	Std. Units	99046001	5.6	6.2	5.6	6.1	5.6	5.7	6.4	5.8	6.5-8.5*
Field Spec. Conductance	umho/cm	99046001	459	389	317	188	126	119	109	262	
Temperature	C	99046001	18	19	19	19	18	18	17	19	
Top Casing	msl-feet		694.87	689.80	689.02	689.02	749.40	750.37	751.94	694.42	
Depth to Water	feet		16.83	18.87	22.30	25.30	45.09	46.38	22.97	29.95	
Water Elevation	msl-feet		678.04	670.93	666.72	663.72	704.31	703.99	728.97	664.47	
Well Depth	feet		34.74	39.72	75.11	103.91	52.55	69.56	41.44	34.69	
Arsenic	mg/l	99005001	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.010
Barium	mg/l	99005001	0.022	0.042	0.056	0.12	0.24	0.062	0.013	0.026	2.0
Boron	mg/l	99005001	1.6	0.40	0.54	0.46	< 0.10	< 0.10	< 0.10	1.7	
Cadmium	mg/l	99005001	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0050
Calcium	mg/l	99005001	39	22	32	18	9.2	9.0	11	23	
Chloride	mg/l	99005001	5.3	3.3	3.6	3.6	5.1	5.2	2.9	4.8	250*
Chromium	mg/l	99005001	< 0.0010	< 0.0010	0.0026	0.0099	0.051	< 0.0010	0.0021	< 0.0010	0.10
Copper	mg/l	99005001	< 0.0020	< 0.0020	< 0.0020	0.0026	0.044	< 0.0020	< 0.0020	< 0.0020	1.0*
Fluoride	mg/l	99005001	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	4.0
Iron	mg/l	99005001	0.010	21	1.5	7.7	33	0.016	0.092	< 0.010	0.30*
Lead	mg/l	99005001	< 0.0020	< 0.0020	< 0.0020	0.0027	0.0081	< 0.0020	< 0.0020	< 0.0020	
Magnesium	mg/l	99005001	27	15	11	7.8	9.5	3.1	2.8	14	
Manganese	mg/l	99005001	0.15	6.7	0.19	0.14	0.33	0.010	< 0.0050	0.025	0.050*
Mercury	mg/l	99005001	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	0.0020
Nickel	mg/l	99005001	0.0033	0.0021	< 0.0020	0.0022	0.061	0.0043	< 0.0020	< 0.0020	
Nitrate Nitrogen	mgN/L	99005001	< 0.020	< 0.020	< 0.020	0.070	0.80	4.0	3.2	< 0.020	10
Selenium	mg/l	99005001	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.050
Silver	mg/l	99005001	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.10*
Strontium	mg/l	99005001	0.28	0.091	0.15	0.14	0.10	0.11	0.045	0.13	
Sulfate	mg/l	99005001	220	160	140	60	19	2.5	0.98	100	250*
Total Dissolved Solids	mg/l	99012001	350	270	250	160	130	100	92	210	500*
Total Organic Carbon	mg/l	99005001	0.24	0.56	0.21	0.37	0.77	0.49	0.27	0.26	
Zinc	mg/l	99005001	< 0.0050	0.0070	< 0.0050	0.018	0.076	< 0.0050	< 0.0050	< 0.0050	5.0*

* SC R 61-68(O) Secondary Maximum Contaminant Level (MCL) for drinking water as reference only.

Facility: Lee Steam Station NPDES Permit #SC0002291 Part I, B
Site Reference: #00793 & 00128
Sample Date: March 9, 2009 (Field and Geochemistry Data)

Certificate Codes:

Duke Energy Lab #99005001
Duke Energy Field #99046001
Prism Lab #99012001

Parameter	Units	Certificate Codes	Monitoring Well Identification							FIELD BLANK	SC R.61-68 MCL
			MW-17D	MW-18	MW-18D	MW-26S	MW-26D	MW-27S	MW-27D		
Field pH	Std. Units	99046001	5.9	6.4	12.0	5.2	6.1	6.2	6.3		6.5-8.5*
Field Spec. Conductance	umho/cm	99046001	311	85	4974	59	55	134	152		
Temperature	C	99046001	18	16	15	18	19	15	15		
Top Casing	msl-feet		694.08	824.57	824.39	717.40	717.07	683.95	683.66		
Depth to Water	feet		30.19	78.78	80.14	11.60	11.32	13.17	12.43		
Water Elevation	msl-feet		663.89	745.79	744.25	705.80	705.75	670.78	671.23		
Well Depth	feet		48.04	116.71	152.00	23.01	51.86	25.04	35.56		
Arsenic	mg/l	99005001	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.010
Barium	mg/l	99005001	0.11	0.025	0.90	0.041	0.024	0.038	0.046	< 0.0050	2.0
Boron	mg/l	99005001	1.9	< 0.10	< 0.10	0.22	< 0.10	0.21	0.24	< 0.10	
Cadmium	mg/l	99005001	< 0.00050	< 0.00050	0.00067	0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.0050
Calcium	mg/l	99005001	28	7.9	297	< 0.030	3.7	9.2	11	< 0.030	
Chloride	mg/l	99005001	4.4	1.9	1.4	3.9	2.2	3.5	3.6	< 0.10	250*
Chromium	mg/l	99005001	0.0024	0.0037	0.060	0.0024	0.0029	0.0012	< 0.0010	< 0.0010	0.10
Copper	mg/l	99005001	< 0.0020	< 0.0020	0.0056	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	1.0*
Fluoride	mg/l	99005001	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.14	< 0.10	4.0
Iron	mg/l	99005001	0.97	0.033	0.033	0.30	1.4	0.20	< 0.010	< 0.010	0.30*
Lead	mg/l	99005001	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	
Magnesium	mg/l	99005001	16	2.6	< 0.030	1.9	1.6	6.6	7.8	< 0.030	
Manganese	mg/l	99005001	0.15	0.011	< 0.0050	0.059	0.025	0.24	0.42	< 0.0050	0.050*
Mercury	mg/l	99005001	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	0.0020
Nickel	mg/l	99005001	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	
Nitrate Nitrogen	mgN/L	99005001	< 0.020	0.34	< 0.020	< 0.020	0.27	< 0.020	< 0.020	< 0.020	10
Selenium	mg/l	99005001	< 0.0020	< 0.0020	0.0035	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	0.050
Silver	mg/l	99005001	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.10*
Strontium	mg/l	99005001	0.15	0.043	10	< 0.0050	0.028	0.055	0.068	< 0.0050	
Sulfate	mg/l	99005001	130	1.4	13	16	1.2	26	25	< 0.10	250*
Total Dissolved Solids	mg/l	99012001	260	92	1300	76	72	100	110		500*
Total Organic Carbon	mg/l	99005001	0.23	< 0.10	2.9	0.18	0.12	0.27	0.64	< 0.10	
Zinc	mg/l	99005001	0.0050	< 0.0050	< 0.0050	0.0070	0.0060	< 0.0050	< 0.0050	< 0.0050	5.0*

* SC R 61-68(O) Secondary Maximum Contaminant Level (MCL) for drinking water as reference only.

Facility: Lee Steam Station NPDES Permit #SC0002291 Part I, B
Site Reference: #00793 & 00128
Sample Date: September 23 - 24, 2013 (Field and Geochemistry Data)

Certificate Codes:

Duke Energy Lab #99005001
Duke Energy Field #99046001

Parameter	Units	Certificate Codes	Monitoring Well Identification								SC R.61-68 MCL
			MW-5	MW-9	MW-9M	MW-9D	MW-11S	MW-11D	MW-12	MW-17	
Field pH	Std. Units	99046001	5.6	5.8	5.3	6.0	5.2	5.4	6.0	5.8	6.5-8.5*
Field Spec. Conductance	umho/cm	99046001	18	19	19	19	17	17	17	17	
Temperature	C	99046001	396	347	299	173	97	118	108	214	
Top Casing	msl-feet		694.87	689.80	689.02	689.02	749.40	750.37	751.94	694.42	
Depth to Water	feet		17.61	19.03	22.52	25.83	39.57	40.51	22.72	29.86	
Water Elevation	msl-feet		677.26	670.77	666.50	663.19	709.83	709.86	729.22	664.56	
Well Depth	feet		34.74	39.72	75.11	103.91	52.55	69.56	41.44	34.69	
Arsenic	mg/l	99005001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.010
Barium	mg/l	99005001	0.023	0.036	0.048	0.07	0.060	0.066	0.014	0.018	2.0
Boron	mg/l	99005001	2.1	0.37	0.44	0.39	<0.05	<0.05	<0.05	1.8	
Cadmium	mg/l	99005001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0050
Calcium	mg/l	99005001	31	18	28	13	5.0	8.4	9.9	16	
Chloride	mg/l	99005001	4.6	3.2	3.3	3.3	5.8	4.5	3.2	4.3	250*
Chromium	mg/l	99005001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.10
Copper	mg/l	99005001	<0.005	<0.005	<0.005	<0.005	0.0100	<0.005	<0.005	<0.005	1.0*
Fluoride	mg/l	99005001	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	0.15	4.0
Iron	mg/l	99005001	<0.01	19	1.3	3.1	2.7	0.013	0.10	0.105	0.30*
Lead	mg/l	99005001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Magnesium	mg/l	99005001	22	13	10	6.3	3.8	3.0	2.8	11	
Manganese	mg/l	99005001	0.13	5.5	0.09	0.07	0.041	<0.005	<0.005	0.037	0.050*
Mercury	mg/l	99005001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0020
Nickel	mg/l	99005001	<0.005	<0.005	<0.005	<0.005	0.020	<0.005	<0.005	<0.005	
Nitrate Nitrogen	mgN/L	99005001	<0.023	<0.023	<0.023	<0.023	1.3	3.4	3.3	<0.023	10
Selenium	mg/l	99005001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.050
Silver	mg/l	99005001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.10*
Strontium	mg/l	99005001	0.24	0.071	0.13	0.10	0.06	0.11	0.047	0.10	
Sulfate	mg/l	99005001	160	130	110	41	6	2.4	0.6	63	250*
Total Dissolved Solids	mg/l	99030001	300	250	230	150	78	100	98	150	500*
Total Organic Carbon	mg/l	99005001	0.16	0.46	0.11	0.14	0.12	0.15	<0.1	0.14	
Zinc	mg/l	99005001	<0.005	<0.005	<0.005	<0.005	0.013	<0.005	<0.005	<0.005	5.0*

* SC R 61-68(O) Secondary Maximum Contaminant Level (MCL) for drinking water as reference only.

Facility: Lee Steam Station NPDES Permit #SC0002291 Part I, B
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			MW-17D	MW-18	MW-18D	MW-26S	MW-26D	MW-27S	MW-27D		
Field pH	Std. Units	99046001	5.9	6.2	11.9	5.0	6.0	6.1	6.1		6.5-8.5*
Field Spec. Conductance	umho/cm	99046001	17	16	17	19	19	16	15		
Temperature	C	99046001	247	94	2524	78	61	130	147		
Top Casing	msl-feet		694.08	824.57	824.39	717.40	717.07	683.95	683.66		
Depth to Water	feet		30.05	79.89	81.55	12.52	12.24	13.59	12.86		
Water Elevation	msl-feet		664.03	744.68	742.84	704.88	704.83	670.36	670.80		
Well Depth	feet		48.04	116.71	152.00	23.01	51.86	25.04	35.56		
Arsenic	mg/l	99005001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.010
Barium	mg/l	99005001	0.065	0.027	0.4	0.082	0.018	0.035	0.041	<0.005	2.0
Boron	mg/l	99005001	2.2	<0.05	<0.05	0.21	<0.05	0.20	0.21	<0.05	
Cadmium	mg/l	99005001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0050
Calcium	mg/l	99005001	20	8.1	125	0.040	3.9	8.2	10	0.010	
Chloride	mg/l	99005001	4.3	1.8	2.1	3.0	2.1	3.0	3.0	<0.1	250*
Chromium	mg/l	99005001	<0.005	<0.005	0.079	<0.005	<0.005	<0.005	<0.005	<0.005	0.10
Copper	mg/l	99005001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1.0*
Fluoride	mg/l	99005001	0.14	0.11	0.12	<0.1	0.13	0.14	0.17	<0.1	4.0
Iron	mg/l	99005001	0.14	0.011	<0.01	1.07	0.43	0.032	<0.01	<0.01	0.30*
Lead	mg/l	99005001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Magnesium	mg/l	99005001	11	2.6	0.01	3.5	1.5	6.2	7.5	<0.005	
Manganese	mg/l	99005001	0.16	<0.005	<0.005	0.110	0.0060	0.33	0.59	<0.005	0.050*
Mercury	mg/l	99005001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0020
Nickel	mg/l	99005001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
Nitrate Nitrogen	mgN/L	99005001	<0.023	0.30	0.0400	<0.023	0.26	<0.023	<0.023	<0.023	10
Selenium	mg/l	99005001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.050
Silver	mg/l	99005001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.10*
Strontium	mg/l	99005001	0.11	0.044	4.1	<0.005	0.028	0.049	0.060	<0.005	
Sulfate	mg/l	99005001	76	1.4	40	23	1.2	14	12	<0.1	250*
Total Dissolved Solids	mg/l	99030001	180	79	650	57	68	91	100		500*
Total Organic Carbon	mg/l	99005001	0.21	<0.1	1.6	0.17	<0.1	0.21	0.26	<0.1	
Zinc	mg/l	99005001	<0.005	<0.005	<0.005	0.0080	<0.005	<0.005	<0.005	<0.005	5.0*

* SC R 61-68(O) Secondary Maximum Contaminant Level (MCL) for drinking water as reference only.

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ENVIRONMENTAL AUDIT IN SUPPORT OF THE COURT APPOINTED MONITOR

Allen Steam Station
Belmont, North Carolina
USA

July 2019

Final Report Issued To:

Duke Energy and the Court Appointed Monitor

Prepared By:

Advanced GeoServices Corp.
and
The Elm Consulting Group International LLC

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1.0 INTRODUCTION

Advanced GeoServices Corp. (AGC) and The Elm Consulting Group International LLC (Elm) (collectively, the Audit Team) are conducting environmental compliance audits (the Audits) of certain coal combustion residuals (CCR) management locations owned or operated by Duke Energy Business Services LLC, Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc. (collectively, Duke Energy). The Audits are being conducted under the direction of Mr. Benjamin Wilson, the Court Appointed Monitor (CAM), pursuant to an Order issued by the U.S. District Court, Eastern District of North Carolina, in case numbers 5:15-CR-62-H, 5:15-CR-67-H, and 5:15-CR-68-H.

The scope of the Audits is set forth in the plea agreements entered into by Duke Energy and the United States in the above cases, the Court's judgments in these cases, and a written Audit scoping document agreed to by Duke Energy and the United States.

1.1 BACKGROUND INFORMATION

The subject of this report is the Audit completed at Duke Energy's Allen Steam Station located in Belmont, North Carolina (Allen Facility). The Audit was conducted on May 13-14, 2019, for a total of two days on-site. The Audit Team members were:

- Mr. Christopher Reitman, P.E. AGC — Project Director, Audit Team Leader, Sr. Subject Matter Expert (on-site)
- Mr. Joseph Cotier, CPEA, Elm — Sr. Environmental Auditor (on-site)
- Mr. Bernard B. Beegle, P.G., AGC — Sr. Subject Matter Expert (off-site)

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The key representatives of the Allen Facility were:

- Mr. Scott Harris, CCP System Owner
- Mr. Steve Pulley, CCP Engineering & Closure Engineering
- Mr. Tim Hill, General Manager, CCP Operations and Maintenance
- Mr. Scott Martin, CCP Projects
- Ms. Elizabeth Glenn, EHS CCP Permitting and Compliance
- Ms. Courtney Murphy, EHS CCP Waste & Groundwater
- Ms. Tammy Jett, EHS CCP Waste & Groundwater (by phone)
- Ms. Diana Kooser, Regulatory Affairs
- Mr. Drew Stroud, Environmental Rover, EHS CCP Compliance
- Mr. Michael Phillips, Manager, EHS CCP Compliance
- Ms. Mary Parlemon, EHS CCP Environmental Field Support
- Mr. Randy Gantt, Station Environmental Field Support
- Mr. Terry Tuck, Station General Manager
- Mr. David Barszczowski, Station Engineering
- Ms. Julianna, Jankowski, Station H&S Field Support
- Mr. Keith Higgins, EHS CCP Compliance
- Mr. Seth Glass, CCP Project Manager (Lined Retention Basin Project)
- Ms. Anne Pifer, Manager, EHS CCP and Compliance

1.2 FACILITY OVERVIEW

The Allen Facility is located on a 2,220-acre property at 253 Plant Allen Road, Belmont, Gaston County, North Carolina. Duke Energy personnel reported that the Allen Facility began operation in 1957 with Units 1 and 2. Unit 3 came on-line in 1959, Unit 4 came on-line in 1960, and Unit 5 came on-line in 1961. No coal-fired power generation took place during the Audit. Duke Energy personnel stated power generation is primarily during peak periods of energy need.

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1.2.1 Ash Management Activities

The following CCR management areas are located on-site:

- Retired Ash Basin (or Inactive Ash Basin) – The Retired Ash Basin, also known as the Inactive Ash Basin, is 133 acres and was constructed in 1957 and received ash until 1973. Some recent groundwater correspondence including the 2018 Comprehensive Site Assessment (CSA) Update prepared by Duke Energy identifies the Retired Ash Basin as the eastern portion of the Inactive Ash Basin. However, Duke Energy personnel clarified during the Audit that the Retired Ash Basin and the Inactive Ash Basin are synonymous.

- Structural Fills – As identified in the 2018 CSA Update, the two unlined Distribution of Residuals Solids (DORS) Structural Ash Fills are located on top of the western portion of the Retired Ash Basin, adjacent to and west of the Retired Ash Basin Landfill, described below. These fills were constructed of ponded ash removed from the Active Ash Basin per Duke Energy's DORS Permit issued by the North Carolina Department of Natural Resources (the predecessor to the North Carolina Department of Environmental Quality (NCDEQ)) Department of Water Quality (DWQ). Placement of dry ash in the Structural Fills began in 2003 and was completed in 2009. During and after the completion of filling, the structural fill areas were graded to drain, and soil cover was placed on the top slopes and side slopes, and vegetation was established. The eastern Structural Fill covers approximately 17 acres and contains approximately 500,000 tons of ash. The western Structural Fill covers approximately 17 acres and contains approximately 328,000 tons of ash.

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- Ash Storage Areas – As identified in the 2018 CSA Update, there are two unlined Ash Storage Areas located on top of the western portion of the Retired Ash Basin, adjacent to and west of the two DORS Structural Fills. Similar to the two DORS Structural Fills, the Ash Storage Areas were constructed under Duke Energy's DORS Permit in 1996 by excavating ash from the northern portion of the Active Ash Basin in order to provide capacity for sluiced ash in the Active Ash Basin and the future construction of Primary Ponds 1, 2, and 3. After the completion of stockpiling, the Ash Storage Areas were graded to drain. A minimum of 18 inches of soil cover was placed on the top slopes, a minimum of 24 inches of soil was placed on the side slopes, and vegetation was established. Approximately 300,000 cubic yards of ash are stored in the Ash Storage Areas, which encompass an area of approximately 15-20 acres of the western portion of the Retired Ash basin.

- Retired Ash Basin Landfill – As identified in the 2018 CSA Update, the Retired Ash Basin Landfill is a double-lined landfill that became operational in 2009 and is located on the eastern portion of the Allen Facility, on top of the Retired Ash Basin. The Retired Ash Basin Landfill is 47 acres and is divided into cells 1, 2A, and 2B. Interim soil cover has been placed on cells 1 and 2A. Cell 2B is currently active. Two new cells have also been permitted to the north of the existing landfill cells; however, Duke Energy personnel stated these two additional cells may no longer be required as an on-site landfill option for excavation is being considered.

- Active Ash Basin – The Active Ash Basin is 158.5 acres (at an elevation of approximately 645 feet above mean sea level (MSL)) and includes three dredge cells, the polishing pond, and the ash storage area, which are subdivided within the Active Ash Basin by divider dikes. At the time of the Audit, flows to the Active Ash Basin had been discontinued.

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1.2.2 Environmental Permits and Programs

The Allen Facility operates under the following environmental permits and programs:

- **National Pollutant Discharge Elimination System (NPDES) Wastewater Permitting** – During the period of review, the Allen Facility was governed by the expired and renewed NPDES Permit No. NC0004979 and a Special Order by Consent. Requirements of these are as follows.

  1. NCDEQ issued NPDES Permit No. NC0004979 with an effective date of March 1, 2011 and an expiration date of May 31, 2015. A timely permit renewal application was submitted to NCDEQ on October 15, 2014; therefore, the March 1, 2011 permit remained in effect until the permit was renewed by NCDEQ. The ash management activities covered by the expired permit included:
     - Outfall 002: ash pond effluent discharging to the Catawba River (Lake Wylie), including domestic wastewater, stormwater, ash sluice, water treatment system wastewater, flue gas desulfurization (FGD) system blowdown, landfill leachate, and miscellaneous cleaning and maintenance wash waters, and
     - Outfall 005: an internal outfall that discharges treated FGD wastewaters from the wet scrubber to the Active Ash Basin.

     Pursuant to Part I.A(13) and 15A NCAC 2L.0200, the Allen Facility's NPDES permit required groundwater monitoring for 13 compliance wells three times per year. This groundwater monitoring requirement was removed pursuant to the renewed NPDES Permit, described below, that went into effect August 1, 2018.

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Duke Energy's October 15, 2014 NPDES permit renewal application included identification of and monitoring data for "seeps" S-1 to S-9 (i.e., Areas of Wetness (AOWs)) and requested coverage for these seeps under the NPDES permit. AOW S-9 has since been grouted by Duke Energy. On March 29, 2016, Duke Energy submitted an updated permit renewal application to NCDEQ identifying additional AOWs S-08B and S-10.

2. On July 13, 2018, NCDEQ issued renewed NPDES Permit No. NC0004979 with an effective date of August 1, 2018. The renewed permit carries an expiration date of July 31, 2023 and includes the following Outfalls:
   - Outfall 002: ash pond effluent discharging to the Catawba River (Lake Wylie), including domestic wastewater, stormwater, ash sluice, water treatment system wastewater, flue gas desulfurization (FGD) system blowdown, landfill leachate, and miscellaneous cleaning and maintenance wash waters. The permit includes monitoring requirements for normal operations/decanting vs. dewatering of the Active Ash Basin. On February 1, 2019, all process wastewater was routed to the new Lined Retention Basin and discharge at Outfall 006 commenced. Decanting of the Active Ash Basin commenced on February 9, 2019.
   - Outfall 005: an internal outfall that discharges treated FGD wastewaters from the wet scrubber to the Active Ash Basin.
   - Outfall 006: Discharge from the Lined Retention Basin to Lake Wylie. The discharge must be treated using chemical coagulation, settling, and pH adjustment.
   - Outfall 007: Emergency spillway for the Lined Retention Basin to Lake Wylie.

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- Outfall 008: Emergency spillway for the Retired Ash Basin to Lake Wylie.
- Outfalls 103, 104, 108, 108B (former seeps S-3, S-4, S-8, S-8B): Constructed, potentially contaminated toe drains from the ash basin system to Lake Wylie.

The renewed permit also removed the requirement for groundwater monitoring pursuant to 15A NCAC 2L.0200 and included these additional requirements:

- Discontinue Outfall 002 discharge if arsenic, selenium, mercury, nickel, or lead reach 85% of allowable levels.
- During decanting and dewatering at Outfall 002, monitor continuously for pH and total suspended solids (TSS) and shut the discharge off automatically if pH level falls outside the 6.1 to 8.9 standard units range or if TSS exceeds one-half of the daily maximum limit.
- Connect to the dry bottom ash system by December 31, 2019 (this was completed on March 31, 2019).
- Conduct monthly instream monitoring for thirteen parameters at a point 1.1 miles upstream and 250 meters downstream of Outfall 002.
- Description of a Compliance Boundary in Part I.A(28).

3. On April 25, 2018, the North Carolina Environmental Management Commission issued Special Order by Consent No. EMC SOC WQ S17-009 (SOC) to Duke Energy. The SOC has an expiration date of "no later than June 30, 2022." The SOC covers discharges from seeps S-1, S-2, S-5, S-6, S-7, and S-9, all considered non-constructed seeps. Non-constructed seeps are not on or within a dam structures and do not convey wastewater via a pipe or constructed channel directly to a receiving stream.

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Seeps S-1 and S-9 have been dispositioned due to either a lack of flow or a lack of CCR constituents in the flow. Monitoring is required at S-2 which includes interim action levels for pH and total hardness. Seeps S-5, S-6, and S-7 are represented by instream monitoring both upstream and downstream of the seep locations and must cover the 2B standards. Quarterly monitoring is required for parameters specified in the SOC. At the time of the Audit, four rounds of sampling had been conducted. No exceedances of Interim Action Levels were noted.

Additional requirements of the SOC include:

- Payment of an upfront civil penalty within 30 days of SOC issuance. This penalty was paid May 7, 2018.
- Completion of the dry bottom ash system by March 31, 2019 (ahead of the required date in the NPDES permit). In an April 4, 2019 letter to NCDEQ, Duke Energy reported connection to the system on March 31, 2019.
- Initiation of the decanting (at the Active Ash Basin via Outfall 002) by June 30, 2019. In a February 14, 2019 letter to NCDEQ, Duke Energy reported commencement of decanting on February 9, 2019.
- Completion of decanting by June 30, 2020.
- Annual completion of a comprehensive survey of existing and potential new seeps. New non-constructed seeps identified and reported to NCDEQ in the Annual Seep Report are deemed covered by the SOC.
- Posting of a copy of the Allen Facility NPDES Permit, SOC, and related reports on Duke Energy's public website.

In a May 10, 2019 letter to Duke Energy, NCDEQ extended SOC coverage to non-constructed seeps S-10 and S-12. Physically, S-10 and S-12 are the same seep. During normal operations, S-10 seep water is collected in a sump and pumped back

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to the Active Ash Basin. During circumstances where the power to the recirculating pump might fail, the sump could overflow and seep water could mix with stormwater resulting in discharge to Lake Wylie via stormwater Outfall SW015, described below. During this occurrence, the seep is considered S-12. Under the SOC, seep S-12 is monitored as part of the instream monitoring program.

- **NPDES Industrial Stormwater Permitting** – NCDEQ issued individual Stormwater Permit No. NCS000546 on May 15, 2015 for stormwater discharges associated with industrial activities, with an effective date of May 15, 2015 and an expiration date of April 30, 2020. On November 16, 2018, Duke Energy submitted a request to NCDEQ to add Outfall SW015 to the stormwater permit. Outfall SW015 collects stormwater and may collect potential seepage water from seep S-10 but was not included in the renewed NPDES Permit No. NC0004979 because all of the collected waters are normally pumped back to the Active Ash Basin. However, as described above, if the pump fails, it is possible that a combination of stormwater and potential seepage water could discharge to Lake Wylie via Outfall SW015. NCDEQ notified Duke Energy on March 7, 2019 that Outfall SW015 had been added to the stormwater permit.

- **Stormwater Pollution Prevention Plan** - A Stormwater Pollution Prevention Plan (SWPPP) for these outfalls and drainage areas was implemented in November 2017.

- **Stormwater Construction Permitting** – Two NCDEQ-issued stormwater construction permits cover activities related to the ash basins and ash management at the Allen Facility. These permits were issued by NCDEQ under its General Permit for Construction Activities, No. NCG010000. Construction activities related to these permits appeared to be largely complete at the time of the Audit. The inspections being done under these permits were being completed by Duke

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Energy or their contractors, as noted below, including the completion of necessary inspections of erosion and sedimentation control (ESC) measures.

- GASTO-2017-015 was reissued December 7, 2017 for Water Redirection Program (Duke Energy).
- GASTO-2009-001 was reissued February 14, 2018 for Retired Ash Basin Landfill (Charah, Inc.).

Erosion and sedimentation control plans were in place for these projects.

On April 15, 2019, excessive rains caused sediment to be released beyond the determined limits of disturbance and into a small jurisdictional creek under GASTO-2017-015. The release was appropriately reported to the NCDEQ on April 15, 2019. Duke Energy stated in its notification that no known or suspected CCR materials were in the area of the sediment release. NCDEQ completed an ESC inspection on April 15, 2019 and included recommendations for corrective action, including installation of additional slope drains and/or removing a 24" corrugated pipe and replacing it with a geotextile and rip-rap channel. Also recommended was the removal of an earthen dam in the diversion ditch to allow flow to equalize between the slope drains and existing rip-rap. The Audit Team inspected this area and corrective measures appeared to be complete and functional.

- **Spill Prevention, Control and Countermeasure (SPCC) Plan –** One SPCC Plan was in place at the Allen Facility that was related to ash or ash management activities. Charah, Inc. implemented a Tier I Qualified SPCC Plan, dated March 2, 2017, that covers oil storage associated with activities at the Allen Facility landfill. Charah operates as a contractor to Duke Energy.

- **Tier II Reporting** – On February 20, 2019, Duke Energy submitted a Tier II report identifying hazardous chemicals on-site during 2018.

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- **Title V Permit** – The NCDEQ has issued Title V Permit No. 03757T45 with an effective date of January 13, 2015, a significant modification date of January 2, 2019, and an expiration date of February 28, 2023. Insignificant Activities listed in the permit include the facility's ash and ash handling system and the gypsum storage and conveyor systems. The Dry Fly Ash System, including the ash silos, is included in Section 2.1.F of the permit. Fugitive dust control is included in Section 3.MM of the permit.

- **CAMA** – The NCDEQ initially assigned both the Retired Ash Basin and the Active Ash Basin at the Allen Facility "intermediate risk" classifications under the Coal Ash Management Act of 2014 (CAMA). An intermediate risk classification requires excavation, removal, and safe storage of the impounded coal ash by December 31, 2024. Duke Energy completed dam improvements and local alternative potable drinking water, and as a result the risk ranking of the Active Ash Basin and Retired Ash Basin was revised to low risk. A low risk ranking was received on November 13, 2018 from NCDEQ; it allows in-place closure activities at the Active Ash Basin and the Retired Ash Basin and provides an extension of the closure deadline to June 2030. However, on April 1, 2019, NCDEQ issued a closure determination directing Duke Energy to excavate all of the coal ash from the Allen Facility and properly dispose of it. On April 26, 2019, Duke Energy filed an administrative petition challenging NCDEQ's determination.

  Other CAMA requirements include identification of drinking water supply wells within one-half mile of the facility, submission of Groundwater Assessment Plans, installation and multiple rounds of sampling from groundwater assessment wells, submission of Groundwater Assessment Reports summarizing groundwater investigations, submission of an Annual Groundwater Protection and Restoration Report, submission of Discharge Assessment Plans to characterize seeps, and

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submission of a Groundwater Corrective Action Plan. These submissions were provided by Duke Energy in a timely manner.

On October 11, 2017, NCDEQ approved provisional background threshold values (PBTVs) for the Allen Facility, and on January 31, 2018, Duke Energy submitted to NCDEQ the 2018 Comprehensive Site Assessment Update for the Allen Facility applying the PBTVs.

On December 21, 2018, NCDEQ issued Duke Energy optimized Interim Monitoring Plans (IMPs) for all 14 Duke Energy facilities, with groundwater sampling to begin in the first quarter of 2019.

Under CAMA, Duke Energy submitted to NCDEQ the 2018 Groundwater Protection and Restoration Annual Report on January 25, 2019 and the required Submittal of 2018 Surface Water Protection and Restoration Annual Report on January 21, 2019, both regarding the Allen Facility.

In a letter dated March 20, 2019, Duke Energy responded to NCDEQ's December 21, 2018 letter regarding the optimized IMPs for all 14 Duke Energy Facilities. Duke Energy's letter provided clarification and requested NCDEQ's concurrence on a few monitoring and reporting details related to the IMPs. NCDEQ approved these details for several sites, including the Allen Facility, on April 4, 2019. Pursuant to Duke Energy's March 20, 2019 letter, the Allen Facility CAMA groundwater monitoring network consists of sampling 33 wells quarterly and 103 wells semi-annually beginning the first quarter 2019.

Under CAMA, on April 30, 2019 Duke Energy submitted to NCDEQ the 2018 CAMA Annual Interim Monitoring Report regarding the Allen Facility.

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- **Waste Unit Compliance Boundaries** – NCDEQ issued a letter dated August 25, 2017 to Duke Energy regarding compliance boundaries for North Carolina coal ash facilities, with the following explanation regarding the establishment of compliance boundaries at the Allen Facility:
  - NCDEQ noted that the Retired Ash Basin was taken out of service in 1973. Consequently, pursuant to the 2L Rules and N.C.G.S. § 143-215.1, the Retired Ash Basin does not have a compliance boundary associated with any NPDES permit for the Allen Facility.
  - NCDEQ also requested modifications to the compliance boundary near Lake Wylie.

Duke Energy informed the Audit Team that in Paragraph 58 of Duke Energy's Petition For Contested Case Hearing filed with the North Carolina Office of Administrative Hearings on April 26, 2019, Duke Energy challenges NCDEQ's position with respect to this issue and argues that because the compliance boundaries were "established" at the time the Retired Ash Basin was originally permitted, they continue in effect thereafter without regard to whether the disposal system remains active or continues to be permitted. For this reason, Duke Energy has informed the Audit Team of their position that since the compliance boundaries were "established" at the time the Retired Ash Basin was originally permitted, the compliance boundaries continue in effect thereafter without regard to whether the disposal system remains active or continues to be permitted.

An updated waste and compliance boundaries map was provided in the renewed NPDES wastewater permit, and the map, which does not include a compliance boundary for the Retired Ash Basin, went into effect on August 1, 2018.

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- **Retired Ash Basin Landfill** – NCDEQ issued Duke Energy a permit to operate (Permit No. 3612-INDUS-2008) the Retired Ash Basin Landfill dated December 9, 2014, with an expiration date of December 9, 2019. The permit does not require groundwater monitoring activities for the Retired Ash Basin Landfill.

- **CCR Rule** – The Coal Combustion Residuals Rule (CCR Rule, 40 CFR, part 257, Subpart D) identifies standards for the disposal of CCR in landfills and surface impoundments. The Active Ash Basin, the Retired Ash Basin, and the Retired Ash Basin Landfill are subject to the CCR Rule since the Allen Facility continues to be used for power generation. Tables 1a, 1b, and 1c summarize the reports and plans posted by Duke Energy to its publicly available website in accordance with the CCR Rule for the Allen Facility.

  The Active Ash Basin, the Retired Ash Basin, and the Retired Ash Basin Landfill are part of a multi-unit CCR groundwater monitoring network. The multi-unit CCR groundwater monitoring network consists of 48 CCR monitoring wells (including 4 background wells). Duke Energy is currently sampling an additional 24 monitoring wells to assist in the CCR characterization.

  On November 7, 2018, Duke Energy posted on Duke Energy's public website the required location restrictions for impoundments which stated the Active Ash Basin did not meet the surface impoundment standard for placement above the uppermost aquifer (40 CFR § 257.60(a)).

  On December 14, 2018, Duke Energy provided notice on Duke Energy's public website that the following CCR Rule Appendix IV constituents were detected at levels above the applicable Groundwater Protection Standard (GWPS).

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Active Ash Basin, Retired Ash Basin, and Retired Ash Basin Landfill

- Arsenic
- Beryllium
- Cadmium
- Cobalt
- Lithium
- Thallium

On February 19, 2019, Duke Energy provided notice on Duke Energy's public website that an assessment of corrective measures was initiated for the Active Ash Basin, the Retired Ash Basin, and the Retired Ash Basin Landfill in accordance with 40 CFR § 257.96(a). Duke Energy posted to their operational record a CCR Assessment of Corrective Measures Reports dated April 10, 2019 for the Active Ash Basin, the Retired Ash Basin, and the Retired Ash Basin Landfill.

On March 1, 2019, Duke Energy posted on its public website the 2018 CCR Annual Groundwater Monitoring and Corrective Action Reports for the Active Ash Basin, the Retired Ash Basin, and the Retired Ash Basin Landfill.

1.2.3 Dam and Other Structural Permits and Approvals

Two active dams exist on-site and are associated with the ash management operations. The dams are grandfathered under North Carolina's Session Law 2009-390 (Senate Bill 1004, effective January 1, 2010). Under this grandfathering, the original designs of the dams are not subject to the current design standards for new construction, although modifications after the effective date may be subject to these standards.

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The dams are identified as follows:

- The Retired Ash Basin Dam (GASTO – 016).
- The Active Ash Basin Dam (GASTO – 061).

Each of these dams has a high hazard classification under the North Carolina Dam Safety system. No significant changes occurred to these dams during the reporting period.

A new dam, identified as GASTO-324, was created for the Lined Retention Basin. The Lined Retention Basin is not considered a CCR structure for purposes of this Audit.

1.2.4 Audit Observations and Update of Allen Facility Activities

The Allen Facility completed a long-term water management project that redirects the flows currently entering the Active Ash Basin to a new Lined Retention Basin. The project included the disturbance of 92 acres and the movement of over 500,000 cubic yards of material.

Key elements of the project included:

- A Submerged Flight Conveyor (SFC) System. The SFC system is used to dewater and dry the bottom ash, which will either be beneficially used or placed in the Retired Ash Basin Landfill.
- A Holding Basin. This will collect contact water from the Coal Yard, Station Process Water, and wastewater from the SFC system. Some preliminary treatment is performed at the Holding Basin.
- Lined Retention Basin. The Lined Retention Basin provides primary treatment for the wastewater at the station. A new high hazard dam, primary discharge structure, and emergency spillway were constructed to create the Lined Retention Basin.

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The Water Redirection Project also involved the installation of pumps and piping to transfer water from the new Holding Basin on the south side of the facility, in the former coal pile area, to the planned Lined Retention Basin on the north side of the facility. The discharge for water from the Lined Retention Basin is to Lake Wylie via NPDES Outfall 006 which has been identified in the renewed NPDES Permit No. NC0004979. The discharge must be treated using chemical coagulation, settling, and pH adjustment. On February 9, 2019, process flows to the Active Ash Basin ceased and the Water Redirection Project was put into service to manage plant process water and other facility flow.

Duke Energy is currently evaluating options for landfilling and is planning to submit a landfill option to the NCDEQ by December 31, 2019.

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2.0 AUDIT SCOPE AND SUBJECT MATTER

The Audit was completed in accordance with the court documents and the Audit scoping document agreed to by Duke Energy and the United States. A description of the scope is provided in Attachment A. The Audit included ash management activities, including aspects of generation that affect the nature of the waste streams from the point of generation into surface impoundments or ash management basins, landfills, and/or storage piles. The Audit focused on the activities at the Allen Facility since the date of the last Audit, which was May 14-15, 2018.

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3.0 AUDIT FINDINGS

The following Findings at the Allen Facility were identified by the Audit Team.

3.1 EXCEEDANCES OF THE STATE GROUNDWATER QUALITY STANDARDS

Requirement – The State groundwater rules establish maximum contaminant levels for groundwater at or beyond the compliance boundaries for the Ash Basins. *See* 15A NCAC 02L.0202. 15A NCAC 02L.0103(d) provides that "[n]o person shall conduct or cause to be conducted, any activity which causes the concentration of any substance to exceed that specified" under the Class GA standards or the interim maximum acceptable concentrations (IMACs) established for groundwater quality pursuant to 15A NCAC 02L.0202. Further, under N.C.G.S.A. § 143-215.1(i), "[a]ny person … who is required to obtain an individual permit … for a disposal system under the authority of N.C.G.S.A. § 143-215.1 [water pollution control] … shall have a compliance boundary … beyond which groundwater quality standards may not be exceeded." *See also* 15A NCAC 02L.0102(3) (defining "compliance boundary" as "a boundary around a disposal system at and beyond which groundwater quality standards may not be exceeded").

In addition, under N.C.G.S.A. § 143-215.6A(a)(1), civil penalties may be assessed against any person who violates any standard established by the NCDEQ under the authority of N.C.G.S.A. § 143-214.1, which covers groundwater standards.

Finding – Constituents exceeding the standards for Class GA waters, established in 15A NCAC 2L.0202, were documented in monitoring wells located at or beyond the compliance boundary for the Active Ash Basin and in monitoring wells located beyond the waste boundary of the Retired Ash Basin.[1] Based on a review of the Allen Facility 2018 CAMA groundwater data and the CAMA Annual Interim Monitoring Report dated April 30, 2019, pH, antimony, arsenic beryllium, boron, cadmium, chromium (VI) and chromium (total), cobalt, iron, manganese, nickel, selenium,

[1] NCDEQ has stated that the Inactive Ash Basin does not have a compliance boundary; however, as discussed above in Section 1.2.2 on page 1-13, Duke Energy disputes this.

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sulfate, thallium, vanadium, zinc, and total dissolved solids (TDS) were observed to exceed either the North Carolina 2L groundwater standards, the IMAC groundwater standards, or the NCDEQ approved provisional background threshold values (PBTVs), if the PBTV was greater than the 02L or IMAC groundwater standards, one or more times at or beyond the compliance boundary of the Active Ash Basin or beneath or surrounding the Retired Ash Basin. The 2018 groundwater data summary and pertinent Figures/Table from the Allen Facility 2018 CAMA Annual Interim Monitoring Report dated April 30, 2019 are provided in Attachment B.

The Audit Team noted that the exceedances of zinc, nickel, beryllium, thallium, selenium, and cadmium in groundwater at the Allen Facility are limited to an area around groundwater monitoring well GWA-06S, which is located approximately 400 feet west of the coal pile and approximately 1800 feet north of the Active Ash Basin compliance boundary. Notably, the pH measured at well GWA-06S was very low (3.7 to 3.9), and surrounding and downgradient groundwater sampling locations did not have similar low pHs, suggesting the cause of the low pH was isolated. The low pH observed at GWA-06S is unusual for CCR activities, and likely makes the identified constituents more soluble. Considering this information, the Audit Team believes the exceedances of the North Carolina 2L standards at GWA-06S may not be directly related to CCR activities and may be related to other historical activities conducted in this area.

Duke Energy has stated its opinion that, pursuant to a September 2015 Settlement Agreement with the NCDEQ, "Duke Energy is not subject to any further financial penalties for exceedances of groundwater standards" and "Duke Energy is not subject to any further enforcement action based on exceedances of groundwater standards as long as it remains in substantial compliance with CAMA groundwater requirements."

The CAM has advised the Audit Team that the Audit scope does not include an evaluation of compliance with the September 2015 Settlement Agreement and therefore the Audit Team does not take a position on Duke Energy's opinion.

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4.0 OPEN LINES OF INQUIRY

Open Lines of Inquiry are items identified by the Audit Team while on-site that, due to limited available information or the need for additional research, could not be determined as being in compliance or out of compliance. There were no Open Lines of Inquiry identified as part of this Audit.

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5.0 AUDIT APPROACH

5.1 ON-SITE ACTIVITIES

During its time on-site, the Audit Team conducted an opening conference with facility personnel to discuss the scope of work and the plan for accomplishing necessary tasks while at the facility. A site tour of the coal ash management and program support areas was subsequently completed. Following the tour, the Audit Team conducted a review of pertinent files, interviews with facility representatives, and verification of facility activities related to the ECPs, written programs, and permits. A debrief was conducted each Audit day to advise the facility representatives of Audit progress, open lines of inquiry, possible Audit findings, and needs for the next day. At the completion of the Audit, the Audit Team led a verbal discussion of draft Audit findings with facility representatives.

5.2 STANDARDS OF PRACTICE

The fieldwork portion of the Audit was conducted on May 13-14, 2019, with compliance reporting commencing May 14, 2015, the date of the Court's judgments. The Audit focused on the activities at the facility since the date of the last Audit, which was May 14-15, 2018 and was based on:

- Physical inspections of the facility;
- Examination of selected administrative and operating records made available by facility staff at the Audit Team's request;
- Interviews and discussions with key facility management and staff; and
- Verification procedures designed to assess the facility's application of, and adherence to, terms of the Probation, environment laws and regulations, and site policies and procedures. In addition, the Audit Team reviewed the facility's adherence to good management practices.

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The Audit followed established audit protocols and procedures. It should be understood that the Audit consisted of evaluating a sample of practices and was conducted over a short period of time.

Efforts were made to sample major facets of environmental performance during the period under review. This method is intended to uncover major system deficiencies and the Audit may not have identified all potential problems.

To support the overall independence of the Audit process, the Audit included an auditing professional certified by the Board of Environmental, Health and Safety Auditor Certifications (BEAC). BEAC is an accredited professional certification board that issues the Certified Professional Environmental Auditor (CPEA) designation to qualified auditors. Under BEAC, auditor independence is a key criterion for the implementation of an effective third-party audit program. The Audit was implemented in accordance with the standards related to auditor independence.

The process by which the Audit was conducted was consistent with the general state of the art of environment auditing and the best professional judgment of the Audit Team. To conduct the Audit, the team implemented a formal approach, drawing on process guidance from both BEAC and the Auditing Roundtable (AR) guidance documents. Guidance documents included:

- *Standards for the Professional Practice of Environmental, Health and Safety Auditing*. Prepared by the Board of Environmental, Health and Safety Auditor Certifications, 2008.

- ISO 19011:2002 – *Guidelines for Quality and/or Environmental Management Systems Auditing*. Prepared by the International Organization for Standardization, 2002.

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- *Standard for the Design and Implementation of an Environmental, Health and Safety Audit Program*. Prepared by The Auditing Roundtable, Inc., 1995.

- *Minimum Criteria for the Conduct of Environmental, Health and Safety Audits*. Prepared by The Auditing Roundtable, Inc.

5.3 REPRESENTATIVE SAMPLING

When confronted with a large population of data to review or equipment to inspect, the Audit Team employed representative sampling techniques to evaluate records over the Audit period requested, and as necessary, for physical inspection of some types of common equipment. The sample size for records reviews or equipment inspections required professional judgment.

The Audit Team's judgement considered the following:

- The outcome of the evaluation of the records sampled. If problems are found in the representative sample, more records may need to be examined to evaluate compliance status.
- Potential for or severity of non-compliance.
- The general appearance and observed practices of certain operating areas.
- Information obtained during an interview that indicates a potential problem.
- Other specific information or guidance from the CAM.
- Time available during the Audit.

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The Audit Team also employed the following types of sampling techniques, depending upon the characteristics of a specific population:

- Random sampling – every item has an equal chance of being selected.
- Interval sampling – select every nth item, (e.g., every third manifest in chronological order as contained in facility files).
- Block sampling – auditor uses his/her judgment to select a specific block of items, (e.g., petroleum storage tank inspections from April to October).
- Stratified sampling – population is divided into groups, which are then sampled through random or judgmental techniques.

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TABLE 1a
Active Ash Basin - Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
History of Construction	Design Criteria	05/29/2019
CCR Assessment of Corrective Measures Report	Groundwater Monitoring and Corrective Action	05/07/2019
Notification of Intent to Close	Closure and Post Closure Care	03/26/2019
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Fugitive Dust Control Plan	Operating Criteria	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan for Allen Active and Retired Ash Basins	Design Criteria	10/01/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	07/31/2018

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TABLE 1a
Active Ash Basin - Plans and Reports Posted by Duke Energy under the CCR Rule
(Continued)

Document Name	Category	Release Date
Annual Meeting with Local Emergency Responders 2018	Design Criteria	06/19/2018
Notice of Establishment of an Assessment Monitoring Program	Groundwater Monitoring and Corrective Action	04/03/2018
Emergency Action Plan for Allen Retired and Active Ash Basins Revision 008A	Design Criteria	02/16/2018
CCR Annual Groundwater and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Allen Inundation Maps	Design Criteria	01/25/2018
2017 Annual CCR Fugitive Dust Control Report-Allen	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Allen Active Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017
Groundwater Monitoring System Certification-Allen Active Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	08/02/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	06/29/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Post Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016

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TABLE 1a
Active Ash Basin - Plans and Reports Posted by Duke Energy under the CCR Rule (Continued)

Document Name	Category	Release Date
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report 2016	Operating Criteria	08/11/2016
Coal Combustion Residual Fugitive Dust Control Plan	Operating Criteria	11/12/2015
Annual Surface Impoundment Report (Initial) for Allen	Operating Criteria	02/16/2016
Annual Surface Impoundment Report 2015 Allen Steam Station - Revision 1	Operating Criteria	02/19/2016

*Tables generated from information on Duke Energy's CCR website on May 29, 2019

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TABLE 1b
Retired Ash Basin - Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
History of Construction	Design Criteria	05/29/2019
CCR Assessment of Corrective Measures Report	Groundwater Monitoring and Corrective Action	05/07/2019
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Fugitive Dust Control Plan	Operating Criteria	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan for Allen Active and Retired Ash Basins	Design Criteria	10/01/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	07/31/2018
Annual Meeting with Local Emergency Responders 2018	Design Criteria	06/19/2018

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TABLE 1b
Retired Ash Basin - Plans and Reports Posted by Duke Energy under the CCR Rule
(Continued)

Document Name	Category	Release Date
Notice of Establishment of an Assessment Monitoring Program	Groundwater Monitoring and Corrective Action	04/03/2018
Emergency Action Plan for Allen Retired and Active Ash Basins Revision 008A	Design Criteria	02/16/2018
CCR Annual Groundwater and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Allen Inundation Maps	Design Criteria	01/25/2018
2017 Annual CCR Fugitive Dust Control Report-Allen	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Allen Retired Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017
Groundwater Monitoring System Certification-Allen Retired Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	08/02/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	06/29/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Post Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016

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TABLE 1b
Retired Ash Basin - Plans and Reports Posted by Duke Energy under the CCR Rule (Continued)

Document Name	Category	Release Date
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report 2016	Operating Criteria	08/11/2016
Coal Combustion Residual Fugitive Dust Control Plan	Operating Criteria	11/12/2015
Annual Surface Impoundment Report (Initial) for Allen	Operating Criteria	02/16/2016
Annual Surface Impoundment Report 2015 Allen Steam Station - Revision 1	Operating Criteria	02/19/2016

*Tables generated from information on Duke Energy's CCR website on May 29, 2019

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TABLE 1c
Retired Ash Basin (RAB) Landfill - Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
CCR Assessment of Corrective Measures Report	Groundwater Monitoring and Corrective Action	05/07/2019
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Fugitive Dust Control Plan	Groundwater Monitoring and Corrective Action	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
CCR Annual Landfill Inspection Report 2018 Retired Ash Basin Landfill	Operating Criteria	11/19/2018
Unstable Areas	Location Restriction	11/07/2018
Run On and Run Off Control System Plan	Operating Criteria	08/31/2018
Notice of Establishment of an Assessment Monitoring Program	Groundwater Monitoring and Corrective Action	04/03/2018
CCR Annual Groundwater and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
2017 Annual CCR Fugitive Dust Control Report-Allen	Operating Criteria	11/29/2017
CCR Annual Landfill Report 2017-Allen Retired Ash Basin Landfill	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Allen Retired Ash Basin Landfill	Groundwater Monitoring and	11/06/2017

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TABLE 1c
Retired Ash Basin (RAB) Landfill - Plans and Reports Posted by Duke Energy under the CCR Rule

	Corrective Action	
Groundwater Monitoring System Certification-Allen Retired Ash Basin Landfill	Groundwater Monitoring and Corrective Action	11/06/2017
Run On and Run Off Control System Plan for Allen Retired Ash Basin Landfill Revision 001	Operating Criteria	05/24/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
CCR Annual Landfill Inspection Report 2016	Operating Criteria	11/22/2016
Post Closure Plan for Retired Ash Basin Landfill	Closure and Post Closure Care	11/11/2016
Closure Plan for Retired Ash Basin Landfill	Closure and Post Closure Care	11/11/2016
Run-on and Run-off Control System Plan	Operating Criteria	11/03/2016
Coal Combustion Residual Fugitive Dust Control Plan	Operating Criteria	11/12/2015
Annual Landfill Report - Initial for Allen Steam Station Retired Ash Basin Landfill	Operating Criteria	02/03/2016

*Tables generated from information on Duke Energy's CCR website on May 29, 2019

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ATTACHMENT A

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ATTACHMENT A
AUDIT SCOPE

A-1 GENERAL AUDIT SCOPE ITEMS

The general Audit scope items included:

- Review and evaluation of documentation for maintenance and repair of structures and equipment used for coal ash disposal,

- Review and evaluation of documentation of modifications, failures, leaks, damage, disrepair and other problems at the coal ash management units,

- Review and evaluation of documentation of efforts to correct failures, leaks, damage, disrepair and other problems where they determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding,

- Review and evaluation of documentation of communication of the items above within the organization,

- Review and evaluation of documentation associated with the specific environmental compliance items described below and laws, regulations, and policies associated these items and

- Review of compliance with administrative aspects and regulatory submissions related to coal ash management-specific regulations, including:

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- Coal Combustion Residuals — 40 CFR Part 257 Subpart D
- NC Coal Ash Management Act of 2014 — NC General Statutes Chapter 130A, Article 9

More specific items which were addressed in the audits to comply with the General Audit Scope are described below.

A-2 SPECIFIC COMPLIANCE WITH THE ECP-NC

The following items related to specific ECP-NC compliance were reviewed as part of the audit:

1. Verify maintenance and sufficient funding of corporate compliance organizations (ABSAT, CCP organization, National Ash Management Advisory Board). Where a root cause of a compliance finding appears in an auditor's judgment to result from inadequate funding, the AGC/ELM Audit Team will identify this in the Audit finding.

2. Verify timely production of satisfactory Compliance Officer (CO) reports to the CAM relating to the development, implementation, and enforcement of the ECP-NC. No auditing work is associated with this work at this time.

3. Evaluate existence and efficacy of toll-free hotline/e-mail inbox for violation reporting, including the appropriateness of the follow-up investigation and disposition of each reported matter. This requirement will be evaluated for the first year of audits and then reassessed.

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4. Evaluate completion and efficacy of periodic notices (via Internet, Intranet, email, notices in employee work areas, and publication in community outlets) to employees and the public of the availability of the toll-free hotline and electronic mail inbox.

5. Evaluate training materials and curricula utilized in the mandated training program, particularly those tailored to employee's specific job descriptions, to determine whether it advances the goal of "ensuring that every domestic employee of Duke Energy Corporation and its wholly-owned or operated affiliates understands applicable compliance policies and is able to integrate the compliance objectives in the performance of his/her job." Ensure that the subjects specifically named in the plea agreements are covered by the training (namely, notice and reporting requirements in the event of a release or discharge and the safe and proper handling of pollutants, hazardous substances and/or wastes.)

6. Evaluate whether Defendants are using "Best Efforts" to comply with the obligations under the ECP-NC. Where the Audit Team makes compliance findings, the Audit Team will, upon request, provide their opinion on whether this best efforts standard applies, and if so, whether best efforts have been used.

7. Verify compliance at each facility with the specific procedures and protocols set forth in the ECP-NC.

A-3 SPECIFIC COMPLIANCE WITH OTHER PROVISIONS OF THE PLEA AGREEMENT

The following items related to specific items in the Plea Agreement were reviewed as part of the Audit:

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1. Determine whether Defendants have opened, expanded, or reopened any coal ash or coal ash wastewater impoundment and, if so, verify that they are lined and do not allow unpermitted discharges of coal ash or coal ash wastewater to waters of the United States.

2. Verify that Defendants have determined the volume of wastewater and coal ash in each wet-storage coal ash impoundment in North Carolina as described in the plea agreements and that written or electronic records of this information is maintained in a location available to facility staff and employees responsible for making environmental or emergency reports.

3. Review citations/notices of violation/notices of deficiency related to violations of federal, state, or local law to assure that they have been properly relayed to the Court and, as appropriate under the plea agreements, determine their materiality.

4. Evaluate Defendants' efforts to close coal ash impoundments at Dan River, Riverbend, Asheville, and Sutton for legal compliance.

5. Note any observations made during the Audit that cause concern regarding the assets and/or security available to the Defendants to meet the obligations imposed by the Judgment in this case.

A-4 GENERAL ENVIRONMENTAL COMPLIANCE SUBJECT AREAS

The following items related to General Environmental Compliance were reviewed as part of the Audit:

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1. Assess all waste streams from Duke Energy facilities with coal ash impoundments. Review Duke Energy's processes, procedures, and practices, as well as compliance with those processes, procedures, and practices, for:

    a. identifying waste streams (especially, but not limited to, waste streams with discharge points into bodies of water),
    b. identifying and communicating any modifications or changes, or potential modifications or changes, to waste streams,
    c. ensuring proper handling/disposal of waste streams,
    d. identifying, preventing, and mitigating any risks or hazards that could affect waste streams and/or the disposal of waste streams, and
    e. ensuring proper permitting for waste streams.

For Item 1.d., the Audit Team evaluated such risk/hazard issues where there were compliance findings associated with waste streams.

2. Review and evaluate documentation of:

    a. Maintenance and repair of structures and equipment related to coal ash disposal,
    b. Modification of the coal ash impoundments and related pollution prevention equipment and structures,
    c. Failures, leaks, damage, disrepair, and other problems,
    d. Communication of the information described in a-c within the organization, and
    e. Efforts to correct failures, leaks, damage, disrepair, and other problems.

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3. Assess the employees responsible for inspection, maintenance, and repair of coal ash basins and related structures and equipment. The assessment included an assessment of the workloads of such employees to assure that Duke Energy's facilities are adequately staffed. These assessments were made where the Audit Team determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

4. Review the results and recommendations of any other audits (internal or external/state mandated) and assess Duke Energy's implementation of those recommendations.

5. Review and assess Duke Energy's processes, procedures, and practices for identifying, communicating, and addressing problems and potential problems at its coal ash basins (leaks, unpermitted discharges, etc.).

6. Review and assess Duke Energy's policies, procedures, practices, and equipment for handling emergency releases from its coal ash basins and evaluate the personnel with duties in such situations.

7. Verify that Duke Energy is complying with its NPDES wastewater and stormwater permits, as well as other relevant environmental permits. This should include verifying Duke Energy's timely submission of permit applications, permit renewal applications, and responses to requests for additional information from the relevant regulatory authority.

8. Review and assess any actions or measures Duke Energy has undertaken to assure accountability and prevent recurrences when problems and/or failures occur (i.e. disciplinary actions, re-training, revision to policies and procedures, etc.). This

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review will be completed where the Audit Team determines that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

9. Review and assess compliance with the following environmental regulations, as applicable to the management of coal ash:

a.	Wastewater Discharges	40 CFR 122; 15A NCAC 2H.0100 *et seq*
b.	Stormwater Discharges	40 CFR 122.26; 15A NCAC 2H.1000 *et seq;* NC General Permit (Construction) No. NCG010000
c.	NC Groundwater Standards	15A NCAC 02L.0202(h)
d.	Hazardous Waste Management	15A NCAC 13A.0100 to 13A.0107
e.	Oil Pollution Prevention	40 CFR Part 112
f.	Air Pollution (Title V)	15A NCAC 2Q, and
g.	Hazardous Chemicals (Tier II)	40 CFR Part 370.

Reviews also included an analysis of overall compliance and the status and security of the asset. Subsequent reviews of individual facilities will evaluate the movement towards compliance. The Audit did not include an evaluation of compliance with the September 2015 Settlement Agreement with NCDEQ.

A–5 LIST OF PERMITS AND PROGRAMS DEEMED TO BE EITHER DIRECTLY OR INDIRECTLY IN SUPPORT OF ASH MANAGEMENT

During the Audit, the Audit Team reviewed a variety of written programs developed and implemented by Duke Energy and facility staff. State-issued permits and supporting documentation relative to environmental programs and geotechnical aspects of ash basin management were also requested and reviewed.

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Requested documents, pertinent to management of ash in basins, landfills, ponds, etc. were outlined in the pre-audit questionnaire for each facility and included, but were not limited to:

1. The Compliance Register developed for ETrac for the Site.

2. The Duke Energy Operations Manual for the facility.

3. A site plan, site map, or aerial photo which shows the entire facility and key features, of the facility including NPDES outfalls associated environmental monitoring locations, storage tanks, etc.

4. Most recent 2 years of maintenance, monitoring, and inspection records for each coal ash/CCR basin (just the physical inspections, not the groundwater records).
5. A "Phase 1 and Phase 2" summary of ash basin conditions prepared by an outside consultant.

6. Duke Energy's permitting plans for addressing ash impoundments and landfills at this facility.

7. Applicable pages from the Duke Energy basin-by-basin coal ash/CCR project tracking document for this facility.

8. Original basin/landfill/coal ash management unit construction records.

9. Documentation of changes to these units.

10. Coal ash unit construction permit application and approval.

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11. State-issued permits and application materials for permits associated with coal ash/CCR management (including, e.g., dam permits).

12. Any currently effective state order, consent order, or similar state direction that addresses coal ash/CCR management at the site.

13. Records required to be maintained in the site's operating record under the federal CCR regulation and/or any state CCR regulatory program.

14. Records of off-site ash shipments from May 2015 forward.

15. Stormwater permit application and approval for all outfalls.

16. Industrial wastewater (NPDES/POTW) permit application and approval for all outfalls/discharges.

17. Industrial and stormwater sampling and monitoring records, and any corrective action plans (last 2 years).

18. Stormwater pollution prevention plan.

19. Landfill operating permit with maintenance and monitoring requirements.

20. Landfill leak detection and groundwater monitoring records from the last 2 years along with any workplans that describes the rationale for the monitoring system at the Site.

21. Landfill operating permit with maintenance and monitoring requirements.

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22. Copies of any air permits and applications for coal ash units and ancillary operations.

23. Any testing and monitoring records completed to comply with the air permits.

24. Any notices of violations associated with the coal ash/CCR management activities received over the last 2 years.

25. Copy of SPCC Plan.

26. Community Right-to-Know

    a. Copies of lists of hazardous chemicals or MSDSs submitted;
    b. Copies of Tier I or II reports; and
    c. Copies of Form R (toxic release inventory) reports.

27. Copies of communications with employees and the public regarding availability of toll-free hotline and electronic mail inbox for reporting suspected environmental violations.

28. Management Systems:

    a. List of responsible party for each environmental activity.
    b. All environmental-related training records.
    c. All environmental policies and procedures.
    d. Organization chart.
    e. Site diagram identifying storage areas, tanks, etc.

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29. Employee training records related to environmental programs and ash management policies.

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ATTACHMENT B

2018 Groundwater Data Summary Documents and Compliance Boundary Map

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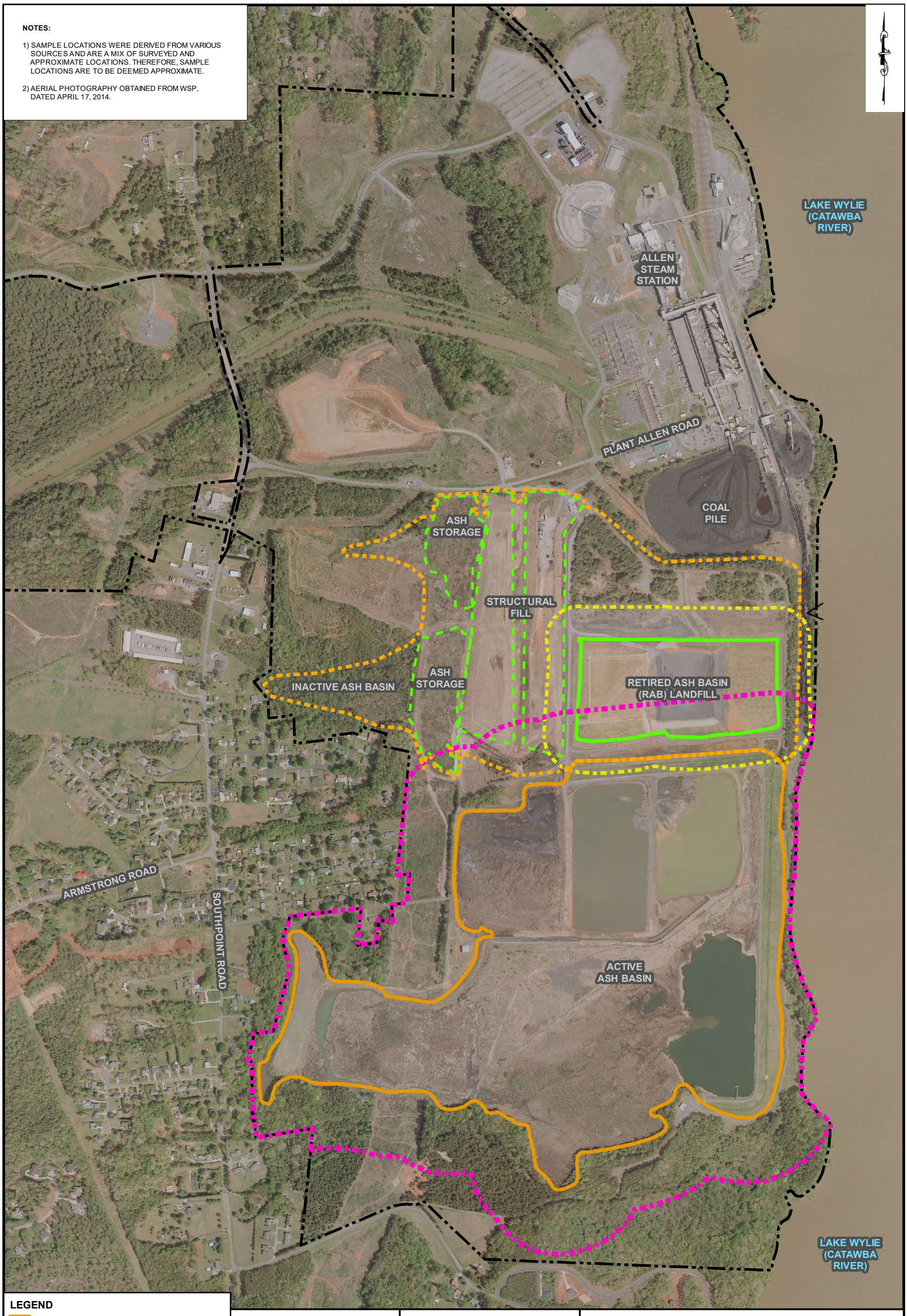
NOTES:

1) SAMPLE LOCATIONS WERE DERIVED FROM VARIOUS SOURCES AND ARE A MIX OF SURVEYED AND APPROXIMATE LOCATIONS. THEREFORE, SAMPLE LOCATIONS ARE TO BE DEEMED APPROXIMATE.

2) AERIAL PHOTOGRAPHY OBTAINED FROM WSP, DATED APRIL 17, 2014.



LEGEND

- ACTIVE ASH BASIN WASTE BOUNDARY
- INACTIVE ASH BASIN WASTE BOUNDARY
- ASH BASIN COMPLIANCE BOUNDARY
- LANDFILL BOUNDARY
- LANDFILL COMPLIANCE BOUNDARY
- ASH STORAGE AND STRUCTURAL FILL BOUNDARY
- PLANT SITE BOUNDARY

400 200 0 400 800
GRAPHIC SCALE IN FEET

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CHECKED BY: L. DRAGO
DATE: 01/10/2018

P:\Duke Energy Progress.1026\00 GIS BASE DATA\Allen\Map_Docs\DEQ Monthly\Allen_Boundaries_2018JAN.mxd

FIGURE 1
ASH BASIN WASTE AND COMPLIANCE BOUNDARIES
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)														ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)														ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
AB-01R	03/02/2018	**6.3**	<50	100	243	<0.5	0.17	45.7	0.042 j	<0.08	4.1	4.9	0.12	288	12	1.6	1	<0.1	**2.1**	<10	NA	<0.1
AB-01R	03/08/2018	**6.4**	<50	120	280	<1	<1	42	<1	<1	NA	<5	<1	128	7	<5	<1	<0.2	**2.53**	<5	NA	NA
AB-01R	06/04/2018	**6.3**	<50	102	260	<0.5	0.08 j	38	<0.1	<0.08	4.6	4.2	0.056 j	<50	<5	1.3	0.89	<0.1	**1.8**	<10	NA	<0.1
AB-01R	07/02/2018	**6.1**	<50	130	260	<1	<1	41	<1	<1	NA	<5	<1	36	<5	<5	<1	<0.2	**2.33**	6	NA	NA
AB-01R	08/27/2018	**6.2**	<50	114	269	<0.5	0.14	40.6	<0.1	<0.08	4.4	4.4	0.051 j	31.1 j	<5	1.4	0.96	<0.1	**2.1**	4.4 j,B,P8	NA	<0.1
AB-01R	12/06/2018	**6.3**	<50	119	236	<0.5	0.18	36.9	0.018 j,S1	<0.08	2.2	3.8	0.074 j,B	<50	<5	1.2	0.74	<0.1	**2.1**	<10	NA	<0.1
AB-02	03/02/2018	**5.0**	<50	<1	<25	<0.5	<0.1	27.1	0.13	<0.08	0.26	0.41 j	0.57	27.7 j	29.8	1	<0.5	<0.1	0.076 j,B	5.9 j	NA	<0.1
AB-02	05/31/2018	**5.6**	<50	1.8	<25	<0.5	<0.1	29.2	0.12	<0.08	0.26	0.33 j	0.69	<50	32.4	0.96 B	<0.5	0.03 j	<0.3	5.5 j	NA	<0.1
AB-02	08/29/2018	**5.0**	<50	<1	33	<0.5	<0.1	36.9	0.097 j	<0.08	0.39	0.59	0.88	<50	37.5	1.9	<0.5	<0.1	0.13 j	8 j	NA	<0.1
AB-02	12/07/2018	**5.1**	<50	0.57 j	36	<0.5	0.1	29.7	0.12	<0.08	0.32	0.37 j,S1	0.88	256	37.1	1.1	<0.5	0.015 j	**0.33 S1**	4.8 j	NA	<0.1
AB-02D	03/02/2018	**5.8**	<50	<1	<25	<0.5	0.094 j	28.8	0.037 j	<0.08	1.8 M6	2.1	0.061 j	129	5.2	0.71	<0.5	<0.1	**3.7**	<10	NA	<0.1
AB-02D	05/31/2018	**6.3**	<50	<1	87	<0.5	0.12	29.3	<0.1	<0.08	3.3	3.2	0.039 j	63.7	3.2 j	1.5	<0.5	<0.1	**5.1**	21.1	NA	0.056 j
AB-02D	08/29/2018	**6.2**	<50	<1	89	<0.5	0.12	26.8	<0.1	<0.08	3.5	2.8	<0.1	<50	<5	0.72	<0.5	<0.1	**5.1**	2.8 j	NA	0.062 j
AB-02D	12/07/2018	**6.2**	<50	<1	76	<0.5	0.14	28	0.023 j	<0.08	1.5	1.8	0.053 j	<50	3.7 j	0.63	<0.5	<0.1	**3.2**	<10	NA	0.05 j
AB-04BR	02/28/2018	**6.4**	<50	3.5	136	<0.5	0.18	73.1	<0.1	0.14 B	2	2.1	**1.3**	<50	**395**	1.7	0.17 j	<0.1	**3.3**	4.2 j	0.00015 j	<0.1
AB-04BR	05/31/2018	**6.4**	<50	3	148	<0.5	0.16	57.8	<0.1	0.092	1.7	2	0.93	<50	**227**	3.2	<0.5	<0.1	**4.1**	5 j	0.0001 j	<0.1
AB-04BR	08/28/2018	6.6	<50	10.1	188	0.34 j	0.24	74.5	<0.1	0.15	2.4	1.5	**1.4**	<50	**128**	0.92	0.16 j	<0.1	**2.9**	6.6 j	0.00019 j	0.069 j
AB-04BR	12/11/2018	6.8	<50	3.9	164	0.13 j	0.19	71.3	<0.1	0.24	0.9	1.4	0.94	<50	**166**	0.87	<0.5	<0.1	**3**	5.8 j	0.00013 j	<0.1
AB-04D	02/28/2018	**6.2**	<50	1.3	110	<0.5	0.081 j	33.2	<0.1	0.036 j,B	4.7	5.7	0.16	<50	9.1	3.5	<0.5	<0.1	**4.4**	6.4 j	0.000034 j	<0.1
AB-04D	03/08/2018	**6.1**	<50	1.9	140	<1	<1	32	<1	<1	NA	7	<1	229	11	<5	<1	<0.2	**5.02**	9	NA	NA
AB-04D	05/31/2018	**6.1**	<50	1.7	115	<0.5	0.062 j	27.6	0.078 j	<0.08	6.8	6.5	0.036 j	<50	<5	2.6	<0.5	<0.1	**4.3**	7.4 j	0.000034 j	<0.1
AB-04D	07/02/2018	**6.0**	<50	2.4	120	<1	<1	31	<1	<1	NA	7	<1	151	8	<5	<1	<0.2	**4.89**	11	NA	NA
AB-04D	08/28/2018	**6.0**	<50	1.7	124	<0.5	0.059 j	34	<0.1	0.038 j	5.7	5.9	0.045 j	142	5.2	2.8	0.17 j	<0.1	**4.2**	8.3 j	<0.0005	<0.1
AB-04D	12/11/2018	**6.4**	<50	1.6	81	<0.5	0.052 j	26.2	0.016 j	<0.08	4.3	6.2	0.032 j	<50	<5	2.1	<0.5	<0.1	**4.1**	3.9 j	<0.0005	<0.1
AB-04S	02/28/2018	**6.0**	<50	9.6	84	<0.5	0.1	30.4	<0.1	<0.08	0.065	0.28 j	0.14	**516**	25.7	0.31 j	<0.5	<0.1	**0.6**	<10	<0.0005	<0.1
AB-04S	03/08/2018	**6.2**	<50	13	120	<1	<1	33	<1	<1	NA	<5	<1	**454**	9	<5	<1	<0.2	**1.41**	<5	NA	NA
AB-04S	05/31/2018	**6.1**	32.1 j	8.6	93	<0.5	0.18	30.1	<0.1	<0.08	0.064	0.43 j	0.082 j	**1120**	11.2	0.59	<0.5	<0.1	**1.2**	2.6 j	<0.0005	<0.1
AB-04S	07/02/2018	**6.0**	<50	11	93	<1	<1	34	<1	<1	NA	<5	<1	**419**	**195**	<5	<1	<0.2	**1.21**	<5	NA	NA
AB-04S	08/28/2018	**5.9**	45 j	10.2	95	<0.5	0.12	34.6	<0.1	<0.08	0.27	0.42 j	0.24	**714**	**54.3**	0.55	0.18 j	<0.1	**0.44 B**	3.5 j	<0.0005	<0.1
AB-04S	12/11/2018	**6.3**	<50	10.2	71 D6	<0.5	0.17	21.4	0.016 j	<0.08	0.076 S1	0.84	0.17	**885**	32.4	0.55	<0.5	0.021 j	**1.9**	<10	<0.0005	<0.1
AB-05	03/05/2018	**5.6**	<50	1	26	0.12 j	0.086 j	27.5	0.065 j	<0.08	1.1	2.5	0.096 j	**469**	13.2	1.5	<0.5	0.035 j	**1.4 B**	10.6	<0.0005	<0.1
AB-05	06/06/2018	**5.4**	<50	0.94 j	34	<0.5	<0.1	29.1	0.049 j	<0.08	2.1	5.8	0.16	**779**	21.7	3.6	<0.5	0.034 j	**1.1**	3.7 j	NA	<0.1
AB-05	08/28/2018	**5.5**	<50	1.1 M1	30	<0.5	0.051 j	29.5	<0.1	<0.08	1.5	1.8	0.073 j	**420**	12.1	1.4	<0.5	<0.1	**0.76**	8.3 j,B	NA	<0.1 M1
AB-05	12/13/2018	**5.5**	<50	1.1	<25	0.13 j	<0.1	26.2	0.046 j	<0.08	0.92	8.3	0.23	**380**	14.5	4.9	<0.5	<0.1	**1.2**	8.3 j	NA	<0.1
AB-06A	02/27/2018	**6.0**	<50	27.5	125	<0.5	0.14	39.8	0.06 j	<0.08	9.5	**11.8**	0.11	36.3 j	15.2	1.2	0.42 j	<0.1	**3.8**	<10	<0.0005	0.064 j
AB-06A	05/30/2018	**6.0**	<50	29.8	143	<0.5	0.12	40	<0.1	<0.08	**10.3 TP**	**11**	0.098 j	69.7	14.2	1.2	0.44 j	<0.1	**3.5**	<10	<0.0005	0.076 j
AB-06A	08/28/2018	**6.2**	<50	32.2 M1	136	<0.5	0.18	44.6	<0.1	<0.08	**11.1**	**10.2**	0.055 j	<50	7.7	1.1	0.44 j	<0.1	**3.8**	2.6 j,B	<0.0005	0.079 j,M1,R1
AB-06A	12/11/2018	**6.1**	<50	31.9	134	<0.5	0.096 j	41.8	0.022 j	<0.08	8.5	9	0.083 j	<50	9	0.94	0.39 j	<0.1	**3.6**	<10	<0.0005	0.082 j
AB-06R	02/27/2018	**6.4**	<50	27.1	128	<0.5	0.15	31.9	<0.1	<0.08	7.4	8.3	0.078 j	87.7	43	1.7	0.38 j	<0.1	**3.5**	<10	<0.0005	<0.1
AB-06R	05/30/2018	**6.1**	<50	29.7	130	<0.5	0.13	30.9	0.041 j	<0.08	7.4 TP	7.3	0.037 j	119	30.8	1.5	0.35 j	<0.1	**3.2**	5.2 j	<0.0005	<0.1
AB-06R	08/28/2018	**5.9**	<50	31.4	131	0.077 j	0.21	35.1	<0.1	<0.08	8	7.1	0.075 j	127	41.4	1.6	0.38 j	<0.1	**3.2**	4.4 j,B	<0.0005	<0.1
AB-06R	12/11/2018	**6.0**	<50	30.9	138	<0.5	0.13	30.1	0.01 j	<0.08	7.9	8.3	0.059 j	<50	21.9	1.9	0.36 j	<0.1	**3.4**	3 j	<0.0005	<0.1
AB-09D CCR	02/26/2018	6.8	608	46.8	174 D6	<0.5	0.079 j	28.5	<0.1	<0.08	NA	0.35 j	0.026 j	NA	NA	NA	1.9	<0.1	NA	NA	NA	<0.1
AB-09D	03/01/2018	6.7	587	44.6	195	<0.5	0.082 j	30.2	<0.1	<0.08	0.22	0.28 j	<0.1	<50	25.8	0.2 j	1.9	<0.1	**6.5**	<10	0.00012 j	<0.1
AB-09D	03/06/2018	6.6	522	49	190	<1	<1	28	<1	<1	NA	<5	<1	99	10	<5	1.74	<0.2	**6.62**	<5	NA	NA
AB-09D CCR	05/30/2018	6.7	534	46.1	201	<0.5	0.07 j	28.1	<0.1	<0.08	NA	0.33 j,S1	0.024 j,S1	NA	NA	NA	1.9	<0.1	NA	NA	NA	<0.1
AB-09D	06/01/2018	6.7	553	48.4	198	<0.5	0.086 j	27.5	<0.1	<0.08	0.18	0.26 j	<0.1	<50	7.5	0.21 j	1.8	<0.1	**5.8**	<10	0.00011 j	<0.1
AB-09D	07/02/2018	6.6	554	50	200	<1	<1	31	<1	<1	NA	<5	<1	**452**	18	<5	1.66	<0.2	**7.48**	<5	NA	NA
AB-09D	08/30/2018	6.6	566	51.7	216	<0.5	0.11	30	<0.1	<0.08	0.22	0.38 j	0.049 j	127	9.4	0.25 j	1.8	<0.1	**5.6**	3.2 j,B	0.00012 j	<0.1
AB-09D	12/06/2018	6.8	551	48.4	203	<0.5	0.069 j	28.8	<0.1	<0.08	0.64	0.71	0.033 j	42.9 j	4.7 j	<0.5	1.5	<0.1	**6.8 BC**	<10	0.00012 j	<0.1
AB-09D CCR	12/06/2018	6.8	476	50.2	201	<0.5	0.071 j,S1	29.2	<0.1	<0.08	NA	0.27 j,S1	0.044 j,S1	NA	NA	NA	1.7 S1	<0.1	NA	NA	NA	<0.1
AB-09S CCR	02/27/2018	**6.3**	**1020**	31.6	127	<0.5	0.11	172	<0.1	<0.08	NA	0.13 j	**8.3**	NA	NA	NA	<0.5	0.033 j	NA	NA	NA	<0.1
AB-09S	03/01/2018	**6.4**	**702**	31	128	<0.5	0.096 j	188	<0.1	<0.08	<0.025	0.22 j	**9.9**	**7060**	**9860**	0.48 j	<0.5	0.04 j	<0.3	<10	<0.0005	<0.1
AB-09S	03/06/2018	**6.2**	685	37	140	<1	<1	190	<1	<1	NA	<5	**9.12**	**8300**	**10400**	<5	<1	<0.2	<0.3	<5	NA	NA
AB-09S CCR	05/30/2018	**6.2**	692	34.3	131	<0.5	0.1	202	<0.1	<0.08	NA	<0.5	**8.6**	NA	NA	NA	<0.5	0.041 j	NA	NA	NA	<0.1
AB-09S	06/01/2018	**6.1**	691	35.7	143	<0.5	0.09 j	190	<0.1	<0.08	<0.025	0.66	**8.2**	**8320**	**11600**	2	<0.5	0.03 j	<0.3	<10	<0.0005	<0.1
AB-09S	07/02/2018	**6.1**	**708**	39	140	<1	<1	207	<1	<1	NA	<5	**8.85**	**20800**	**11500**	<5	<1	<0.2	**0.485**	<5	NA	NA
AB-09S	08/30/2018	**6.3**	643	37.7	139	<0.5	0.12	184	<0.1	<0.08	<0.025	0.61	**8.5**	**8170**	**9830**	1	<0.5	0.037 j	0.2 j	55.9	<0.0005	<0.1
AB-09S	12/06/2018	**6.3**	**705**	35.1	132	<0.5	0.12	176	<0.1	<0.08	0.025 M1	<0.5	**7.9**	**7680**	**10200**	0.63	<0.5	0.025 j	0.079 j,BC,S1	<10	<0.0005	<0.1
AB-09S CCR	12/06/2018	**6.3**	561	35.3	133	<0.5	0.16 S1	189	<0.1	<0.08	NA	0.1 j,S1	**7.8**	NA	NA	NA	<0.5	0.034 j	NA	NA	NA	<0.1
AB-10D CAMA	03/06/2018	**5.7**	<50	23.4	132	<0.5	0.085 j	39.6	<0.1	<0.08	1	2.8	0.06 j	<50	2.5 j	0.59	<0.5	<0.1	**4.7**	<10	NA	<0.1
AB-10D	03/06/2018	**6.2**	<50	27	150	<1	<1	39	<1	<1	NA	<5	<1	294	25	<5	<1	<0.2	**5.58**	<5	NA	NA
AB-10D	06/01/2018	**6.2**	<50	27.5	147	<0.5	0.061 j	35.9	<0.1	<0.08	2.5	3	0.095 j	37.6 j	6.9	0.51	<0.5	<0.1	**4.6**	<10	NA	<0.1
AB-10D	07/02/2018	**6.2**	<50	28	140	<1	<1	39	<1	<1	NA	<5	<1	74	<5	<5	<1	<0.2	**5**	<5	NA	NA
AB-10D	08/30/2018	**6.2**	<50	29.3	153	<0.5	0.096 j	40.4	<0.1	<0.08	2.4	2.8	0.08 j	51.2	4.5 j	0.61	<0.5	<0.1	**4.3**	4.8 j,B	NA	<0.1
AB-10D	12/11/2018	**6.4**	<50	30.8	146	<0.5	0.077 j	39.8	<0.1	<0.08	**14.6**	2.9	0.11	79.4	6	<0.5	<0.5	<0.1	**4.2**	<10	NA	<0.1
AB-10S CAMA	03/06/2018	**6.1**	30.6 j	16.7	119	<0.5	<0.1	62.4	<0.1	<0.08	0.06	2.4	**1.7**	110	**675**	2.1	<0.5	<0.1	0.25 j	<10	NA	<0.1

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
AB-10S	03/06/2018	**6.1**	<50	18	110	<1	<1	62	<1	<1	NA	<5	**1.88**	102	**770**	<5	<1	<0.2	**0.557**	<5	NA	NA
AB-10S	06/01/2018	**3.9**	29.2 j	19.1	128	<0.5	<0.1	63.2	<0.1	<0.08	<0.025	0.16 j	**1.8**	<50	**750**	0.42 j	<0.5	<0.1	**0.38**	<10	NA	<0.1
AB-10S	07/02/2018	**6.1**	<50	20	120	<1	<1	68	<1	<1	NA	<5	**2.17**	**411**	**840**	<5	<1	<0.2	**1.32**	<5	NA	NA
AB-10S	08/30/2018	**6.1**	32.6 j	20.2	132	<0.5	0.062 j	65.1	<0.1	<0.08	<0.025	<0.5	**2**	50.3	**845**	0.9	<0.5	<0.1	0.21 j	3.1 j,B	NA	<0.1
AB-10S	12/11/2018	**6.2**	28 j	20.6	118	<0.5	0.066 j	56.9	0.025 j	<0.08	<0.025 M0,R1,S1	0.21 j	**1.7**	255	**693**	<0.5	<0.5	<0.1	**0.67**	<10	NA	<0.1
AB-11D	02/28/2018	**6.1**	<50	<1	77	<0.5	0.053 j	47.4	0.037 j	<0.08	3	3.8	<0.1	38.1 j	4.6 j	0.28 j	<0.5	<0.1	**1.5**	<10	<0.0005	<0.1
AB-11D	03/08/2018	**6.0**	<50	0.41	120	<1	<1	44	<1	<1	NA	<5	<1	**670**	<5	<5	<1	<0.2	**3.93**	<5	NA	NA
AB-11D	06/04/2018	**5.9**	<50	<1	104	<0.5	0.15	41.8	<0.1	<0.08	3	3.2	0.021 j	38.3 j	<5	0.25 j	<0.5	<0.1	**1.4**	15	<0.0005	<0.1
AB-11D	07/02/2018	**6.0**	<50	0.37	110	<1	<1	44	<1	<1	NA	<5	<1	258	<5	<5	<1	<0.2	**2.5**	<5	NA	NA
AB-11D	08/30/2018	**6.0**	<50	<1	104	<0.5	0.082 j	43.4	<0.1	<0.08	3.1	3.2	<0.1	<50	<5	0.26 j	<0.5	<0.1	**1.8**	3 j,B	<0.0005	<0.1
AB-11D	12/07/2018	**6.1**	<50	<1	97	<0.5	<0.1	43	<0.1	<0.08	3.5 M0	3.4	0.021 j	<50	<5	<0.5	<0.5	<0.1	**1.6**	<10	<0.0005	<0.1
AB-12D	03/02/2018	6.5	<50	4.3	117	<0.5	0.14	46.4	<0.1	<0.08	0.51	0.66	<0.1	27.6 j	<5	0.2 j	0.7	<0.1	**3.5**	<10	NA	<0.1
AB-12D	03/08/2018	**6.4**	<50	5.1	150	<1	<1	48	<1	<1	NA	<5	<1	**679**	17	<5	<1	<0.2	**4.97**	<5	NA	NA
AB-12D	06/01/2018	**6.4**	<50	3.9	129	<0.5	0.11	44.6	<0.1	<0.08	0.45	0.49 j	<0.1	<50	<5	<0.5	0.65	<0.1	**3.3**	<10	NA	<0.1
AB-12D	07/02/2018	**6.4**	<50	4.3	130	<1	<1	49	<1	<1	NA	<5	<1	**329**	8	<5	<1	<0.2	**4.32**	36	NA	NA
AB-12D	08/29/2018	6.6	<50	3.8	130	<0.5	0.048 j	49.2	<0.1	<0.08	0.45 M1	0.54	0.03 j	176	4.2 j	0.17 j	0.69	<0.1	**3.7**	5 j,B,1g	NA	<0.1
AB-12D	12/07/2018	6.6	<50	4 M1	<25	<0.5	0.077 j	47.4	<0.1	<0.08	0.56	0.68 S1	0.063 j	102	2.7 j	0.56	0.53	<0.1	**3.5**	3.6 j	NA	<0.1
AB-12S	03/02/2018	**5.2**	<50	<1	<25	<0.5	0.062 j	40.2	0.086 j	<0.08	0.12	0.43 j	0.54	**815**	**58.4**	0.41 j	<0.5	<0.1	0.13 j,B	3.9 j	NA	<0.1
AB-12S	03/08/2018	**5.1**	<50	0.12	59	<1	<1	40	<1	<1	NA	<5	<1	**465**	**53**	<5	<1	<0.2	**1.04**	<5	NA	NA
AB-12S	06/01/2018	**4.7**	<50	<1	<25	<0.5	0.086 j	36.7	0.043 j	0.036 j	0.18	0.68	0.5	**399**	47.7	0.35 j	<0.5	<0.1	0.14 j	<10	NA	<0.1
AB-12S	07/02/2018	**5.0**	<50	0.17	33	<1	<1	39	<1	<1	NA	<5	<1	**522**	**54**	<5	<1	<0.2	**1.27**	<5	NA	NA
AB-12S	08/29/2018	**4.5**	<50	<1	<25	<0.5	<0.1	44.9	0.057 j	<0.08	0.14	0.37 j	0.58	**1040**	**69.6**	0.35 j	<0.5	<0.1	**1**	6.1 j,B,1g	NA	<0.1
AB-12S	12/07/2018	**5.2**	<50	<1	135	<0.5	<0.1	37.1	0.056 j	<0.08	0.21 S1	0.27 j,S1	0.7	39.6 j	34.4	<0.5	<0.5	<0.1	0.17 j,B,S1	6.3 j	NA	<0.1
AB-13D	03/05/2018	**6.3**	<50	<1	120 D6	<0.5	0.15	45.8	<0.1	0.035 j	1	1.4	0.082 j	289	7.8	1.3	<0.5	<0.1	**6.1**	<10	<0.0005	<0.1
AB-13D	03/06/2018	**6.1**	<50	0.58	120	<1	<1	71	<1	<1	NA	<5	**1.41**	**2370**	**54**	<5	<1	<0.2	**12.7**	8	NA	NA
AB-13D	06/04/2018	**6.0**	<50	<1 M1	126	<0.5	0.12	42.3	<0.1	0.053 j	0.8 M1	1.3	0.13	**464**	10	0.72	<0.5	<0.1	**5.8**	<10	<0.0005	<0.1
AB-13D	07/02/2018	**6.0**	<50	0.46	120	<1	<1	45	<1	<1	NA	<5	<1	**505**	13	<5	<1	<0.2	**7.17**	5	NA	NA
AB-13D	08/30/2018	**5.8**	<50	<1 M1,R1	113	<0.5	0.12	38	<0.1	0.039 j	1.1	1.2	0.048 j	117	3.2 j	0.57	<0.5	<0.1	**4.8**	3.2 j,B	<0.0005	<0.1 M1,R1
AB-13D	12/13/2018	**6.2**	<50	<1	119	<0.5	0.1	36.2	<0.1	<0.08	1	1.5	0.039 j	29 j	2.6 j	0.55	<0.5	<0.1	**5.3**	<10	<0.0005	<0.1
AB-13S	03/05/2018	**6.0**	<50	2	86	<0.5	0.075 j	43	<0.1	<0.08	0.58	0.76	0.41	89.4	22.3	2	<0.5	<0.1	**0.9**	9.9 j,B	<0.0005	<0.1
AB-13S	03/06/2018	**5.7**	<50	1.4	75	<1	<1	42	<1	<1	NA	<5	<1	78	15	<5	<1	<0.2	**1.17**	9	NA	NA
AB-13S	06/04/2018	**5.3**	<50	0.67 j	83	<0.5	<0.1	41.5	0.049 j	<0.08	0.37	0.58	0.94	35.8 j	**73.9**	2.7	<0.5	<0.1	**0.33**	134	<0.0005	<0.1
AB-13S	07/02/2018	**5.7**	<50	3.1	100	<1	<1	48	<1	<1	NA	<5	**1.12**	43	**232**	<5	<1	<0.2	**1.11**	13	NA	NA
AB-13S	08/30/2018	**5.7**	<50	1.8	88	<0.5	0.06 j	35.7	0.049 j	<0.08	0.4	1.3	0.65	40.6 j	**127**	3.4	<0.5	<0.1	**0.65**	11.5 B	<0.0005	<0.1
AB-13S	12/13/2018	**5.5**	<50	1	75	<0.5	<0.1	43.1	0.055 j	<0.08	0.58 M1	0.81	**1.3**	61.7	**168**	3.2	<0.5	<0.1	**0.56**	10.7	<0.0005	<0.1
AB-14BR	03/06/2018	**9.5**	<50	3.2	142	0.18 j	1.6	27.5	<0.1	<0.08	0.2	0.42 j	<0.1	<50	<5	0.2 j	<0.5	<0.1	**19.6**	<10	NA	0.081 j
AB-14BR	05/30/2018	8.5	<50	4.6	130	0.15 j	1.1	12.9	<0.1	<0.08	0.21 P4,TP,R0	0.32 j	<0.1	41.5 j	<5	<0.5	0.17 j	<0.1	**15.3**	<10	NA	0.086 j,M1
AB-14BR	08/27/2018	8.5	<50	5.3	130	0.15 j	0.99	12.4	<0.1	0.032 j	0.22 M1	0.37 j	<0.1	<50	<5	<0.5	0.24 j	<0.1	**13.7**	2.7 j	NA	0.095 j
AB-14BR	12/12/2018	8.5	<50	6.3	122	0.13 j	0.95	11.1	<0.1	<0.08	0.2 S1	0.41 j,B,S1	0.01 j	<50	<5	<0.5	<0.5	<0.1	**13.8**	<10	NA	0.096 j
AB-14D	03/06/2018	**5.2**	178	27.7	103	<0.5	<0.1	67.1	0.12	0.035 j	3.3 H5,M6,R0	3.7	1	109	12	6.4	0.2 j	<0.1	**0.53**	3.6 j	NA	<0.1
AB-14D	03/08/2018	**5.2**	157	31	120	<1	<1	112	<1	<1	NA	<5	**1.98**	**1090**	24	12	<1	<0.2	**2.95**	6	NA	NA
AB-14D	05/30/2018	**5.7**	158	28	112	<0.5	0.069 j	67.7	0.12	0.03 j	2.5 P4,TP,R0	2.8	1	153	11.8	6.1	0.2 j	<0.1	**0.67**	6.4 j,B	NA	<0.1
AB-14D	07/02/2018	**5.2**	141	25	110	<1	<1	67	<1	<1	NA	<5	**1.04**	265	15	7	<1	<0.2	**1.36**	14	NA	NA
AB-14D	08/27/2018	**4.5**	151	27.5	101	<0.5	0.067 j	59.7	0.15	0.044 j	2.2	2.3	0.95	84.4	11	6.7	0.19 j	<0.1	0.25 j	7.2 j	NA	<0.1
AB-14D	12/12/2018	**5.3**	175	30.5	101	<0.5	<0.1	58.3	0.1	<0.08	3	2.9 S1	0.79	<50	9.4	4.2	<0.5	<0.1	**0.52 S1**	3.6 j	NA	<0.1
AB-20D	02/27/2018	8.4	<50	7.6	121	<0.5	0.85	16.1	<0.1	<0.08	0.5	0.74	0.045 j	28.7 j	<5	0.23 j	0.24 j	<0.1	**13.2**	<10	NA	0.069 j
AB-20D	06/01/2018	8.3	<50	5.5	129	<0.5	0.6	18.1	<0.1	<0.08	0.58	0.66	0.023 j	35.8 j	<5	0.18 j	0.18 j	<0.1	**10**	<10	NA	0.076 j
AB-20D	08/29/2018	7.9	<50	8.3	129	0.097 j	0.98	16.3	<0.1	<0.08	1.8	1.4	0.025 j	49.9 j	<5	0.13 j	0.29 j	<0.1	**10.7**	3.2 j	NA	0.085 j
AB-20D	12/06/2018	8.2	<50	4.3	128	<0.5	0.5	20.6	<0.1	<0.08	0.34	0.72 B	0.078 j,B	107	4.8 j	<0.5	<0.5	<0.1	**9**	19.5	NA	0.062 j
AB-20S	02/27/2018	6.5	**2080**	201	**576**	**3.6**	**12.4**	38.6	0.052 j	0.076 j	1.1 M6	1.7	0.052 j	185	<5	43.7	**862**	**0.3**	**22.1**	17.2	NA	0.21
AB-20S	06/01/2018	**6.4**	**1830**	147	**520**	0.57	**37.4**	56.8	<0.1	<0.08	<0.025	0.64	0.52	**552**	**54.8**	23.6	**40.6**	0.15	**4.1**	10.8	NA	0.24
AB-20S	08/29/2018	6.8	**2440**	132	**579**	0.19 j	**68**	88.9	<0.1	<0.08	<0.025	0.68	**1.2**	**6490**	**225**	23.7	4.6	<0.1	**1.1**	18.8	NA	0.37
AB-20S	12/06/2018	**6.3**	**1670**	127	417	**1.9**	9	64.5	0.097 j,S1	0.11	0.31	0.94 B	0.28	**340**	**66.4**	19.5	**460**	**0.47**	**11.2**	10.3	NA	0.13
AB-21BR	02/28/2018	**10.6**	<50	37.5	213	0.58	2.5	<5	<0.1	<0.08	**10.6**	**11.7**	0.12	<50	<5	0.55	0.72	<0.1	**46.6**	<10	NA	0.21
AB-21BRL	02/28/2018	**8.8**	<50	11	129	0.15 j	2.1	4.6 j	<0.1	<0.08	0.044	0.13 j	0.084 j	<50	**69.2**	0.19 j	<0.5	<0.1	**3.7**	<10	0.0012	0.36
AB-21BRL	06/04/2018	**8.8**	37.4 j	14.8	158	<0.5	1.9	4.4 j	<0.1	<0.08	0.026	0.33 j,B	0.095 j	<50	**52.6**	0.32 j,B	<0.5	<0.1	**1.1**	9.9 j	0.0013	0.26
AB-21BRL	08/27/2018	8.4	<50	10.5	144	0.11 j	2.1	4 j	<0.1	<0.08	0.03	0.55	0.082 j	30.1 j	**56.7**	0.61	<0.5	<0.1	**1.1**	4.1 j,B	0.0013	0.26
AB-21BRL	12/07/2018	8.5	<50	8.8	135	<0.5	2	2.9 j	<0.1	<0.08	0.089 S1	0.12 j,S1	0.092 j	<50	44.7	<0.5	<0.5	<0.1	**5.7**	<10	0.0013	0.27
AB-21D	02/28/2018	**11.6**	<50	6.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-21D	06/04/2018	**11.5**	<50	6.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-21D	08/27/2018	**11.2**	<50	7.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-21D	12/07/2018	**11.5**	<50	7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-21S	02/28/2018	7.3	**4000**	68.7	**596**	0.2 j	**571**	467	0.078 j	<0.08	<0.025	0.28 j	0.9	**12200**	**1400**	1.5	0.64	0.053 j	**6.6**	<10	0.0203	1.1
AB-21S	06/04/2018	7.2	**3310**	85.6	**602**	0.65	**489**	414	<0.1	<0.08	<0.025	0.48 j,B	**1.1**	**10000**	**1120**	1.2 B	3.9	0.054 j	**9.9**	<10	0.0246	1.1
AB-21S	08/27/2018	7.4	**4380**	90.4	**609**	0.16 j	**1320**	473	0.06 j	<0.08	<0.025	0.3 j	0.83	**8430**	**1040**	1.3	0.32 j	<0.1	**4.4**	3.4 j,B,P8	0.0253	1.3
AB-21S	12/07/2018	7.3	**3410**	67.8	**525**	0.44 j	**576**	409	0.022 j	0.24	<0.025	0.24 j,S1	**1.2**	**9700**	**1220**	1.5	2	0.052 j	**6.1**	<10	0.0217	1.2
AB-21SL	02/28/2018	8.2	**8930**	137 M1	382	**1.5**	**486**	281	0.14	<0.08	<0.025	0.25 j	0.74	**882**	**164**	3	0.19 j	<0.1	**6.9**	<10	**0.0743**	1.4
AB-21SL	06/04/2018	8.2	**7590**	127	418	**3.6**	**490**	233	0.076 j	0.25	<0.025	0.36 j,B	0.54	**559**	**114**	2.6 B	0.42 j	<0.1	**6.8**	<10	**0.0772**	1.5
AB-21SL	08/27/2018	8.1	**7120**	129	415	**3.3**	**513**	230	0.056 j,B	0.18	<0.025	0.34 j	0.45	**514**	**137**	3.9	0.32 j	<0.1	**6.7**	4 j,B	**0.0753**	1.6

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
AB-21SL	12/07/2018	8.5	**7590**	139	412	**3.2**	**508 M1**	219	0.013 j	**2.5**	<0.025	0.094 j,S1	0.41	**350**	**129**	2.7	<0.5	<0.1	**10.4**	<10	**0.0692**	1.7
AB-21SS	09/06/2018	**6.3**	<50	2.4	105	**1.1**	0.96	19.5	<0.1	<0.08	<0.025	0.35 j	**2.4**	**1100**	**378**	1.3	<0.5	<0.1	**2.2**	8.5 j,B	NA	0.085 j
AB-21SS	12/07/2018	6.8	<50	1.1	101	0.54 S1	0.59	12.4	0.016 j	<0.08	0.053 S1	0.42 j,S1	0.95	**534 R0**	**244**	2.3	<0.5	<0.1	**4.2 S1**	4.8 j	NA	0.089 j
AB-22BR	03/06/2018	7.6	**1900**	19.9	269	0.14 j	0.27	19.2	<0.1	<0.08	0.11	**19.2**	0.52	**692**	**159**	11	<0.5	<0.1	**0.83**	6.7 j	NA	0.084 j
AB-22BR	06/05/2018	7.4	**1760**	25.2	282	0.21 j	0.39	15.2	<0.1	<0.08	0.027	2.8	0.16	**415**	**111**	2.1	<0.5	<0.1	**1.5**	11.8	NA	0.096 j
AB-22BR	08/31/2018	6.7	**1930**	35.1	269	<0.5	<0.1	20.8	<0.1	<0.08	<0.025	0.38 j	0.26	**863 BC**	**62.4**	1.5	<0.5	<0.1	**2.5**	4.7 j	NA	<0.1
AB-22BR	12/12/2018	7.3	**1890**	33.6	285	0.24 j	0.33	24.5	<0.1	<0.08	0.043 S1	0.73 B,S1	0.28	**897**	**109**	2.9	<0.5	<0.1	**1.2**	4.1 j	NA	0.079 j
AB-22BRL	03/06/2018	7.1	**2050**	43.8	310	<0.5	0.35	23.7	<0.1	<0.08	0.077	3.3	0.22	141	16.8	4.2	<0.5	<0.1	**1.9**	3.6 j	NA	<0.1
AB-22BRL	06/05/2018	6.9	**1820**	42.7	316	<0.5	0.29	21	<0.1	<0.08	<0.025 P4,R0	6.6	0.26	93.8	8.5	5.9	<0.5	<0.1	**2.3**	<10	NA	<0.1
AB-22BRL	08/31/2018	6.9	**1920**	43.2	303	<0.5	0.17	18.6	<0.1	<0.08	<0.025	1.1	0.14	130 B,BC	7.4	1.3	<0.5	<0.1	**7.7**	9.4 j	NA	<0.1
AB-22BRL	12/12/2018	7.0	**1960**	46.4	299	<0.5	0.29	18.5	0.015 j	<0.08	0.044 S1	1.3 S1	0.16	168 B	6.2	1.4	<0.5	<0.1	**4.5**	5.3 j	NA	<0.1
AB-22D	03/06/2018	6.6	**2110**	36.6	242	<0.5	0.2	94.1	<0.1	<0.08	<0.025	4	0.43	**661**	**175**	6.2	<0.5	<0.1	**6.6**	10.8	NA	<0.1
AB-22D	06/05/2018	6.5	**1900**	38.1	267	<0.5	0.099 j	87.7	<0.1	<0.08	<0.025	1.5	0.35	**443**	**152**	3.4	<0.5	<0.1	**5.4**	<10	NA	<0.1
AB-22D	08/31/2018	**6.3**	**2020**	38.1	252	<0.5	<0.1	93.2	<0.1	<0.08	<0.025	0.78	0.38	**530 BC**	**182**	2.9	<0.5	<0.1	**5.4**	6.9 j	NA	<0.1
AB-22D	12/12/2018	6.6	**2040**	39.7	250	<0.5	0.075 j	86.2	<0.1	<0.08	<0.025	0.83 B,S1	0.34	**339**	**159**	3.2	<0.5	<0.1	**4.7**	2.9 j	NA	<0.1
AB-22S	03/06/2018	**5.3**	<50	1.4	44	0.29 j	0.16	57	0.045 j	<0.08	<0.025	0.65	**29.2**	**2250**	**1040**	3	<0.5	0.051 j	**0.37**	7.1 j	NA	<0.1
AB-22S	06/05/2018	**5.4**	<50	1.4	50	0.18 j	0.16	52.1	<0.1	<0.08	<0.025	0.83	**21.7**	**1840**	**841**	2.8	<0.5	0.047 j	0.26 j	7.3 j	NA	<0.1
AB-22S	08/30/2018	**5.4**	<50	1.6	52	<0.5	0.13	67.7	0.074 j	<0.08	<0.025	0.39 j	**37.4**	**1630**	**1300**	2.5	<0.5	0.082 j	0.064 j	7.6 j,B	NA	<0.1
AB-22S	12/12/2018	**5.3**	<50	4.2	60	<0.5	0.11	64.6	0.064 j	<0.08	0.044 S1	0.29 j,B,S1	**32.6**	**776**	**1240**	2.2	<0.5	0.045 j	**0.31 B,S1**	115	NA	<0.1
AB-23BRU	02/28/2018	**11.8**	74.5	70.6	500	**2.4**	9.6	6.9	<0.1	<0.08	2.9	5.4	0.11	70.7	<5	1.3	1.1	<0.1	**64.6**	<10	NA	0.74
AB-23BRU	06/04/2018	**11.4**	54.8	61.7 M1,R1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-23BRU	08/29/2018	**11.1**	54.1	60.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-23BRU	12/07/2018	**11.7**	<50	17.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-23S	02/28/2018	**9.1**	490	17.7	104 D6	1	**1250**	82.3	<0.1	<0.08	<0.025	0.18 j,B	0.02 j	70.7	27.8	0.34 j	<0.5	<0.1	**17.2**	<10	NA	0.16
AB-23S	06/04/2018	**8.8**	403	19	114	0.96	**1180**	73.2	<0.1	<0.08	<0.025	0.28 j,B	0.041 j	72.2	28	0.3 j,B	0.22 j	<0.1	**17.4**	<10	NA	0.16
AB-23S	08/29/2018	**9.0**	417	20.1	114	0.75	**1150**	81.9	<0.1	<0.08	<0.025	<0.5	0.052 j	105	18.9	0.33 j	0.32 j	<0.1	**19**	<10	NA	0.17
AB-23S	12/07/2018	**9.0**	399	14.9	117	**1.1**	**1190**	71.2	<0.1	<0.08	<0.025	<0.5	0.044 j	<50	28.2	<0.5	<0.5	<0.1	**11.8**	<10	NA	0.16
AB-24BR	02/27/2018	7.2	<50	3.5	94	<0.5	0.29	21.8	<0.1	<0.08	<0.025	0.25 j	0.054 j	196	**120**	2.1	<0.5	<0.1	**10.5**	33.6	NA	0.064 j
AB-24BR	06/01/2018	6.9	<50	4	114	<0.5	0.38	22.2	<0.1	<0.08	<0.025	0.29 j	0.083 j	**349**	**79.5**	1.7	<0.5	<0.1	**12.2**	56.6	NA	0.072 j
AB-24BR	08/27/2018	7.0	<50	3.8	113	<0.5	0.36	23.8	<0.1	<0.08	0.054	<0.5	0.049 j	102	**73.4**	1.4	<0.5	<0.1	**12.5**	40.6	NA	0.076 j
AB-24BR	12/06/2018	7.0	<50	3.6	105	<0.5	0.32	22.5	<0.1	<0.08	0.08	0.12 j	0.11	32.8 j	**62.9**	3.7	<0.5	<0.1	**12.1 BC**	56.1	NA	0.055 j,M1
AB-24D	02/27/2018	**11.6**	<50	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-24D	06/01/2018	**11.4**	<50	20.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-24D	08/27/2018	**11.2**	<50	17.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-24D	12/06/2018	**11.4**	<50	24.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-24S	02/27/2018	7.2	637	60.8	231	0.82	**102**	152	<0.1	<0.08	<0.025	0.96	**1.5**	**3230**	**1010**	3.2	<0.5	0.033 j	**7.3**	<10	NA	0.3
AB-24S	06/01/2018	6.8	568	80.1	288	**1.2**	**108**	153	<0.1	<0.08	<0.025	0.17 j	0.98	**3210**	**721**	1.9	1.2	0.11	**14**	16.9	NA	0.45
AB-24S	08/27/2018	7.2	202	10.7	111	0.97	**105**	312	0.043 j	<0.08	0.046	0.28 j	0.8	**862**	**323**	1.5	<0.5	0.04 j	**14.7**	5.2 j	NA	0.41
AB-24S	12/06/2018	7.1	**1070**	217	**501**	0.89	**229 M1**	151	0.041 j,S1	0.056 j	<0.025	0.23 j,B	**1.7**	**6350**	**1360**	3.9	<0.5	0.04 j	**8.1**	3.8 j	NA	0.26
AB-24SL	02/27/2018	8.4	658	18.5	124	0.33 j	**600**	117	<0.1	<0.08	<0.025 M1	0.21 j	0.027 j	135	48.6	0.65	<0.5	<0.1	**2.2**	<10	NA	0.77
AB-24SL	06/01/2018	7.5	658	21.8	142	0.54	**582**	114	<0.1	<0.08	<0.025	0.54	0.027 j	158	**50.7**	0.69	0.86	<0.1	**2**	<10	NA	0.89
AB-24SL	08/27/2018	8.5	572	10.5	116	0.21 j	**826**	104	<0.1	<0.08	0.028	<0.5	<0.1	50.5	28	0.45 j	0.2 j	<0.1	**1.5**	2.8 j	NA	0.84
AB-24SL	12/06/2018	8.5	552	15.1	108	0.28 j	**710**	90.8	<0.1	<0.08	0.047	0.31 j	<0.1	54.2	28.2	0.54	<0.5	<0.1	**2.4 BC**	2.9 j	NA	0.53
AB-25BR	03/02/2018	**11.4**	25.4 j	5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-25BR	06/01/2018	**12.0**	<50	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-25BR	08/28/2018	**11.3**	<50	5.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-25BR	12/06/2018	**12.4**	<50	3.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-25BRU	03/02/2018	**11.2**	<50	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-25BRU	06/01/2018	**11.8**	<50	16.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-25BRU	08/28/2018	**11.5**	30 j	12.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-25BRU	12/06/2018	**11.9**	<50	11.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-25S	03/02/2018	7.3	**1440 M1**	61.1 M1	250	**8.1**	**195**	111	0.081 j	0.055 j	<0.025	0.13 j	**2.9**	**665**	**236**	3.7	<0.5	0.15	**28.3**	<10	0.0132	1.3
AB-25S	06/01/2018	7.3	**1500**	66.3	280	**9**	**197**	121	<0.1	0.032 j	<0.025	<0.5	**3.1**	**811**	**250**	3.8	<0.5	0.16	**26.4**	<10	0.0119	1.5
AB-25S	08/28/2018	7.3	**1080**	38.1	191	**5.1**	**202**	121	<0.1	0.038 j	<0.025	<0.5	**1.4**	**462**	**147**	2.2	<0.5	0.12	**27.7**	2.8 j	0.0059	1.7
AB-25S	12/06/2018	7.5	**1220**	41.3	195	**5.8**	**203**	119	0.018 j,S1	0.13	0.063	0.12 j,B	**1.8**	**374**	**189**	2.6	<0.5	0.14	**27.8**	<10	0.0068	1.4
AB-25SL	03/02/2018	**8.7**	**1140**	38.4	175	0.66	**889**	119	0.043 j	<0.08	<0.025	0.24 j	0.056 j	92.7	31.4	1.4	0.17 j	<0.1	**12.2**	<10	0.0112	1.7
AB-25SL	06/01/2018	8.5	**1190**	44	213	0.7	**863**	124	<0.1	<0.08	<0.025	0.22 j	0.065 j	141	32.9	1.3	0.19 j	<0.1	**6.6**	<10	0.0113	2
AB-25SL	08/28/2018	8.5	**1140**	41.7	206	0.66	**892**	131	<0.1	0.039 j	<0.025	0.3 j	0.05 j	70.1	29.6	1.1	0.18 j	<0.1	**6.8**	<10	0.011	1.9
AB-25SL	12/06/2018	**8.7**	**825**	24.4	160	0.55	**869 M1**	93.4	<0.1	0.084	0.085	0.14 j,B	0.055 j,B	31.7 j	34.6	1	<0.5	<0.1	**8.2**	<10	0.0065	1.5
AB-25SS	09/06/2018	**6.1**	**1180**	15.3	118	0.18 j	0.19	52.7	<0.1	<0.08	<0.025	1.3	0.82	**799**	**180**	3	0.14 j	<0.1	**1.4**	6 j,B	NA	<0.1
AB-25SS	12/06/2018	**6.3**	**1170**	24.3	141	0.12 j	0.55	63	0.01 j,S1	<0.08	<0.025	0.65 B,S1	**1.4**	134	**345**	3	<0.5	<0.1	**0.64 B,S1**	4.3 j	NA	<0.1
AB-26D	03/08/2018	7.3	294	28	168	0.12 j	0.23	30.1	<0.1	<0.08	0.34	4.7	0.46	**472**	**106**	4.7	0.29 j	<0.1	**7.1**	4.2 j	NA	<0.1
AB-26D	06/05/2018	7.5	319	40.8	187	<0.5	0.16	29.6	<0.1	<0.08	0.66	1.8	0.25	246	**99.7**	1.3	0.42 j	<0.1	**6**	<10	NA	<0.1
AB-26D	08/30/2018	7.2	324	34.9	174	<0.5	0.22	35	<0.1	<0.08	1.3 M6	2.7	0.48	**1750**	**126**	1.4	0.3 j	<0.1	**6.5**	7 j,B	NA	<0.1
AB-26D	12/12/2018	7.8	342	46.9	188	<0.5	0.24	32.4	<0.1	<0.08	0.51 S1	1 B,S1	0.26	164 B	**89**	1.2	<0.5	<0.1	**6.4**	18.4	NA	<0.1
AB-26S	03/06/2018	**5.8**	**1110**	62.2	152	0.22 j	0.081 j	130	<0.1	<0.08	0.11	7.7	**1.5**	**1520**	**259**	9.5	<0.5	<0.1	**0.5**	7.2 j	NA	<0.1
AB-26S	06/05/2018	**5.6**	**1070**	69.5	162	0.18 j	0.049 j	122	<0.1	<0.08	0.23	0.87	**1.2**	**817**	**231**	2.7	<0.5	<0.1	**0.73**	<10	NA	<0.1
AB-26S	08/30/2018	**5.7**	**1030**	72.6	154	<0.5	0.098 j	122	<0.1	<0.08	0.34	1.2	**1.2**	**1160**	**220**	2.5	<0.5	<0.1	**1.1**	4.8 j,B	NA	<0.1
AB-26S	12/12/2018	**6.0**	**1060**	69.8	152	<0.5	0.12	115	<0.1	<0.08	0.36 S1	0.9 B,S1	0.74	111 B	**168**	2.1	<0.5	<0.1	**0.62 B,S1**	106	NA	<0.1

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

		LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
AB-27BR	02/28/2018	7.8	164	34.2	155	<0.5	0.39	8	<0.1	<0.08	<0.025	0.23 j,B	0.36	67.1	**372**	0.65	<0.5	<0.1	**0.56**	<10	NA	0.076 j
AB-27BR	06/01/2018	8.3	131	8.8	229	<0.5	0.44	9.2	<0.1	<0.08	0.051	0.48 j	0.077 j	76.2	**86.3**	0.53	<0.5	<0.1	**0.8**	<10	NA	<0.1
AB-27BR	08/28/2018	8.2	137	4.6	237	0.12 j	0.56	9.5	<0.1	<0.08	0.048	0.29 j	0.07 j	85.2	**78.4**	0.92	<0.5	<0.1	**0.63**	5.7 j,B	NA	<0.1
AB-27BR	12/11/2018	7.8	135	31.9	192	0.7	0.38	8.5	<0.1	<0.08	0.031 S1	0.38 j	0.34	87.5	**233**	0.76	<0.5	<0.1	**0.88**	4.4 j	NA	0.061 j
AB-27D	02/28/2018	6.6	**1330**	89.9	213	<0.5	1.6	65.3	<0.1	<0.08	<0.025	0.42 j	0.68	**1740**	**283**	0.69	0.43 j	<0.1	**2.7**	28.8	NA	0.071 j
AB-27D	06/06/2018	**6.3**	**1400**	95.9	232	<0.5	0.69	52	<0.1	<0.08	<0.025	2.1	0.98	**734**	**665**	1.6	<0.5	<0.1	**0.82**	4.5 j	NA	<0.1
AB-27D	08/28/2018	6.5	**892**	81.2	228	0.14 j	2.9	63.9	<0.1	<0.08	0.045	1	0.44	**508**	**132**	0.68	0.88	<0.1	**4.3**	35	NA	0.057 j
AB-27D	12/11/2018	7.2	318	30.6	145	0.34 j	4.9	34	0.012 j	<0.08	0.15 S1	0.49 j	1	182	27	1.5	3.7	0.068 j	**23.6**	128	NA	0.084 j
AB-27S	02/28/2018	6.9	484	8.8	255	<0.5	**208**	360	<0.1	<0.08	<0.025	0.37 j	**5.4**	**18800**	**3580**	0.47 j	<0.5	<0.1	**0.35 B**	<10	NA	0.26
AB-27S	06/01/2018	6.6	418	35.4	319	<0.5	**166**	438	<0.1	<0.08	<0.025	0.43 j	**5**	**20200**	**4100**	0.39 j	<0.5	<0.1	**0.57**	5.4 j	NA	0.2
AB-27S	08/28/2018	6.8	448	3.9	210	<0.5	**267**	288	<0.1	<0.08	<0.025	<0.5	**1.7**	**12900**	**2070**	0.15 j	<0.5	<0.1	**0.49**	9.4 j,B	NA	0.37
AB-27S	12/11/2018	6.7	393	67.4	438	<0.5	**151**	428	<0.1	<0.08	<0.025	0.31 j	**5.1**	**19200**	**5120**	0.72	<0.5	<0.1	0.16 j	7.6 j	NA	0.17
AB-28D	02/27/2018	8.5	82.2	18.2	173	<0.5	0.4	53.2	<0.1	<0.08	0.12	0.37 j	<0.1	<50	<5	1.4	<0.5	<0.1	**9.6**	<10	NA	0.19
AB-28D	06/01/2018	**9.0**	75	18	185	<0.5	0.48	50.7	<0.1	<0.08	0.36	0.54	<0.1	<50	<5	0.78	0.21 j	<0.1	**9.7**	<10	NA	0.058 j
AB-28D	08/27/2018	**8.9**	77.7	17.9	186	<0.5	0.43	54.1	<0.1	<0.08	0.71	0.81	<0.1	<50	<5	0.22 j	0.2 j	<0.1	**9.3**	2.5 j,B	NA	0.059 j
AB-28D	12/04/2018	7.5	89.3	18.2	182	0.17 j	0.35 B	56.7	<0.1	<0.08	0.56	0.71	0.024 j	<50	<5	0.45 j	<0.5	<0.1	**9.8**	2.7 j,S1	NA	0.056 j
AB-28S	02/27/2018	6.5	**976**	200	482	0.51	**11**	62.9	<0.1	<0.08	<0.025	0.78	**8.6**	**9570**	**2880**	4.2	0.6	**0.31**	0.08 j,B	4.9 j	NA	0.068 j
AB-28S	06/01/2018	**6.2**	**1150**	207	**616 D6**	0.64	**11.8**	59.4	<0.1	<0.08	<0.025	<0.5	**9.4**	**7050**	**2590**	2.6	2.7	**0.31**	0.2 j	9.2 j	NA	0.09 j
AB-28S	08/27/2018	**6.2**	**993**	160	460	0.11 j	**19.3**	75.4	<0.1	<0.08	<0.025	0.19 j	**8.1**	**10600**	**2500**	2.3	0.6	**0.37**	<0.3	12.5	NA	0.062 j
AB-28S	12/04/2018	**6.4**	**1070**	209	**589**	0.64 S1	**10.8 S1**	69	<0.1	0.058 j	<0.025	1.7	**9.2**	**7220**	**2810**	4.1	2.6 S1	**0.45**	**0.39 B,S1**	23.7 S1	NA	0.1
AB-29D	02/28/2018	6.6	423	47.5	170	<0.5	3.6	60.4	<0.1	<0.08	0.48	0.79	0.42	32.5 j	8.2	3.3	0.23 j	<0.1	**7.8**	<10	NA	<0.1
AB-29D	05/31/2018	6.7	358	50.3	178	<0.5	0.12	51.1	<0.1	<0.08	0.54	0.64	0.4	<50	5.6	3.4	0.26 j	<0.1	**8.1**	<10	NA	<0.1
AB-29D	08/29/2018	6.6	369	50.9	181	<0.5	0.12	54.8	<0.1	<0.08	0.56	0.62	0.33	<50	5.8	2.9	0.27 j	<0.1	**5.4**	3.9 j	NA	<0.1
AB-29D	12/11/2018	6.9	371	48.1	182	<0.5	0.21	51.4	<0.1	<0.08	0.3	0.44 j	0.52	<50	9.8	3.1	<0.5	<0.1	**6.4**	34.4	NA	<0.1
AB-29S	02/28/2018	8.2	**1210**	82.1	295	0.66	**693**	320	0.043 j	<0.08	<0.025 M1	0.13 j	0.16	**505**	**858**	0.38 j	<0.5	0.032 j	**10.1**	<10	NA	0.21
AB-29S	05/31/2018	**6.2**	426	38.1	177	0.16 j	**262**	193	<0.1	<0.08	0.017 j	0.38 j	**32.3**	**8830**	**2860**	5.6	<0.5	<0.1	**5.6**	5.3 j	NA	0.08 j
AB-29S	08/29/2018	8.1	**1120**	82.3	282	0.8	**638**	307	<0.1	<0.08	<0.025	<0.5	0.18	**551**	**898**	0.5	0.14 j	<0.1	**9.8**	2.7 j	NA	0.21
AB-29S	12/11/2018	**6.3**	364	38	188	<0.5	**194**	250	0.031 j	<0.08	<0.025	<0.5	**45.4**	**17600**	**3410**	6.4	<0.5	0.15	**1.9**	11.5	NA	0.057 j
AB-29SL	02/28/2018	**9.1**	**2310**	106	279	**5.3**	**76.6**	131	<0.1	<0.08	<0.025	0.27 j	0.044 j	89.4	**429**	0.35 j	8.8	0.056 j	**56**	6.8 j	NA	0.33
AB-29SL	05/31/2018	**9.2**	**2100**	156	298	**5.6**	**75.9**	119	<0.1	<0.08	0.025	<0.5	<0.1	66.7	**344**	0.34 j	8.3	0.056 j	**70.4**	5.3 j	NA	0.37
AB-29SL	08/29/2018	**9.8**	**2240**	164	306	**5.8**	**55.9**	122	<0.1	<0.08	0.035	<0.5	<0.1	39.3 j	**78.4**	0.31 j	9	<0.1	**74.8**	9.1 j	NA	0.18
AB-29SL	12/11/2018	**9.2**	**1700**	138	276	**3.9**	**71**	104	<0.1	<0.08	0.059 S1	<0.5	0.1	33.8 j	**854**	<0.5	7.4	0.067 j	**35.7**	<10	NA	0.21
AB-29SS	09/06/2018	**6.4**	604	97.1	237	0.12 j	0.05 j	69.2	<0.1	<0.08	1.3	1.9	0.29	**772**	26.7	1.1	0.17 j	<0.1	**4.4**	4.1 j,B	NA	<0.1
AB-29SS	12/11/2018	6.6	389 M1,S1	88.6	235	<0.5	0.14	44.4 S1	0.011 j	<0.08	1	1.9	0.17	**316**	7.5 S1	0.78	<0.5	<0.1	**4.8**	<10	NA	<0.1
AB-30D	02/28/2018	6.6	<50	24.7	150	<0.5	0.14	51.5	<0.1	<0.08	0.33	0.48 j,B	0.075 j	<50	2.9 j	0.17 j	<0.5	<0.1	**12**	<10	NA	0.073 j
AB-30D	05/31/2018	6.5	<50	27.5	151	<0.5	0.17	50.4	<0.1	<0.08	0.35	0.49 j	0.1	<50	3.3 j	0.59 B	<0.5	<0.1	**12.5**	<10	NA	0.067 j
AB-30D	08/29/2018	6.5	<50	27.1	150	<0.5	0.11	53.8	<0.1	<0.08	0.4	0.44 j	0.075 j	<50	2.6 j	0.16 j	<0.5	<0.1	**12**	3.3 j,B,1g	NA	0.087 j
AB-30D	12/11/2018	6.8	<50	26.3	158	<0.5	0.16	51.4	<0.1	<0.08	0.33	0.37 j	0.1	<50	3 j	<0.5	<0.5	<0.1	**11.2**	31.7	NA	0.076 j
AB-30S	02/28/2018	7.4	**996**	48.8	246	0.39 j	**337**	304	<0.1	<0.08	<0.025	0.17 j,B	**2.1**	**3690**	**1190**	1.1	<0.5	0.055 j	**5.4**	<10	NA	0.2
AB-30S	05/31/2018	7.5	**809**	53.7	231	0.47 j	**415**	292	<0.1	<0.08	2.2	0.18 j	**2.5**	**5410**	**1110**	1.4 B	<0.5	0.047 j	**5.5**	<10	NA	0.16
AB-30S	08/29/2018	7.5	**878**	51.5	242	0.53	**329**	324	<0.1	<0.08	<0.025	<0.5	**3.2**	**6110**	**1200**	1.6	<0.5	0.036 j	**6.1**	3.1 j,B,1g	NA	0.18
AB-30S	12/11/2018	7.2	85.6	**460**	**797**	0.28 j	**99.3**	92	<0.1	<0.08	0.069 M0,S1	<0.5	**1.6**	**1250**	**668**	1.4	2.3	0.14	**9.5**	4.3 j	NA	0.11
AB-31D	03/01/2018	**11.4**	412	45.5	207	**5.6**	0.63	77.1	<0.1	<0.08	1.8	3	0.097 j	151	3 j	0.88	1.8	<0.1	**6.7**	4.3 j	NA	0.052 j
AB-31S	03/01/2018	**6.2**	**2180**	114	217	<0.5	0.084 j	27.4	0.042 j	0.13	0.13	8	0.18	**1160**	**50.8**	4.4	<0.5	0.048 j,B	**1.6**	3.3 j	NA	<0.1
AB-31S	05/31/2018	**6.1**	**2020**	117	227	<0.5	0.065 j	24	<0.1	0.11	0.25 M1	1.7	0.075 j	**942**	40	0.59 B	<0.5	<0.1	**1.2**	6.9 j	NA	<0.1
AB-31S	08/30/2018	**6.2**	**1850**	125	233	<0.5	0.11	21.4	<0.1	0.083	0.2	1	0.066 j	**444**	29.1	0.43 j	0.18 j	<0.1	**1.1**	3.5 j,B	NA	<0.1
AB-31S	12/11/2018	**6.2**	**1930**	131	236	<0.5	0.056 j	19.9	0.012 j	0.058 j	0.24 S1	0.4 j	0.08 j	82.3	24.1	<0.5	<0.5	<0.1	**0.63**	<10	NA	<0.1
AB-32D	03/01/2018	6.7	**749**	30.6	158	<0.5	0.16	55.2	<0.1	<0.08	NA	2.1	0.1	124	11.8	1.1	<0.5	<0.1	**8.2**	11.5	NA	<0.1
AB-32D	03/02/2018	6.5	NA	NA	NA	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-32D	05/31/2018	6.5	700	34.4	157	0.17 j	0.25	47	<0.1	<0.08	0.036	0.38 j	0.1	98.4	13.5	0.35 j,B	<0.5	<0.1	**7.1**	25.2	NA	<0.1
AB-32D	08/29/2018	6.6	**731**	36.6	155	0.1 j	0.13	52.3	<0.1	<0.08	0.025	1.2	0.46	**406**	24.3	1.3	0.18 j	<0.1	**7.8**	25.1 B,1g	NA	0.056 j
AB-32D	12/11/2018	6.7	597	26.4	158	<0.5	0.21	47.2	0.015 j	<0.08	0.048 S1	0.72	0.19	285	17.1	0.71	<0.5	<0.1	**6.6**	36.4	NA	<0.1
AB-32S	03/01/2018	6.5	<50	1.7	71	<0.5	0.91	19.8	<0.1	<0.08	<0.025	0.29 j	**16.4**	**48000**	**6920**	0.56	<0.5	<0.1	**0.38**	<10	NA	<0.1
AB-32S	05/31/2018	**6.4**	<50	2	73	<0.5	0.73	15.6	<0.1	<0.08	0.057	2.2	**21.3**	**34400**	**5530**	3.2	<0.5	0.029 j	0.2 j	3.3 j	NA	<0.1
AB-32S	08/29/2018	**6.3**	<50	2.9	73	<0.5	0.56	21.9	<0.1	<0.08	<0.025	0.42 j	**15.7**	**42700**	**6370**	1.6	<0.5	<0.1	0.22 j	5.8 j,B,1g	NA	0.057 j
AB-32S	12/11/2018	**6.4**	<50	1.9	85	<0.5	0.89	18.5	<0.1	<0.08	<0.025	0.45 j	**15.1**	**36300**	**5340**	0.84	<0.5	<0.1	**0.43**	3.3 j	NA	<0.1
AB-33D	03/01/2018	**11.8**	162	3.3	494	**4.5**	0.73	63	<0.1	<0.08	<0.025	0.45 j	0.042 j	125	16	0.48 j	<0.5	<0.1	**7.7**	<10	<0.0005	<0.1
AB-33D	05/31/2018	**11.6**	150	4.7	**685**	**7.3**	1.6	112	<0.1	<0.08	0.085	2.4	0.16	**418**	22.9	3.9	0.4 j	<0.1	**8.4**	3.2 j	0.000042 j	<0.1
AB-33D	08/29/2018	**11.5**	168	3.9 M1	408	**5.7**	0.61	97	<0.1	<0.08	0.025	3.5	0.079 j	86.1	18.7	3	0.33 j	<0.1	**4.4**	3.7 j	<0.0005	<0.1 M1,R1
AB-33D	12/11/2018	7.5	212	7.4	155	0.88	0.21	66.3	<0.1	<0.08	0.098 S1	1.8	0.14	107	**57.2**	1.4	<0.5	<0.1	**2.5**	<10	0.000084 j	<0.1
AB-33S	03/01/2018	6.6	**908**	244	**618**	<0.5	0.11	26.7	<0.1	<0.08	<0.025	**19.3**	**12**	**35200**	**6690**	13	<0.5	0.045 j,B	<0.3	<10	0.00037 j	0.092 j
AB-33S	05/31/2018	6.5	**868**	225	**604**	<0.5	0.14	23.6	<0.1	<0.08	0.029	<0.5	**12.6**	**30900**	**6090**	1.1	<0.5	0.038 j	0.11 j	2.7 j	0.00032 j	0.08 j
AB-33S	08/29/2018	6.5	**868**	208	**598**	<0.5	0.14	24.9	<0.1	<0.08	<0.025	<0.5	**12.4**	**27700**	**5780**	1.1	0.41 j	0.042 j	0.2 j	4.5 j	0.00033 j	0.1
AB-33S	12/11/2018	6.7	**783**	180	487	<0.5	0.14	21.8	0.025 j	<0.08	<0.025	<0.5	**8.8**	**22100**	**4850**	0.93	<0.5	0.026 j	0.13 j	<10	0.00019 j	0.086 j
AB-33SS	09/06/2018	**5.9**	**1820**	121	226	<0.5	0.11	21.9	<0.1	<0.08	<0.025	0.24 j	**4.1**	298	**744**	1.1	0.22 j	0.048 j	0.28 j,B	4.4 j,B	NA	<0.1
AB-33SS	12/11/2018	**6.1**	**2100**	125	230	<0.5	0.5	15.6	0.012 j	<0.08	<0.025	0.11 j	**3.7**	**1490**	**990**	1.2	<0.5	0.021 j	**0.4**	<10	NA	<0.1
AB-34D	03/02/2018	6.9	<50	1.2	89	<0.5	0.21	25.5	<0.1	<0.08	0.35	1.6	0.2	**508**	10.8	0.87	<0.5	<0.1	**13.1**	4.2 j	NA	0.059 j
AB-34D	06/05/2018	6.7	<50	1.4	113	<0.5	<0.1	28.2	<0.1	<0.08	0.41	**10.5**	0.32	**570**	11.8	5.7	<0.5	<0.1	**12.2**	<10	NA	0.061 j
AB-34D	08/29/2018	6.8	<50	1.4	107	<0.5	0.14	27.6	<0.1	<0.08	0.48	1.2	0.14	**416**	8.4	0.79	<0.5	<0.1	**9.2**	5.2 j	NA	0.065 j

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
AB-34D	12/11/2018	6.8	<50	1.3	105	<0.5	0.12	23.7	<0.1	<0.08	0.54	0.99	0.15	197	4.9 j	1.4	<0.5	<0.1	**10.9**	<10	NA	<0.1
AB-34S	03/01/2018	**6.0**	341	232	498	<0.5	0.44	51.6	<0.1	<0.08	<0.025	0.14 j	**3**	**158000**	**9120**	0.63	<0.5	0.038 j,B	<1.5	3.3 j	NA	<0.1
AB-34S	05/30/2018	**6.2**	273	241	**534**	<0.5	0.4	44.2	0.045 j	<0.08	0.061 j,P4,TP,R0	0.73	**2.1**	**140000**	**8390**	0.96	<0.5	<0.1	<0.3	<10	NA	0.059 j
AB-34S	08/29/2018	**6.3**	304	**255**	**561**	<0.5	0.46	47.8	<0.1	<0.08	<0.025	<0.5	**2.1**	**140000**	**8440**	0.37 j	0.19 j	<0.1	0.15 j	5.5 j	NA	0.055 j
AB-34S	12/11/2018	6.5	330	213	**522**	<0.5	0.51	45	<0.1	<0.08	<0.025	<0.5	**1.7**	**132000**	**7810**	<0.5	<0.5	<0.1	0.25 j	4.2 j	NA	<0.1
AB-35BR	03/02/2018	7.7	<50	5.4	116	0.94	0.65	24.2	<0.1	<0.08	1.8	**12.9**	0.31	267	11.7	12.3	<0.5	<0.1	**6.1**	3.8 j	0.00028 j	0.1
AB-35BR	05/31/2018	7.9	<50	2.3	105	0.18 j	0.32	23.5	<0.1	<0.08	0.63	0.98	<0.1	<50	2.7 j	0.18 j	<0.5	<0.1	**7.9**	<10	0.000095 j	0.072 j
AB-35BR	08/28/2018	6.9	<50	1.9	113	0.16 j	0.29	26	<0.1	<0.08	0.72	1.2	<0.1	<50	2.6 j	0.17 j	<0.5	<0.1	**7.9**	2.9 j,B	0.000098 j	0.074 j
AB-35BR	12/05/2018	7.0	<50	2	100	0.16 j	0.3	24.3	<0.1	<0.08	0.75 S1	2.8 S1	0.051 j,S1	25.2 j	2.7 j	1.3	<0.5	<0.1	**7.5**	<10	0.000078 j	0.083 j
AB-35D	03/02/2018	**10.4**	<50	5.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-35D	05/31/2018	**10.6**	<50	3.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-35D	08/28/2018	**10.2**	<50	5.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-35D	12/11/2018	**10.2**	<50	6.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-35PWS	09/06/2018	6.5	<50	3.4	118	0.54	0.27	36.5	<0.1	<0.08	0.62	2	0.35	265	**80.7**	1.6	<0.5	<0.1	**8.1**	11.3 B	NA	0.076 j
AB-35PWS	12/13/2018	6.5	<50	4.6	117	<0.5	0.35	48.2	0.051 j	<0.08	0.94	3.8	1	290	**154**	2	<0.5	<0.1	**8.7**	5.2 j	NA	0.073 j
AB-35S	03/02/2018	6.7	**984**	124	**532**	<0.5	**70.5**	111	0.045 j	<0.08	<0.025	4.6	0.21	**37600**	**6840**	3.8	0.56	<0.1	**0.39 B**	<10	0.0003 j	0.2
AB-35S	05/31/2018	6.8	**997**	132	**551**	0.19 j	**81.4**	121	<0.1	<0.08	0.019 j,M1,R1	0.73	0.18	**39600**	**6320**	0.5 j	0.64	<0.1	**0.89**	11.6	0.00082	0.22
AB-35S	08/28/2018	6.7	**1040**	159	**606**	0.17 j	**85.2**	136	<0.1	<0.08	<0.025	2.5	0.11	**39700**	**6440**	1.9	0.22 j	<0.1	**0.68**	4.5 j,B	0.00038 j	0.21
AB-35S	12/05/2018	6.8	**859**	84.2	**516**	0.23 j	**61.9**	116	0.017 j	<0.08	<0.025	0.6 S1	0.18 S1	**35000**	**5680**	0.53	<0.5	<0.1	**0.71**	<10	0.00046 j	0.23
AB-36D	02/27/2018	7.4	<50	3.7	118	<0.5	0.31	46.9	<0.1	<0.08	0.09	0.29 j	0.065 j	120	5.4	1.4	<0.5	<0.1	**8**	<10	NA	0.061 j
AB-36D	06/04/2018	7.3	<50	3.9	127	<0.5	0.96	46.6	<0.1	<0.08	0.12	0.66 B	0.1	225	4.6 j	0.78 B	<0.5	<0.1	**8.4**	<10	NA	0.06 j
AB-36D	08/27/2018	7.1	<50	3.4	113	<0.5	0.22	45.4	<0.1	<0.08	0.12	0.34 j	0.067 j	140	3.9 j	1.9	<0.5	<0.1	**7.8**	3 j,B	NA	0.066 j
AB-36D	12/07/2018	7.4	<50	5.1	<25	<0.5	0.29	48.2	<0.1	<0.08	0.11 S1	0.43 j,S1	0.1	130	6.9	0.74	<0.5	<0.1	**7.6**	21.9	NA	0.078 j
AB-36S	02/27/2018	**6.2**	81	6	148	<0.5	**24.5**	388	0.039 j	<0.08	<0.025	0.28 j	**1.8**	**3390**	**846**	6.9	<0.5	0.063 j	**0.56 B**	<10	NA	0.12
AB-36S	06/04/2018	**6.4**	62.9	4.7	194	<0.5	**43.6**	571	<0.1	<0.08	<0.025	0.75 B	**5**	**11700**	**1150**	8.8	0.17 j	0.039 j	**1.8**	<10	NA	0.2
AB-36S	08/27/2018	**6.2**	75.4	3	175	<0.5	**38.8**	675	0.058 j,B	<0.08	<0.025	0.24 j	**4.7**	**9780**	**854**	9	<0.5	0.044 j	**0.75**	7.7 j,B	NA	0.2
AB-36S	12/07/2018	6.5	117	1.3	209	<0.5	**84**	**952**	0.024 j	<0.08	<0.025	0.16 j,S1	**1.1**	**11500**	**847**	1.4	<0.5	<0.1	**0.62 B,S1**	2.7 j	NA	0.22
AB-37D	02/27/2018	6.9	<50	2.3	125	<0.5	0.3	30.6	<0.1	<0.08	0.17	0.62	0.11	173	4.8 j	0.66	<0.5	<0.1	**9.9**	NA	NA	0.062 j
AB-37D	06/04/2018	7.0	<50	2.5	140	<0.5	0.25	28.2	<0.1	<0.08	0.17	0.37 j,B	0.039 j	61	<5	0.14 j,B	<0.5	<0.1	**9.5**	<10	NA	0.063 j
AB-37D	08/27/2018	6.9	<50	2.4	131	<0.5	0.23	31.4	<0.1	<0.08	0.17	0.53	0.035 j	93.9	<5	0.18 j	<0.5	<0.1	**9**	2.9 j,B	NA	0.072 j
AB-37D	12/07/2018	7.0	<50	2.9	140	<0.5	0.26	25.2	<0.1	<0.08	0.16 S1	0.23 j,S1	0.049 j	33.4 j	<5	<0.5	<0.5	<0.1	**8.4**	23.1	NA	0.08 j
AB-37S	02/27/2018	**6.4**	<50	1.7	100	<0.5	0.15	25.4	<0.1	<0.08	0.29	0.63	0.071 j	138	17.9	0.3 j	<0.5	<0.1	**7.7**	<10	NA	0.086 j
AB-37S	06/04/2018	6.5	<50	1.9 M1	127	<0.5	0.15	24.8	<0.1	<0.08	0.29 M1	0.37 j	<0.1	70.3	2.5 j	<0.5	<0.5	<0.1	**7.1**	<10	NA	0.08 j,M1
AB-37S	08/27/2018	6.5	<50	1.9	119	<0.5	0.15	25.5	<0.1	<0.08	0.3	0.46 j	0.023 j	208	14.6	0.24 j	<0.5	<0.1	**7**	2.8 j,B	NA	0.12
AB-37S	12/07/2018	6.5	<50	2.1	121	<0.5	0.29	30.2	<0.1	<0.08	0.3	0.95 S1	0.54	**507 S1**	**92.2 S1**	0.46 j	<0.5	<0.1	**7.9**	<10	NA	0.11
AB-38BR	03/05/2018	6.6	<50	12.8	201	<0.5	0.27	69.4	<0.1	<0.08	0.03	0.18 j	0.18	46.7 j	**79.4**	4.7	<0.5	<0.1	**5.5**	32.7 B	0.0019	0.062 j
AB-38BR	06/04/2018	6.7	<50	13	204	<0.5	0.21	58	<0.1	<0.08	0.028	0.2 j	0.14	<50	**59.4**	1.4	<0.5	<0.1	**5.6**	20.3	NA	0.065 j
AB-38BR	08/28/2018	6.7	<50	16.6	214	<0.5	0.3	120	<0.1	<0.08	<0.025	0.3 j	0.1	<50	**60.8**	1.1	<0.5	<0.1	**6**	19.6 B	NA	0.07 j
AB-38BR	12/05/2018	6.8	<50	17.2	207	<0.5	0.18	83.2	<0.1	<0.08	0.06 S1	0.16 j,S1	0.27	<50	**101**	2	<0.5	0.021 j	**5.2**	14.7 S1	NA	0.086 j
AB-38D	03/05/2018	**6.2**	<50	20.6 M1	224	<0.5	0.21	142	<0.1	0.041 j	0.071	0.32 j	**1.6**	**335**	**74.4**	5.3	<0.5	<0.1	**6**	4 j,B	0.00019 j	<0.1
AB-38D	06/04/2018	**6.3**	<50	15.3	228	<0.5	0.18	134	<0.1	<0.08	0.066	0.18 j	**1.4**	204	**54.1**	2.3	<0.5	<0.1	**5**	3.7 j	NA	<0.1
AB-38D	08/28/2018	**6.3**	<50	19.2	213	<0.5	0.23	127	<0.1	<0.08	0.1	0.26 j	0.31	63.7	38.9	2.6	<0.5	<0.1	**4.4**	3.4 j	NA	<0.1
AB-38D	12/05/2018	**6.3**	<50	14.4	191	<0.5	0.13	90.1	<0.1	<0.08	0.06 S1	0.28 j,S1	0.8	141	**56.4**	1.9	<0.5	<0.1	**3.4**	4.4 j,S1	NA	0.067 j
AB-38S	03/05/2018	6.5	172	8.1	175	0.12 j	**258**	265	<0.1	<0.08	<0.025	1.3	**1.5**	**31900**	**1700**	1.1	0.18 j	0.13	**0.5**	<10	0.00014 j	0.13
AB-38S	06/04/2018	**6.4**	80.2	6	148	<0.5	**60.6**	166	<0.1	<0.08	<0.025	0.16 j	1	**23100**	**1210**	0.44 j	0.2 j	0.067 j	**0.37**	<10	NA	0.095 j
AB-38S	08/28/2018	6.5	147	9.1	172	0.16 j	**302**	274	<0.1	<0.08	<0.025	<0.5	**1.7**	**31400**	**1690**	0.74	<0.5	0.13	**0.58**	3.7 j	NA	0.16
AB-38S	12/05/2018	6.5	72.2	1.5	154	0.1 j	**124**	155	0.019 j	<0.08	<0.025	<0.5	0.68	**38600**	**1460**	<0.5	<0.5	0.074 j	**0.53**	<10	NA	0.096 j
AB-38SS	09/06/2018	**5.7**	<50	2.1	117	0.1 j	<0.1	66	<0.1	<0.08	<0.025	8.9	**5.4**	**528**	**643**	8.5	<0.5	<0.1	**0.76 B**	6.9 j,B	NA	<0.1
AB-38SS	12/05/2018	**5.8**	<50	4.8	116	<0.5	0.24	60	0.015 j	<0.08	<0.025	0.26 j,S1	**6.3**	**556**	**327**	3.4	<0.5	<0.1	**0.97**	2.7 j,S1	NA	<0.1
AB-39D	03/02/2018	**6.0**	90.1	30	212	<0.5	0.21	177	<0.1	<0.08	0.071	0.21 j	0.11	<50	31.2	0.77	4.2	<0.1	**2.5**	<10	NA	<0.1
AB-39D	05/30/2018	**5.8**	77.4	31	220	<0.5	0.17	169	0.042 j	<0.08	0.092 TP	0.57	0.1	61	25.4	4.4	4.7	<0.1	**2.5**	<10	NA	<0.1
AB-39D	08/29/2018	**5.8**	93.9	34.2	223	<0.5	0.11	183	<0.1	<0.08	0.043	0.16 j	0.082 j	<50	19.4	0.54	4.9	<0.1	**2.5**	3.5 j,B,1g	NA	<0.1
AB-39D	12/05/2018	**6.0**	91.6	36.9	222	<0.5	0.17	171	<0.1	<0.08	0.062 S1	0.33 j,S1	0.099 j,S1	60.2	29.6	0.57	4.7	<0.1	**2.5**	<10	NA	<0.1
AB-39S	03/02/2018	**6.4**	128	2.4	207	<0.5	2	237	<0.1	<0.08	<0.025	0.22 j	**1.8**	**62800**	**5890**	0.29 j	<0.5	<0.1	**0.65**	5.9 j	NA	0.056 j
AB-39S	06/04/2018	6.8	96.3	4	244	<0.5	1.8	230	<0.1	<0.08	<0.025	0.21 j	**1.7**	**61400**	**5660**	<0.5	<0.5	<0.1	**0.54**	<10	NA	0.053 j
AB-39S	08/29/2018	**6.4**	131	2.3	240	<0.5	1.9	262	<0.1	<0.08	<0.025	0.31 j	**2.1**	**60300**	**5560**	<0.5	0.14 j	<0.1	**0.67**	3.1 j,B,1g	NA	0.063 j
AB-39S	12/05/2018	**6.3**	121	4.4	252	<0.5	1.8	226	0.016 j	<0.08	<0.025	0.4 j,S1	**2.2**	**55900**	**5010**	<0.5	<0.5	<0.1	**0.78**	<10	NA	0.074 j
BG-01BR	09/06/2018	7.9	37 j	5.2	171	0.67	0.8	11.6	<0.1	<0.08	0.56 M1	1.1	0.058 j	173	34.5	0.66	0.17 j	<0.1	**8.2**	7.7 j,B	NA	0.085 j
BG-01BR	12/07/2018	8.0	35.6 j	5.5	156	0.27 j	1	11.7	<0.1	<0.08	0.26 M0,R1,S1	0.54 S1	0.039 j	<50	8.8	0.82	<0.5	<0.1	**7.5**	3.6 j	NA	0.099 j
BG-01BR CCR	12/07/2018	8.0	33.1 S1	7.8	162	0.44 j	1.4	12	<0.1	<0.08	NA	0.59 S1	<0.1	NA	NA	NA	0.17 j	<0.1	NA	NA	NA	0.12
BG-01DA	03/01/2018	7.1	<50	22	101	0.12 j	0.24	15.7	<0.1	<0.08	0.28	3.2	0.16	94.8	4.6 j	1.9	<0.5	<0.1	**10.4**	<10	0.00018 j	0.35
BG-01DA	05/31/2018	7.2	<50	1.2	105 D6	0.29 j	0.25	13.8	<0.1	<0.08	0.49	3.8	0.15	108	6	2.1	<0.5	<0.1	**9.6**	<10	0.00019 j	0.075 j
BG-01DA	08/28/2018	7.1	<50	1.3	106	0.23 j	0.26	14.9	<0.1	<0.08	0.17	0.62	0.052 j	64.1	2.7 j	0.71	<0.5	<0.1	**10.2**	3.1 j,B	0.00018 j	0.081 j
BG-01DA	12/07/2018	7.1	<50	1.4	110	0.22 j	0.22	13.3	<0.1	<0.08	0.21 S1	0.4 j,S1	0.083 j	<50	3.3 j	1.2	<0.5	<0.1	**9**	<10	0.00017 j	0.091 j
BG-01S	03/01/2018	**6.0**	<50	<1	40	0.44 j	0.24	40.6	<0.1	<0.08	0.47	4.9	0.22	**486**	19.3	4.2	<0.5	<0.1	**1.1**	22.7	<0.0005	<0.1
BG-01S	05/31/2018	**5.4**	<50	<1	39	0.15 j	0.15	38.4	<0.1	<0.08	0.44	**37.6**	0.59	**664**	19	26.2	<0.5	<0.1	<0.3	5.3 j	<0.0005	<0.1
BG-01S	08/28/2018	**5.9**	<50	<1	39	<0.5	0.2	39	<0.1	<0.08	0.28	0.75	0.041 j	128	4.4 j	1.5	<0.5	<0.1	**0.62**	6.3 j	<0.0005	<0.1
BG-01S	12/07/2018	**6.0**	<50	<1	36	<0.5	0.19	36	0.017 j	<0.08	0.27 S1	0.93 S1	0.064 j	115	3.2 j	0.98	<0.5	<0.1	**0.98 S1**	5.9 j	<0.0005	<0.1
BG-02BRA-2	03/01/2018	**9.5**	<50	18.3	163	**2.1**	1.4	22.8	<0.1	<0.08	1.5	1.5	0.049 j	45.7 j	3.8 j	0.92	0.34 j	<0.1	**12.1**	<10	0.0015	0.11

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	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

		LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
BG-02BRA-2	05/30/2018	**9.2**	<50	18.7	165	**3.4**	1.7	21.8	<0.1	<0.08	0.91 TP	2.2	0.097 j	105	10	1.2	0.32 j	<0.1	**13.9**	10.6 B	0.002	0.11
BG-02BRA-2	08/28/2018	**9.2**	<50	13.1	164	**4**	1.1	30.4	<0.1	<0.08	0.96	1.3	0.035 j	105	2.6 j	0.49 j	0.3 j	<0.1	**10.4**	2.8 j,B	0.0011	0.094 j
BG-02BRA-2	12/07/2018	8.3	<50	33.3	222	0.61	1	20.7	<0.1	<0.08	0.39	1.1	0.038 j	<50	<5	0.8	<0.5	<0.1	**9.8**	<10	0.0014	0.11
BG-02D	02/28/2018	7.0	<50	1.2	110 D6	<0.5	0.4	58.2	<0.1	<0.08	1.2	2	0.13	283	8.7	0.9	<0.5	0.044 j	**8.9**	<10	0.000096 j	0.059 j
BG-02D	05/30/2018	6.7	<50	0.88 j	117	<0.5	0.18	41.3	<0.1	<0.08	0.9 TP	1	0.02 j	<50	<5	0.28 j	<0.5	<0.1	**8.4**	3.1 j,B	0.000044 j	0.053 j
BG-02D	08/28/2018	6.7	<50	1.1	126	0.096 j	0.23	50.4	<0.1	<0.08	1 M6	1.4	0.16	**519**	13.2	0.57	<0.5	<0.1	**8.6**	5.1 j,B	<0.0005	0.054 j
BG-02D	12/07/2018	6.8	<50	1.3	125	<0.5	0.13	48	<0.1	<0.08	0.68	1 S1	0.12	117	5.2	<0.5	<0.5	<0.1	**7.6**	<10	0.000096 j	0.071 j
BG-02S	02/28/2018	**6.1**	<50	<1	133	<0.5	0.28	31.8	0.059 j	<0.08	1.6	3.1	0.18	**2370**	**75.6**	1.1	<0.5	0.029 j	**2.6**	6.5 j	<0.0005	0.05 j
BG-02S	05/30/2018	**6.0**	<50	<1	137	<0.5	0.16	21.8	<0.1	<0.08	1.5 P4,TP,R0	1.7	0.11	**1060**	37.3	0.4 j	<0.5	<0.1	**2.1**	20.4 B	<0.0005	<0.1
BG-02S	08/28/2018	**5.9**	<50	<1	139	<0.5	0.11	15.4	<0.1	<0.08	1.7	1.7	<0.1	<50	<5	0.22 j	<0.5	<0.1	**1.6**	<10	<0.0005	0.055 j
BG-02S	12/07/2018	**6.0**	<50	<1	133	<0.5	0.14	14.3	0.013 j	<0.08	1.4	1.5	0.068 j	<50	2.8 j	<0.5	<0.5	<0.1	**1.8**	<10	<0.0005	0.063 j
BG-03D	03/01/2018	6.5	<50	<1	122	<0.5	0.16	78.6	<0.1	<0.08	0.3	0.83	0.07 j	50.8	3.8 j	0.55	<0.5	<0.1	**6.9**	<10	NA	<0.1
BG-03D	05/30/2018	**6.4**	<50	0.5 j	132	<0.5	0.12	85.8	<0.1	<0.08	0.36 TP	0.49 j	0.038 j	31.7 j	3.4 j	0.16 j	<0.5	<0.1	**6.4**	<10	0.000067 j	<0.1
BG-03D	08/27/2018	6.6	<50	0.56 j	124	<0.5	0.13	79	<0.1	<0.08	0.29	0.43 j	0.022 j	<50	<5	0.17 j	<0.5	<0.1	**6.5**	<10	<0.0005	<0.1
BG-03D	12/06/2018	**6.2**	<50	0.52 j,M1	130	<0.5	0.09 j	85.6	<0.1	<0.08	0.3	0.41 j	<0.1	<50	<5	<0.5	<0.5	<0.1	**6.2 BC**	4.2 j	<0.0005	<0.1 M1
BG-03S	03/01/2018	6.5	<50	<1	126	0.19 j	0.46	57.7	<0.1	<0.08	0.76	4.6	0.18	**797**	35	2.4	<0.5	<0.1	**3.2**	3 j	NA	<0.1
BG-03S	05/30/2018	6.5	<50	<1	141	0.16 j	0.1	60.2	<0.1	<0.08	0.62 TP	1.4	0.16	**846**	38.9	0.71	<0.5	<0.1	**3.4**	7.9 j,B	<0.0005	<0.1
BG-03S	08/27/2018	**6.4**	<50	<1	139	<0.5	0.084 j	66.5	<0.1	<0.08	0.54	0.85	0.078 j	**479**	16.3	0.31 j	<0.5	<0.1	**3.1**	3.7 j,B	<0.0005	<0.1
BG-03S	12/06/2018	6.7	<50	<1	136	<0.5	0.069 j	63.6	<0.1	<0.08	3.2	1.1	0.14	**335**	23.4	0.59	<0.5	<0.1	**3.4 BC**	2.9 j	<0.0005	<0.1
BG-04BR	03/05/2018	7.5	<50	2.3	121	<0.5	0.3	14.1	<0.1	<0.08	0.18	0.94	0.14	**444**	15	0.35 j	0.17 j	<0.1	**10.4**	<10	0.00034 j	0.051 j
BG-04BR	06/04/2018	7.3	<50	2.4	135	<0.5	0.26	11.3	<0.1	<0.08	0.18	0.68 B	0.021 j	40.7 j	2.8 j	0.27 j,B	0.19 j	<0.1	**9.3**	<10	0.00032 j	0.051 j
BG-04BR	08/27/2018	7.5	<50	2.3	131	<0.5	0.3	16.9	<0.1	<0.08	0.39	8.6	0.31	**708**	18.4	5.8	0.21 j	<0.1	**10.6**	4.8 j	0.0004 j	0.057 j
BG-04BR	12/07/2018	7.5	<50	2.7	125	<0.5	0.3	12.6	<0.1	<0.08	0.17 S1	3	0.2	196	7.3	2.5	<0.5	<0.1	**8.6**	<10	0.00032 j	0.065 j
BG-04D	03/05/2018	6.9	<50	1.3	147	0.15 j	0.33	109	<0.1	<0.08	0.33	1.3	0.41	**680**	**175**	0.94	<0.5	<0.1	**7.9**	<10	0.0005	<0.1
BG-04D	06/04/2018	6.8	<50	1.5 M1	155	0.12 j	0.25	100	<0.1	<0.08	0.48 M1	0.92 B	0.18	205	**106**	0.36 j,B	<0.5	<0.1	**7**	<10	0.00042 j	0.053 j
BG-04D	08/27/2018	6.7	<50	1.8	165	<0.5	0.21	116	<0.1	<0.08	0.61	1	0.23	285	**73.2**	0.5	<0.5	<0.1	**5.6**	3 j	0.00048 j	0.059 j
BG-04D	12/06/2018	6.6	<50	1.3	143	<0.5	0.19	103	<0.1	<0.08	0.68	0.84	0.16	74.9	**78.3**	<0.5	<0.5	<0.1	**6.7 BC**	<10	0.00038 j	<0.1
BG-04S	03/05/2018	**6.1**	<50	<1	138	<0.5	0.24	86.8	0.047 j	<0.08	0.031	**13.4**	0.42	**1170**	49.8	11.3	<0.5	<0.1	**3.5**	12.1	0.000052 j	0.069 j
BG-04S	06/04/2018	**5.9**	<50	<1	154	0.14 j	0.24	70.7	0.041 j	<0.08	0.13	2.1	0.098 j	**843**	43.5	3.2 B	<0.5	<0.1	**2.1**	15.1	<0.0005	0.063 j
BG-04S	08/27/2018	**5.9**	<50	<1	144	<0.5	0.24	70.3	<0.1	<0.08	0.081	0.62	0.099 j	192	30.3	2.3	<0.5	<0.1	**1.8**	10.5	<0.0005	0.069 j
BG-04S	12/06/2018	**5.8**	<50	<1	138	<0.5	0.17	71.4	0.01 j,S1	<0.08	1.4	1.9	0.11	101	26.3	3.4	<0.5	<0.1	**2.2 BC**	9.4 j	<0.0005	<0.1
CCR-01DA	02/26/2018	7.7	3.2 j	<1	101	<0.5	0.26	73.7	<0.1	<0.08	NA	0.43 j	0.9	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-01DA	05/29/2018	**6.3**	6.1 S1	<1	136	<0.5	0.16	72.6	<0.1	<0.08	NA	0.56 S1	0.83 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-01DA	12/04/2018	**6.4**	7.8 j,S1	0.57 j	131	<0.5	0.15 S1	75.6	<0.1	<0.08	NA	0.5 S1	0.89 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.05 j
CCR-02D	02/26/2018	7.0	70.9	12.9	315	0.22 j	0.42	159	<0.1	<0.08	NA	0.24 j	0.52	NA	NA	NA	0.19 j	<0.1	NA	NA	NA	<0.1
CCR-02D	05/29/2018	7.0	74.3	13.3	296	<0.5	0.31	146	<0.1	<0.08	NA	0.16 j,S1	0.5 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-02D	12/04/2018	6.7	70.5	13.5	273	<0.5	0.2 S1	162	<0.1	<0.08	NA	0.2 j,S1	0.43 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-02S	05/30/2018	**5.2**	2.7 j,S1	0.59 j	32	0.97	0.073 j	35.3	0.05 j	0.044 j	NA	**47.5**	**1.6**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-02S	12/04/2018	**5.1**	4.5 j,S1	0.79 j	<25	<0.5	0.21 S1	27.2	0.046 j	<0.08	NA	1.1 S1	0.38 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-03DA	02/26/2018	7.1	10.2	9.6	232	0.48 j	0.87	20.5	<0.1	<0.08	NA	2.4	0.32	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-03DA	05/29/2018	**4.2**	12.2 S1	10.3	246	0.3 j	0.88	20.5	<0.1	<0.08	NA	0.93 S1	0.21 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-03DA	12/04/2018	7.0	13.6 j,S1	11.1	260	0.16 j,S1	0.9 S1	19.9	<0.1	<0.08	NA	0.63 S1	0.087 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-03S	02/27/2018	**5.2**	427	106	204	0.34 j	0.42	25.8	0.11	0.18	NA	**23.1**	**47.5**	NA	NA	NA	0.8	0.1	NA	NA	NA	0.14
CCR-03S	05/29/2018	**5.2**	539	107	240	<0.5	0.38	29.4	0.15	0.3	NA	1.1 S1	**46.8**	NA	NA	NA	1	0.11	NA	NA	NA	0.13
CCR-03S	12/04/2018	**5.4**	425	113	241	<0.5	0.24 S1	23.1	0.13	0.28	NA	2.3 S1	**45.7**	NA	NA	NA	0.69 S1	0.1	NA	NA	NA	0.12
CCR-04DA	02/26/2018	7.0	36.8	162	420	0.12 j	0.88	104	<0.1	<0.08	NA	0.8	0.37	NA	NA	NA	0.19 j	<0.1	NA	NA	NA	<0.1
CCR-04DA	05/29/2018	6.9	37 S1	167	438	<0.5	1.4	105	<0.1	<0.08	NA	0.33 j,S1	0.27	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-04DA	12/06/2018	7.3	36.2	176	433	0.15 j,S1	1.5 S1	91.7	<0.1	<0.08	NA	0.3 j,S1	0.18 S1	NA	NA	NA	<0.5 M1,S1	<0.1	NA	NA	NA	<0.1
CCR-04SA	02/26/2018	**3.7**	349	**1580**	**2020**	<0.5	**179**	31	**28.1**	**5.7**	NA	2 j	**2360**	NA	NA	NA	**261**	<10 D3,S1	NA	NA	NA	**4.1**
CCR-04SA	05/29/2018	**3.4**	352	**1420**	**2270**	<0.5	**67.9**	75.1	**26.1**	**5.7**	NA	1.6 j,D3,S1	**2840**	NA	NA	NA	**35.1**	**0.72**	NA	NA	NA	**3.8**
CCR-04SA	12/07/2018	**3.8**	254 D3	**1340**	**1910**	0.3 j,S1	**31.5**	20.2 D3	**19 D3**	**4.3**	NA	<2.5 D3,S1	**1740 D3**	NA	NA	NA	**21.9 D3**	**0.8**	NA	NA	NA	**3.3**
CCR-05D	03/03/2018	6.9	43.8	41.8	180	<0.5	0.25	19.3	<0.1	<0.08	NA	0.26 j	0.085 j	NA	NA	NA	0.2 j	<0.1	NA	NA	NA	<0.1
CCR-05D	06/05/2018	6.9	33.9 S1	40.5	203	<0.5	0.29	19	<0.1	<0.08	NA	0.56 S1	0.28 S1	NA	NA	NA	0.21 j	<0.1	NA	NA	NA	0.064 j
CCR-05D	12/06/2018	7.0	27.6 S1	43.8	195	<0.5	0.3 S1	16	<0.1	<0.08	NA	0.52 S1	0.2 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-05S	03/03/2018	**3.8**	**710**	**842**	**1270**	<0.5	1.9	18.8	**7.3**	**6.7**	NA	0.41 j	**663**	NA	NA	NA	**21.2**	**1.3**	NA	NA	NA	1.6
CCR-05S	06/05/2018	**4.0**	**802**	**765**	**1300**	<0.5	3.7	23.6	**6.9**	**6.9**	NA	0.39 j,S1	**766**	NA	NA	NA	3.9	**2.4**	NA	NA	NA	1.7
CCR-05S	12/06/2018	**3.6**	530	**804**	**1340**	<0.5	8.2	17.1	**8.9**	**6.9**	NA	0.82 S1	**611**	NA	NA	NA	4.9	**2.8**	NA	NA	NA	**2.2**
CCR-06D	03/03/2018	6.7	26.2	2.2	111	<0.5	0.2	46.1	<0.1	<0.08	NA	0.83	0.21	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.053 j
CCR-06D	06/05/2018	6.8	24.2 S1	4.5	125	<0.5	0.092 j	41.2	<0.1	<0.08	NA	0.22 j,S1	0.063 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.061 j
CCR-06D	12/06/2018	6.8	21.9 j,S1	14.6	129 D6	<0.5	0.13 S1	46.6	<0.1	<0.08	NA	0.24 j,S1	0.13 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.056 j
CCR-06S	03/03/2018	**3.6**	674	**2990**	**4120**	<0.5	6.2	33.9	2	0.059 j	NA	1.7 j,D3	**44.5**	NA	NA	NA	8.2	**3.5**	NA	NA	NA	0.28
CCR-06S	06/05/2018	**3.7**	667	**3200**	**5050**	<2.5 D3	7.1	39	2.1	<0.4 D3	NA	0.98 j,D3,S1	**48.4**	NA	NA	NA	3.7	**3.6**	NA	NA	NA	0.32
CCR-06S	12/06/2018	**3.3**	510	**2560**	**3920**	<0.5	5.8	18.3	1.2	0.074 j	NA	1.6 S1	**32.3**	NA	NA	NA	2.7	**3.7**	NA	NA	NA	0.27
CCR-07D	03/03/2018	7.4	**805**	86.3	220	<0.5	0.13	35.4	<0.1	<0.08	NA	1.4	0.43	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-07D	06/05/2018	8.1	**756**	92.1	223	<0.5	0.11	37.2	<0.1	<0.08	NA	1.2 S1	0.31 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-07D	12/06/2018	7.7	663	92.5	216	<0.5	0.13 S1	31.2	<0.1	<0.08	NA	0.48 j,S1	0.15 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-07S	03/03/2018	**5.1**	**2110**	204	338	<0.5	0.35	24.1	0.1	0.088	NA	0.56	**6.8**	NA	NA	NA	0.73	<0.1	NA	NA	NA	<0.1
CCR-07S	06/05/2018	**5.0**	**2050**	219	386	<0.5	0.16	21.9	0.21	0.11	NA	0.3 j,S1	**5.4**	NA	NA	NA	0.21 j	<0.1	NA	NA	NA	<0.1
CCR-07S	12/06/2018	**5.9**	**1520**	**271 M6**	**529**	<0.5	0.42 S1	18.8	0.11	0.07 j	NA	0.69 S1	**6.8**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1 M1,R1

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

		LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)														ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
CCR-08D	03/03/2018	7.2	**1470**	97.3	218	<0.5	0.18	6.9	<0.1	<0.08	NA	0.64	0.31	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-08D	06/05/2018	7.0	**1380**	96.3	222	<0.5	0.057 j	4.2	<0.1	<0.08	NA	<0.5	0.084 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-08D	12/07/2018	7.0	**1280**	98.1	217	<0.5	0.15 S1	5.1	<0.1	<0.08	NA	0.56 S1	0.22 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-08S	03/03/2018	**5.0**	**1780**	244	396	<0.5	0.58	24.6	0.073 j	0.12	NA	0.31 j	**54.7**	NA	NA	NA	2	0.087 j	NA	NA	NA	<0.1
CCR-08S	06/05/2018	**4.8**	**1640**	**282 M6**	478	<0.5	0.69	26.7	0.11	0.15	NA	0.24 j,S1	**63.8**	NA	NA	NA	0.65	0.093 j	NA	NA	NA	<0.1 M1
CCR-08S	12/07/2018	**5.0**	**1560**	**272**	397	<0.5	0.32 S1	25.5	0.12	0.11	NA	1 S1	**33.8**	NA	NA	NA	0.21 j,S1	0.16	NA	NA	NA	0.05 j
CCR-09D	02/26/2018	8.1	**2150**	133 M1,R1	258	<0.5	0.085 j	36	<0.1	<0.08	NA	0.42 j	0.13	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-09D	06/05/2018	6.7	**1860**	105	233	<0.5	<0.1	29.7	<0.1	<0.08	NA	<0.5	0.092 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-09D	12/07/2018	7.0	**1660**	134	272	<0.5	0.087 j,S1	34.5	<0.1	<0.08	NA	<0.5	0.2 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-09S	02/26/2018	**5.4**	**1380**	164	291	<0.5	0.33	20.8	0.057 j	0.049 j	NA	0.18 j	**18.1**	NA	NA	NA	0.54	0.1	NA	NA	NA	<0.1
CCR-09S	06/05/2018	**5.1**	**1370 M6**	189	331	<0.5	0.12	21.1	0.069 j	0.1	NA	<0.5	**17.6**	NA	NA	NA	<0.5	0.15	NA	NA	NA	<0.1
CCR-09S	12/07/2018	**5.3**	**1410**	209	352	<0.5	0.17 S1	20.7	0.063 j	<0.08	NA	<0.5	**21.3**	NA	NA	NA	0.1 j,S1	0.11	NA	NA	NA	<0.1
CCR-11DA	02/26/2018	6.7	**1390**	78	165	<0.5	0.077 j	62.1	<0.1	<0.08	NA	4	0.12	NA	NA	NA	0.23 j	<0.1	NA	NA	NA	<0.1
CCR-11DA	05/29/2018	6.7	**1520**	80.2	182	<0.5	0.079 j	63.5	<0.1	<0.08	NA	0.34 j,S1	0.073 j,S1	NA	NA	NA	0.42 j	<0.1	NA	NA	NA	<0.1
CCR-11DA	12/04/2018	6.6	**1320 M6**	83	183	<0.5	0.076 j,S1	57.2	<0.1	<0.08	NA	0.32 j,S1	0.066 j,S1	NA	NA	NA	0.4 j,S1	<0.1	NA	NA	NA	<0.1
CCR-11S	02/26/2018	6.5	41.4	74.3	221	<0.5	0.082 j	36.5	<0.1	<0.08	NA	7.4	0.068 j	NA	NA	NA	2.4	<0.1	NA	NA	NA	0.052 j
CCR-11S	05/29/2018	7.5	45.9	68.6	239	<0.5	0.061 j	43.9	<0.1	<0.08	NA	0.38 j,S1	0.096 j,S1	NA	NA	NA	2.2	<0.1	NA	NA	NA	0.052 j
CCR-11S	12/04/2018	6.6	359	123	406	<0.5	0.06 j,S1	65.3	<0.1	<0.08	NA	1.1 S1	0.069 j,S1	NA	NA	NA	1.5 S1	0.03 j	NA	NA	NA	0.093 j
CCR-14D	02/27/2018	7.8	600	39.9	172	<0.5	0.21	30.7	<0.1	<0.08	NA	3.5	0.53	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-14D	05/29/2018	8.1	622	43.4	177	<0.5	0.15	23.6	<0.1	<0.08	NA	0.3 j,S1	0.087 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-14D	12/06/2018	7.6	526	42.9	173	<0.5	0.14 S1	22.8	<0.1	<0.08	NA	0.84 S1	0.16 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-14S	02/27/2018	**5.7**	**921**	42	106	<0.5	0.07 j	44.3	<0.1	0.07 j	NA	0.36 j	**12.2**	NA	NA	NA	<0.5	0.074 j	NA	NA	NA	<0.1
CCR-14S	05/29/2018	**5.7**	**983**	44.4	114	<0.5	0.081 j	45.7	<0.1	0.067 j	NA	0.42 j,S1	**12.3**	NA	NA	NA	<0.5	0.072 j	NA	NA	NA	<0.1
CCR-14S	12/06/2018	**5.5**	646	33.1	103	<0.5	0.093 j,S1	55.3	0.024 j	0.072 j	NA	0.14 j,S1	**10.6**	NA	NA	NA	<0.5	0.09 j	NA	NA	NA	<0.1
CCR-16BR CAMA	09/06/2018	6.7	485	39.2	167	0.11 j	0.059 j	57.8	<0.1	<0.08	0.19	0.4 j	0.094 j	33.6 j	3.4 j	3.9	<0.5	<0.1	**7.8**	3.8 j,B	NA	0.051 j
CCR-16BR CAMA	12/04/2018	6.6	477	38.9	166	<0.5	0.12 B	58.4	<0.1	<0.08	0.22 S1	0.39 j	0.032 j	<50	<5	0.49 j	<0.5	<0.1	**7.9**	<10	NA	<0.1
CCR-16BR	12/04/2018	6.6	417 M1	39.1	179	<0.5	0.093 j	57.8	<0.1	<0.08	NA	0.39 j,S1	0.042 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-16D	02/26/2018	7.2	650	36.4	173	<0.5	0.35	8.6	<0.1	<0.08	NA	0.16 j	0.079 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-16D	05/29/2018	8.4	553	37	185	<0.5	0.34	10.1	<0.1	<0.08	NA	0.2 j,S1	0.12 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-16D	12/04/2018	8.1	604	40.7	186	<0.5	0.4 S1	7.4	<0.1	<0.08	NA	0.22 j,S1	0.091 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-16S	02/27/2018	6.5	**1570**	129	302	<0.5	0.32	85.6	0.066 j	0.047 j	NA	0.48 j	**2**	NA	NA	NA	0.25 j	0.052 j	NA	NA	NA	<0.1
CCR-16S	05/29/2018	**5.8**	**1690**	130	308	<0.5	0.26	122	0.052 j	0.081	NA	0.92 S1	**1.8**	NA	NA	NA	0.4 j	0.077 j	NA	NA	NA	<0.1
CCR-16S	12/04/2018	**5.7**	**1920**	126	276	<0.5	0.25 S1	108	0.048 j	0.097	NA	0.82 S1	**2.1**	NA	NA	NA	<0.5	0.096 j	NA	NA	NA	0.05 j
CCR-17D	02/27/2018	7.4	**1520**	42.4	291	<0.5	0.24	2.6	<0.1	<0.08	NA	<0.5	0.13	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-17D	05/30/2018	7.3	**1560**	44.4	296	<0.5	0.23	2.4	<0.1	<0.08	NA	<0.5	0.084 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-17D	12/04/2018	7.3	**1530**	51.2 M1,R1	305	<0.5	0.23 S1	2.5	<0.1	<0.08	NA	0.19 j,S1	0.1 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-17S	02/27/2018	**6.2**	**1350**	39.7	184	<0.5	0.13	59.5	<0.1	<0.08	NA	3.1	0.94	NA	NA	NA	<0.5	0.14	NA	NA	NA	<0.1
CCR-17S	05/30/2018	**6.1**	**1380**	41	203	<0.5	0.059 j	60.7	<0.1	<0.08	NA	1.2 S1	0.63 S1	NA	NA	NA	<0.5	0.11	NA	NA	NA	<0.1
CCR-17S	12/04/2018	**6.4**	**1480**	47.3	200	<0.5	0.058 j,S1	62.1	<0.1	<0.08	NA	1.1 S1	0.79 S1	NA	NA	NA	<0.5	0.12	NA	NA	NA	<0.1
CCR-18D	02/26/2018	6.7	265	47.2	227	<0.5	0.21	84.7	<0.1	<0.08	NA	0.17 j	0.26	NA	NA	NA	0.26 j	<0.1	NA	NA	NA	<0.1
CCR-18D	05/29/2018	6.8	274	47.4	268	<0.5	0.15	86.9	<0.1	<0.08	NA	<0.5	0.17 S1	NA	NA	NA	0.21 j	<0.1	NA	NA	NA	<0.1
CCR-18D	12/04/2018	6.7	289	47.8	248	<0.5	0.11 S1	80.4	<0.1	<0.08	NA	0.1 j,S1	0.17 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.063 j
CCR-18S	02/26/2018	**4.6**	28.5	84.2 M1	163	<0.5	0.66	33.3	0.84	0.035 j	NA	1.6	**23**	NA	NA	NA	1.3	0.046 j	NA	NA	NA	0.11 M1
CCR-18S	05/29/2018	**4.5**	36.4 S1	76.8	188	<0.5	0.2	30.8	0.66	0.05 j	NA	1.2 S1	**22.7**	NA	NA	NA	0.46 j	0.035 j	NA	NA	NA	0.11
CCR-18S	12/04/2018	**4.7**	10 j,S1	52.6	<25	0.16 j,S1	0.1 S1	39.8	0.44	<0.08	NA	<0.5	**28.3**	NA	NA	NA	0.34 j,S1	<0.1	NA	NA	NA	0.059 j
CCR-20D	02/26/2018	6.9	548	40.2	241	<0.5	0.13	48.9	<0.1	<0.08	NA	0.58	0.33	NA	NA	NA	0.57	<0.1	NA	NA	NA	<0.1
CCR-20D	05/29/2018	6.8	442	41.8	261	<0.5	0.091 j	48	<0.1	<0.08	NA	0.43 j,S1	0.7 S1	NA	NA	NA	0.6	<0.1	NA	NA	NA	<0.1
CCR-20D	12/04/2018	6.7	523	46.8	246	<0.5	0.11 S1	46.6	<0.1	<0.08	NA	0.73 S1	0.58 S1	NA	NA	NA	0.73 S1	<0.1	NA	NA	NA	<0.1
CCR-20S	02/26/2018	**5.0**	184	16.1	107	<0.5	0.14	75.1	0.43	<0.08	NA	2.3	**11.6**	NA	NA	NA	0.53	0.036 j	NA	NA	NA	<0.1
CCR-20S	05/29/2018	**4.9**	200	15.9	125	<0.5	<0.1	86	0.49	<0.08	NA	1.8 S1	**13.1**	NA	NA	NA	0.57	0.033 j	NA	NA	NA	<0.1
CCR-20S	12/04/2018	**4.8**	190	13.7	116	<0.5	<0.1	77.8	0.49	<0.08	NA	2.4 S1	**11.8**	NA	NA	NA	0.42 j,S1	0.026 j	NA	NA	NA	<0.1
CCR-21D	02/27/2018	6.5	305	34	258	<0.5	0.047 j	139	<0.1	<0.08	NA	0.57	0.076 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-21D	05/30/2018	6.9	357 M1	38.1	311	<0.5	<0.1	156	<0.1	<0.08	NA	0.16 j,S1	0.023 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-21D	12/04/2018	**9.0**	420	48.5	317	0.26 j,S1	0.17 S1	135	<0.1	<0.08	NA	0.34 j,S1	0.055 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.055 j
CCR-21S	02/27/2018	**4.8**	**1660**	18.2	178	<0.5	0.14	442	2.3	0.75	NA	0.84	**53.3**	NA	NA	NA	0.28 j	**0.25**	NA	NA	NA	0.083 j
CCR-21S	05/30/2018	**5.1**	**1820**	19	209	<0.5	0.11	442	1.8	0.58	NA	0.47 j,S1	**45.1**	NA	NA	NA	0.23 j	0.19	NA	NA	NA	0.079 j
CCR-21S	12/04/2018	**4.8**	**1550**	26.1	160	<0.5	0.11 S1	335	2	1.1	NA	0.74 S1	**53**	NA	NA	NA	0.33 j,S1	**0.21**	NA	NA	NA	0.081 j,M1
CCR-22DA	02/27/2018	**9.1**	17.2 B	23.4	158	0.39 j	0.24	6	<0.1	<0.08	NA	0.96	0.025 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.072 j
CCR-22DA	05/29/2018	**8.9**	19.8 S1	31.5	204	0.5 j	0.26	6.3	<0.1	<0.08	NA	2.4 S1	0.086 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.087 j
CCR-22DA	12/05/2018	8.4	16.4 j,S1	29.8	198	**3.1 S1**	0.75 S1	9.2	<0.1	<0.08	NA	0.86 S1	0.085 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.1
CCR-22S	02/27/2018	**4.8**	4.8 j,B	2.8	50	<0.5	<0.1	138	0.21	0.028 j	NA	0.65	**3.7**	NA	NA	NA	<0.5	0.063 j	NA	NA	NA	<0.1
CCR-22S	05/29/2018	**4.7**	5.5 S1	3.2	76	<0.5	<0.1	157	0.22	<0.08	NA	0.55 S1	**4.4**	NA	NA	NA	<0.5	0.062 j	NA	NA	NA	<0.1
CCR-22S	12/05/2018	**4.8**	3.3 j,S1	4.1	70	<0.5	<0.1	204	0.26	<0.08	NA	0.62 S1	**5.2**	NA	NA	NA	<0.5	0.063 j	NA	NA	NA	<0.1
CCR-23D	02/26/2018	6.8	4.4 j	2	136	<0.5	0.16	10.8	<0.1	<0.08	NA	0.99	**1.1**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-23D	05/29/2018	6.8	5.3 S1	2	126	<0.5	0.11	9.3	<0.1	<0.08	NA	0.58 S1	0.57 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-23D	12/05/2018	6.6	4.1 j,S1	2.6	134	<0.5	0.096 j,S1	8.8	<0.1	<0.08	NA	0.6 S1	0.34 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.076 j
CCR-23S	02/26/2018	**5.5**	3.8 j	0.66 j	59	<0.5	0.085 j	102	0.069 j	0.036 j	NA	0.25 j	**1.5**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-23S	05/29/2018	**5.3**	2.9 j,S1	0.77 j	50 D6	<0.5	0.053 j	94.4	0.057 j	0.029 j	NA	0.36 j,S1	0.28	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CCR-23S	12/05/2018	**5.5**	2.4 j,S1	<1	67	<0.5	<0.1	118	0.066 j	<0.08	NA	0.22 j,S1	**1.4 S1**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1 M1

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

		LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
CCR-26BR CAMA	09/06/2018	6.5	<50	147	375	0.12 j	0.11	74.5	<0.1	<0.08	1.7	2.1	0.044 j	99.8	6.2	0.96	1.1	<0.1	**4.2**	4.3 j,B	NA	<0.1
CCR-26BR CAMA	12/05/2018	**6.4**	<50	149	366	<0.5	0.25	76.3	<0.1	<0.08	1.6	1.9 S1	0.056 j,S1	<50	6.4	1	1.2	<0.1	**3.9**	<10	NA	<0.1
CCR-26BR	12/05/2018	**6.4**	4.4 j,S1	89.3	361	<0.5	0.25	75.3	<0.1	<0.08	NA	2.2	0.066 j	NA	NA	NA	1.3	<0.1	NA	NA	NA	<0.1
CCR-26D CAMA	09/06/2018	**6.2**	<50	63.2	181	<0.5	0.089 j	87.6	<0.1	<0.08	2	2.5	0.1	**763**	**54.7**	1.1	0.69	<0.1	**4.4**	4.8 j,B	NA	<0.1
CCR-26D CAMA	12/05/2018	**6.2**	<50	54.5	197	<0.5	0.13	85.1	<0.1	<0.08	1.8	2.2 S1	0.067 j,S1	122	14	0.52	0.71	<0.1	**4**	<10	NA	<0.1
CCR-26D	12/05/2018	**6.2**	4.4 j,S1	60.1	196	<0.5	0.14	78.9	<0.1	<0.08	NA	2.1	0.089 j	NA	NA	NA	0.73	<0.1	NA	NA	NA	<0.1
CCR-26S CAMA	09/07/2018	**6.2**	<50	1.4	97	<0.5	2.4	38.3	<0.1	<0.08	<0.025	0.5	**11.3**	**44000**	**1050**	1.3	<0.5	<0.1	0.072 j	3.1 j	NA	0.085 j
CCR-26S CAMA	12/05/2018	6.5	<50	4.1	94	<0.5	2	43.3	<0.1	<0.08	<0.025	1.1 S1	**12.3**	**44600**	**1080**	1.5	<0.5	<0.1	0.3	<10	NA	0.08 j
CCR-26S	12/05/2018	6.5	6.8 j,S1	3.9	98	<0.5	2.1	41.7	<0.1	<0.08	NA	1.1 S1	**12.4**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.097 j
CCR-BG-01DA	02/26/2018	7.7	5.8	<1	106 D6	0.78	0.29	23.3	<0.1	<0.08	NA	0.54	0.24	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.11
CCR-BG-01DA	05/30/2018	7.5	6.8 S1	0.52 j	123	0.46 j	0.24	23.4	<0.1	<0.08	NA	0.67 S1	0.24 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.12
CCR-BG-01DA	12/05/2018	7.2	6.2 j,S1	0.95 j	99	0.41 j,S1	0.24 S1	17	<0.1	<0.08	NA	0.62 S1	0.33 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.13
CCR-BG-01S	02/26/2018	**5.5**	4.4 j	1.2	31	<0.5	0.055 j	24	<0.1	<0.08	NA	1.4	**1.8**	NA	NA	NA	<0.5	0.036 j	NA	NA	NA	<0.1
CCR-BG-01S	05/30/2018	**5.5**	6.7 S1	1	32	<0.5	<0.1	26.9	<0.1	<0.08	NA	0.68 S1	**1.9**	NA	NA	NA	<0.5	0.04 j	NA	NA	NA	<0.1
CCR-BG-01S	12/05/2018	**5.5**	8.4 j,S1	1.3	27	<0.5	<0.1	26.5	0.033 j	<0.08	NA	2.2 S1	**1.1 S1**	NA	NA	NA	<0.5	0.028 j	NA	NA	NA	<0.1
CP-01D CCR	12/05/2018	**5.5**	67.9	**678**	**1060**	**10.5**	0.3	66.2	0.043 j	0.087	NA	**182**	**4.2**	NA	NA	NA	1	0.042 j	NA	NA	NA	<0.1
CP-01D	01/17/2019	**5.6**	NA	**780**	**1000**	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00021	<1
CP-01D	01/25/2019	**5.5**	80	NA	NA	<1	<1	31	<1	<1	NA	<1	**2.01**	8.234 j	**30600**	1.8	0.924 j	<0.2	**1.07**	2.338 j	NA	NA
CP-01S CCR	12/05/2018	**6.2**	16.9 j,M1,S1	**413 M6**	**676**	<0.5	0.36	39	<0.1	<0.08	NA	1.1 S1	**66 M1**	NA	NA	NA	<0.5	0.19	NA	NA	NA	0.07 j
CP-01S	01/17/2019	**6.3**	NA	**380**	**590**	NA	NA	NA	NA	NA	<0.025 M1	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	0.076 j
CP-01S	01/25/2019	**6.3**	<50	NA	NA	<1	0.505 j	49	<1	<1	NA	<1	**51.2**	**37600 M4**	**5660**	0.727 j	<1	0.186 j	<0.3	<5	NA	NA
CP-02D CCR	12/05/2018	**6.1**	16.2 j,S1	**2090**	**3270**	0.14 j	0.22	68	<0.1	<0.08	NA	1.2 S1	**5.6**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CP-02D	01/17/2019	**6.1**	NA	**2900**	**3300**	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000215	<1
CP-02D	01/25/2019	**6.0**	21.846 j	NA	NA	<1	<1	45	<1	<1	NA	<1	**1.18**	100	**1620**	36.2	<1	<0.2	**2.93**	<5	NA	NA
CP-02S CCR	12/05/2018	**5.7**	6.2 j,S1	**1700**	**2500**	0.5	0.5	44.8	0.061 j	0.14	NA	1.7	**6.7**	NA	NA	NA	0.4 j	0.049 j	NA	NA	NA	0.054 j
CP-02S	01/17/2019	**6.1**	NA	**2300**	**2500**	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<1
CP-02S	01/25/2019	**6.1**	<50	NA	NA	<1	0.874 j	35	<1	<1	NA	<1	**15.8**	**3590**	**4970**	15.6	<1	<0.2	**0.36**	<5	NA	NA
CP-03D CCR	12/07/2018	**6.3**	5.9 j,S1	**750**	**1340**	0.24 j	0.28	80.4	<0.1	<0.08	NA	0.55 S1	**6.9**	NA	NA	NA	0.22 j	<0.1	NA	NA	NA	0.059 j
CP-03D	01/17/2019	6.5	NA	**560**	**950**	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000397	<1
CP-03D	01/25/2019	**6.4**	<50	NA	NA	<1	0.638 j	56	<1	<1	NA	<1	**7.86**	**4160**	**3150**	2.51	<1	<0.2	**0.376**	<5	NA	NA
CP-03S CCR	12/07/2018	**5.2**	2.7 j,S1	**987 M6**	**1550**	0.5 j	0.74	27.4	0.3	0.35	NA	2.2	**43.2**	NA	NA	NA	2.4	0.069 j	NA	NA	NA	<0.1 M1,R1
CP-03S	01/17/2019	**5.4**	NA	**1200**	**1500**	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<1
CP-03S	01/25/2019	**5.4**	<50	NA	NA	<1	0.943 j	30	0.334 j	0.37 j	NA	<1	**58.7**	256	**3220**	5.88	2.07	0.114 j	**0.398**	35	NA	NA
CP-04D	01/17/2019	**6.4**	NA	160	280	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<1
CP-04D	01/25/2019	6.5	444	NA	NA	<1	0.42 j	82	<1	<1	NA	0.364 j	0.451 j	**792**	**534**	2.08	<1	<0.2	**4.84**	<5	NA	NA
CP-04S	01/17/2019	**6.0**	NA	73 M2	140	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<1
CP-04S	01/25/2019	**6.0**	26.242 j	NA	NA	<1	<1	27	<1	<1	NA	<1	**20.6**	**6730**	**3410**	<1	<1	0.141 j	0.296 j	<5	NA	NA
CP-05D	01/17/2019	**6.1**	NA	**300**	500	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<1
CP-05D	01/25/2019	**6.0**	684	NA	NA	<1	<1	43	<1	<1	NA	<1	**1.88**	**530**	**607**	1.93	<1	<0.2	**1.48**	2.066 j	NA	NA
CP-05S	01/18/2019	**6.0**	NA	39	160	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<1
CP-05S	01/25/2019	**5.8**	<50	NA	NA	<1	<1	78	<1	<1	NA	1.57	**28.1**	**337**	**4960**	2.93	<1	0.193 j	**0.468**	3.304 j	NA	NA
CP-06BR	09/06/2018	8.1	105	88 M1	405	0.12 j	8.2	7.6	<0.1	<0.08	0.042	0.28 j	0.036 j	<50	13.7	0.4 j	<0.5	<0.1	0.3 B	2.7 j,B	NA	1
CP-06BR	12/05/2018	**10.1**	33.5 j	20.3	185	0.16 j	1.6	8.8	<0.1	<0.08	0.038 S1	0.22 j,S1	0.016 j,S1	<50	<5	<0.5	<0.5	<0.1	**0.81**	<10	NA	0.52
CP-06BR CCR	12/05/2018	**10.1**	28.5 S1	17.5	186	0.17 j	1.7	9.5	<0.1	<0.08	NA	0.17 j,S1	0.018 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.38
CP-06D CCR	12/06/2018	6.7	**1130**	87.4	249	0.16 j	0.14	64.7	<0.1	<0.08	NA	3.3	**1.3**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
CP-06D	01/18/2019	6.6	NA	170	260	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<1
CP-06D	01/25/2019	6.5	**1570**	NA	NA	<1	0.402 j	75	<1	<1	NA	<1	**1.46**	**951**	**476**	0.525 j	<1	<0.2	**0.643**	<5	NA	NA
CP-06S CCR	12/07/2018	**6.0**	**1390**	187	355	<0.5	0.21	39.8	<0.1	<0.08	NA	<0.5	**16**	NA	NA	NA	<0.5	0.069 j	NA	NA	NA	**4.2**
CP-06S	01/18/2019	**6.3**	NA	230	320	NA	NA	NA	NA	NA	<0.025	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002	<1
CP-06S	01/25/2019	6.5	**1210**	NA	NA	<1	0.412 j	64	<1	<1	NA	<1	**8.28**	**6630**	**2970**	0.367 j	<1	<0.2	0.196 j	<5	NA	NA
GWA-01BR	02/28/2018	7.9	<50	13.3	160	<0.5	0.66	43.4	<0.1	<0.08	0.79	0.98 B	0.049 j	<50	10.8	0.21 j	0.19 j	<0.1	**10.1**	<10	0.0023	0.07 j
GWA-01BR	05/31/2018	8.0	<50	15	167	<0.5	1	36.1	<0.1	<0.08	0.026	<0.5	0.31	<50	**59.4**	0.29 j	<0.5	<0.1	**9.3**	<10	0.0024	0.077 j
GWA-01BR	08/30/2018	8.3	<50	15.5	174	0.088 j	0.89	34.8	<0.1	<0.08	<0.025	0.25 j	0.22	40.8 j	46.9	0.17 j	<0.5	<0.1	**4.2**	15.3 B	0.0019	0.085 j
GWA-01BR	12/07/2018	**8.6**	<50	16.1	170	<0.5	0.77	32.2	<0.1	<0.08	0.37	0.54 S1	0.069 j	<50	18.2	<0.5	<0.5	<0.1	**5.7**	<10	0.0017	0.074 j
GWA-01D	02/28/2018	6.5	47.4 j	10.3	153	<0.5	0.19	54.9	<0.1	<0.08	7.4	7.3	0.029 j	<50	8.1	0.68	<0.5	<0.1	**6.9**	<10	0.00017 j	<0.1
GWA-01D	05/31/2018	**6.4**	42.4 j	11.7	183	<0.5	0.16	54.8	<0.1	<0.08	7.4	7.2	0.025 j	30.8 j	6.4	0.61	0.18 j	<0.1	**5.9**	69.9	0.00017 j	<0.1
GWA-01D	08/30/2018	**6.4**	47.8 j	11.8	177	<0.5	0.2	58.8	<0.1	<0.08	6.2 M6,R1	7.2	0.045 j	167	8.4	0.68	0.2 j	<0.1	**6.3**	3.8 j,B	0.00022 j	<0.1
GWA-01D	12/07/2018	6.5	40 j	12	185	<0.5	0.24	52.9	<0.1	<0.08	4.4	6.1	0.057 j	<50	7.9	0.68	<0.5	<0.1	**5.4**	<10	0.00016 j	<0.1
GWA-01S	02/28/2018	**5.0**	<50	0.54 j	56	<0.5	0.074 j	118	0.22	<0.08	0.7	5.6	**3**	137	13.9	3.7	<0.5	0.036 j	0.27 j	8.6 j	<0.0005	<0.1
GWA-01S	05/31/2018	**4.9**	<50	<1	71	<0.5	<0.1	114	0.073 j	<0.08	0.71	1.4	**3.2**	57.1	9.3	0.72	<0.5	0.043 j	0.1 j	28.8	<0.0005	<0.1
GWA-01S	08/30/2018	**4.9**	<50	<1	79	<0.5	<0.1	139	0.12	<0.08	1.2	1.4	**3.8**	131	18.8	0.76	<0.5	0.047 j	0.15 j	12.9 B	<0.0005	<0.1
GWA-01S	12/07/2018	**5.0**	<50	<1	74	<0.5	0.045 j	129	0.09 j	<0.08	0.68	5.4	**3.2**	53.2	11.6	2.7	<0.5	0.039 j	<0.3	6.1 j	<0.0005	<0.1
GWA-02D	02/28/2018	6.6	<50	2.2	138 D6	<0.5	0.11	56.1	<0.1	<0.08	2	2.3	0.037 j	87.8	6	0.3 j	<0.5	<0.1	**4.8**	<10	<0.0005	<0.1
GWA-02D	05/31/2018	6.5	<50	<1	96	<0.5	0.12	38.4	<0.1	<0.08	2.5	3	0.19	**489**	19.1	0.52 B	<0.5	<0.1	**4.2**	36.5	<0.0005	<0.1
GWA-02D	08/30/2018	6.5	<50	4.6	107	<0.5	0.13	50.9	<0.1	<0.08	2.5	1.9	0.07 j	202	6.5	0.35 j	0.15 j	<0.1	**4.2**	25.2 B	<0.0005	<0.1
GWA-02D	12/07/2018	6.6	<50	0.66 j	96	<0.5	0.16	39.7	<0.1	<0.08	2.3	3.1	0.068 j	76.3	3.2 j	<0.5	<0.5	<0.1	**4.6**	<10	<0.0005	0.055 j
GWA-02D CCR	12/07/2018	6.6	4.5 j,S1	0.72 j	95	<0.5	0.14	36.5	<0.1	<0.08	NA	2.9	0.059 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.056 j
GWA-02S	02/28/2018	**5.2**	<50	<1	29	<0.5	<0.1	53.9	0.11	<0.08	0.079	0.29 j,B	**7.5**	97.6	**167**	1.2	<0.5	0.029 j	0.13 j	3.8 j	<0.0005	<0.1
GWA-02S	05/31/2018	**4.8**	<50	<1	43	<0.5	<0.1	47.7	0.096 j	<0.08	0.02 j	0.16 j	**7.2**	50.6	**145**	0.93 B	<0.5	<0.1	0.11 j	4.3 j	<0.0005	<0.1

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
GWA-02S	08/30/2018	**5.1**	<50	<1	43	<0.5	0.07 j	40.3	0.085 j	<0.08	<0.025	0.5 j	**4.7**	130	**155**	0.83	<0.5	<0.1	<0.3	5 j,B	<0.0005	<0.1
GWA-02S	12/07/2018	**5.2**	<50	<1	40	<0.5	0.095 j	49.7	0.091 j	<0.08	0.14 S1	0.55 S1	**7.7**	98.1	**144**	1	<0.5	0.029 j	0.22 j,B,S1	4.2 j	<0.0005	<0.1
GWA-02S CCR	12/07/2018	**5.2**	4.1 j,S1	<1	46	<0.5	0.078 j	43.3	0.081 j	<0.08	NA	0.63 S1	**7.6**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
GWA-03BRA	02/27/2018	**9.7**	98.2	19.7	152	**2.3**	1.7	7.5	<0.1	<0.08	<0.025	2.6	0.061 j	31.4 j	<5	2.4	0.21 j	<0.1	**1.1**	<10	0.00035 j	0.24
GWA-03BRA	05/30/2018	**9.3**	80.6	17.2	154	**2**	1.9	5.3	<0.1	<0.08	0.063 TP	0.92	0.048 j	<50	<5	1.7	<0.5	<0.1	**1.3**	20.4 B	0.00042 j	0.29 M1
GWA-03BRA	08/28/2018	**9.3**	85	17.5	150	**1.9**	2.3	6.4	<0.1	<0.08	0.048	1.2	0.029 j	35.8 j	<5	1.5	0.14 j	<0.1	**0.49**	3.2 j	0.00036 j	0.36
GWA-03BRA	12/07/2018	**8.6**	75.9	15.2	139	0.58	1.8	6	<0.1	<0.08	0.025 S1	0.48 j,S1	0.52	56.6	4.4 j	1.9	<0.5	<0.1	0.26 j,B,S1	2.7 j	0.00047 j	0.29
GWA-03D	02/27/2018	8.1	99.4	8.6	119	<0.5	0.3	9.7	<0.1	<0.08	0.28	1.2	0.089 j	**337**	17.4	0.66	<0.5	<0.1	**9.5**	5.5 j	0.00036 j	0.056 j
GWA-03D CCR	02/27/2018	8.1	91.1	8	117	<0.5	0.24	8.9	<0.1	<0.08	NA	1.3	0.056 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.054 j
GWA-03D	05/30/2018	7.6	89.2	9.6	135	<0.5	0.28	9	<0.1	<0.08	0.29 TP	0.4 j	0.051 j	40.3 j	10.1	0.35 j	<0.5	<0.1	**9.4**	11.4 B	0.00036 j	0.061 j
GWA-03D CCR	05/30/2018	7.6	88.1	9.8	137	<0.5	0.3	10.3	<0.1	<0.08	NA	0.47 j,S1	0.058 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.06 j
GWA-03D	08/28/2018	7.4	104	9	134	<0.5	0.24	10.4	<0.1	<0.08	0.28	0.64	0.045 j	146	10.3	0.23 j	<0.5	<0.1	**7.4**	5.4 j	0.00032 j	0.062 j
GWA-03D	12/07/2018	7.5	127	13.4	133	0.34 j	0.44	11.6	<0.1	<0.08	0.33 M0	1.1	0.94	51.3	13.1	0.61	<0.5	<0.1	**7.9**	7.8 j	0.00028 j	0.066 j
GWA-03D CCR	12/07/2018	7.5	110	12.6	137	0.32 j,S1	0.41 S1	10.3	<0.1	<0.08	NA	0.73 S1	0.81 S1	NA	NA	NA	0.12 j,S1	<0.1	NA	NA	NA	0.066 j
GWA-03S	02/27/2018	**5.8**	332	38.6	120	<0.5	0.099 j	27.7	<0.1	<0.08	<0.025	0.94	**9.9**	**5400**	**2150**	0.76	<0.5	<0.1	<0.3	<10	<0.0005	<0.1
GWA-03S CCR	02/27/2018	**5.8**	273	37.8	126	<0.5	0.075 j	24	<0.1	<0.08	NA	<0.5	**9.2**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
GWA-03S	05/30/2018	**5.8**	312	36.2	119	<0.5	0.12	24.6	<0.1	<0.08	0.017 j,TP	<0.5	**12.1**	**7200**	**2110**	0.35 j	<0.5	<0.1	<0.3	<10	<0.0005	<0.1
GWA-03S CCR	05/30/2018	**5.8**	294	36.3	129	<0.5	0.095 j	26.8	<0.1	<0.08	NA	<0.5	**11.5**	NA	NA	NA	<0.5	0.029 j	NA	NA	NA	<0.1
GWA-03S	08/28/2018	**5.7**	382	38.6	132	<0.5	0.14	29.9	<0.1	<0.08	<0.025	5.8	**10.8**	**7260**	**2110**	4.8	<0.5	0.029 j	<0.3	3.9 j	<0.0005	<0.1
GWA-03S	12/07/2018	**5.9**	407	44.5	122	<0.5	0.16	32.2	0.013 j	<0.08	<0.025	<0.5	**10.9**	**3100**	**1920**	0.46 j	<0.5	0.046 j	0.12 j,B,S1	<10	<0.0005	<0.1
GWA-03S CCR	12/07/2018	**5.9**	382	43.6	131	<0.5	0.16 S1	29.3	<0.1	<0.08	NA	<0.5	**11.3**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
GWA-04BR	02/27/2018	8.5	404	40.3	173	0.12 j	0.27	5.4	<0.1	<0.08	<0.025	0.28 j	<0.1	61.6	45.1	0.14 j	1.1	<0.1	**2.8**	<10	0.00036 j	0.069 j
GWA-04BR	05/30/2018	**8.7**	370	37.9	177	0.14 j	0.19	7.1	<0.1	<0.08	0.029 TP	0.21 j	0.02 j	82	44.5	0.3 j	<0.5	<0.1	**0.64**	<10	0.00024 j	0.08 j
GWA-04BR	08/27/2018	8.3	382	41.3	173	<0.5	0.16	8	<0.1	<0.08	<0.025	0.28 j	<0.1	56.9	42.7	<0.5	0.24 j	<0.1	**0.97**	2.9 j,B	0.00021 j	0.075 j
GWA-04BR	12/04/2018	8.5	366	51.3	206	<0.5	0.18	8.4	<0.1	<0.08	0.055 M1,S1	0.33 j,B	0.019 j	59.3	**102**	<0.5	<0.5	<0.1	**1 B,BC,S1**	35.4	0.00019 j	0.06 j,M1
GWA-04D	02/27/2018	6.7	**714**	57.6 M1,R1	176	<0.5	0.089 j	22.5	<0.1	<0.08	<0.025	0.13 j	<0.1	<50	14.9	0.14 j	1.5	<0.1	**4.5**	<10	0.00015 j	<0.1
GWA-04D CCR	02/27/2018	6.7	647	58.7	178	<0.5	0.11	21.9	<0.1	<0.08	NA	0.15 j	0.029 j	NA	NA	NA	1.4	<0.1	NA	NA	NA	<0.1
GWA-04D	05/30/2018	6.8	663	63.1	201	<0.5	0.073 j	21.4	<0.1	<0.08	<0.025 TP	<0.5	<0.1	<50	13.7	<0.5	1.3	<0.1	**4.3**	<10	0.00015 j	<0.1
GWA-04D CCR	05/30/2018	6.8	661	60.9	196	<0.5	0.083 j	21.9	<0.1	<0.08	NA	<0.5	<0.1	NA	NA	NA	1.3	<0.1	NA	NA	NA	<0.1
GWA-04D	08/27/2018	6.6	682	64.4	<25	<0.5	0.11	24.7	0.037 j,B	<0.08	<0.025	0.16 j	<0.1	118	15.1	0.14 j	1.5	<0.1	**4.4**	10.6 B	0.00014 j	<0.1
GWA-04D	12/05/2018	6.8	629	78.1	197	0.4 j	0.086 j	22.1	0.019 j	<0.08	0.049 S1	0.36 j,S1	0.045 j,S1	83.5	14	<0.5	1.2	<0.1	**4.9**	<10	0.00015 j	<0.1
GWA-04D CCR	12/05/2018	6.8	590	72.6	192	0.38 j,S1	0.081 j,S1	23.2	<0.1	<0.08	NA	0.19 j,S1	0.046 j,S1	NA	NA	NA	1.3 S1	<0.1	NA	NA	NA	<0.1
GWA-04S	02/27/2018	**5.6**	**2050**	142	250	<0.5	0.12	49.6	0.045 j	0.037 j	0.03	5.8	**4.3**	**404**	**694**	4.8	<0.5	0.058 j	<0.3	<10	<0.0005	<0.1
GWA-04S CCR	02/27/2018	**5.6**	**1750**	144	242	<0.5	0.094 j	48.8	<0.1	0.034 j	NA	5.5	**4.2**	NA	NA	NA	<0.5	0.055 j	NA	NA	NA	<0.1
GWA-04S	05/30/2018	**5.3**	**1860**	143	269	<0.5	0.14	47.2	0.043 j	0.048 j	<0.025 TP	0.28 j	**4.1**	**477**	**468**	0.19 j	<0.5	0.057 j	<0.3	<10	<0.0005	<0.1
GWA-04S CCR	05/30/2018	**5.3**	**1790**	142 M1	270	<0.5	0.14	47.8	0.04 j	0.046 j	NA	0.44 j,S1	**4.2 S1**	NA	NA	NA	<0.5	0.055 j	NA	NA	NA	<0.1 M1,R1
GWA-04S	08/27/2018	**5.4**	**2100**	141	281	<0.5	0.12	51.2	0.05 j,B	0.052 j	<0.025	0.38 j	**4.2**	274	**480**	0.27 j	0.14 j	0.07 j	<0.3	3.9 j,B	<0.0005	<0.1
GWA-04S	12/05/2018	**5.6**	**2390**	159	269	<0.5	0.18	52.3	0.044 j	<0.08	0.033 S1	0.57 S1	**4.4**	**771**	**534**	<0.5	<0.5	0.067 j	0.24 j	<10	<0.0005	<0.1
GWA-04S CCR	12/05/2018	**5.6**	**1710**	183	267	<0.5	0.15 S1	52.1	0.043 j	<0.08	NA	0.35 j,S1	**4.2**	NA	NA	NA	<0.5	0.06 j	NA	NA	NA	<0.1
GWA-05BRA	02/27/2018	7.6	**867**	45.6	172	0.16 j	1.3	11.9	<0.1	<0.08	<0.025	0.2 j	0.065 j	158	**106**	0.32 j	<0.5	<0.1	**0.33**	<10	0.00034 j	0.074 j
GWA-05BRA	05/31/2018	8.4	689	50.3	185	0.42 j	0.86	23.1	<0.1	<0.08	<0.025	1	0.083 j	122	**57**	1.3	<0.5	<0.1	**1.5**	11.5	0.00029 j	0.13
GWA-05BRA	08/27/2018	8.1	**707**	48	195	0.35 j	1	21.9	0.039 j	<0.08	<0.025	0.82	0.093 j	149	**55.3**	1.2	0.15 j	<0.1	**0.69**	58	0.00034 j	0.14
GWA-05BRA	12/05/2018	8.1	**743**	63.6	184	0.24 j	0.73	18	0.025 j	<0.08	0.048 S1	0.68 S1	0.072 j,S1	94.3	**88.4**	0.92	<0.5	<0.1	**0.68**	22.3 S1	0.00026 j	0.13
GWA-05BRA CCR	12/05/2018	8.1	636	52.4	188	0.37 j	0.84	20.9	<0.1	<0.08	NA	0.38 j,S1	0.19	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.16
GWA-05D	02/27/2018	6.9	603	34.7	175	<0.5	0.46	76	<0.1	<0.08	<0.025	0.52	0.44	218	**173**	0.6	<0.5	<0.1	**3.7**	10.2	0.0001 j	<0.1
GWA-05D CCR	02/27/2018	6.9	540	34.7	161	<0.5	0.36	68.8	<0.1	<0.08	NA	0.39 j	0.37	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
GWA-05D	05/29/2018	8.5	625	37.8	181 D6	<0.5	0.22	70.9	<0.1	<0.08	<0.025	0.19 j	0.2	224	**126**	0.34 j	<0.5	<0.1	**3.9**	8.5 j	0.000055 j	<0.1
GWA-05D CCR	05/29/2018	**5.3**	16.4 S1	3.4	61	<0.5	0.18	97	<0.1	0.18	NA	0.65 S1	**14.6**	NA	NA	NA	0.17 j	0.11	NA	NA	NA	<0.1
GWA-05D	08/27/2018	6.7	658	39.7	178	<0.5	0.29	81.6	<0.1	<0.08	0.21	0.85	0.25	210	**98.9**	0.9	<0.5	<0.1	**5.2**	15.2	0.0001 j	<0.1
GWA-05D	12/05/2018	6.7	635	43.6	172	<0.5	0.28	77	0.011 j	<0.08	0.085 S1	1.9 S1	0.47	**496**	**271**	1.2	<0.5	<0.1	**4.6**	26.4 S1	0.0001 j	0.065 j
GWA-05D CCR	12/05/2018	6.7	578	39.1	172	<0.5	0.23 S1	72.3	<0.1	<0.08	NA	0.25 j,S1	0.42 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.063 j
GWA-05S	02/27/2018	**5.5**	<50	5	61	<0.5	0.087 j	127	0.04 j	0.22	0.049	0.46 j	**18.5**	**702**	**5080 M1**	3.3	<0.5	0.14	0.16 j	9.8 j	<0.0005	<0.1
GWA-05S CCR	02/27/2018	**5.5**	14.1 B	3.5	48	<0.5	0.099 j	85.6	<0.1	0.17	NA	0.64	**12**	NA	NA	NA	<0.5	0.11	NA	NA	NA	<0.1
GWA-05S	05/29/2018	**5.3**	<50	3.7	64	<0.5	0.12	97.1	<0.1	0.14	0.02 j	0.42 j	**14.8**	**2330**	**4710**	2.6	<0.5	0.097 j	**0.34**	9.3 j	<0.0005	<0.1
GWA-05S CCR	05/29/2018	8.5	655	38.4	186 D6	<0.5	0.28	74.1	<0.1	<0.08	NA	2 S1	0.23	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
GWA-05S	08/27/2018	**5.5**	<50	4.5	66	<0.5	0.099 j	122	0.039 j	0.18	<0.025	0.34 j	**20.2**	**1820**	**6480**	2.6	0.16 j	0.13	0.13 j	10.6	<0.0005	<0.1
GWA-05S	12/05/2018	**5.3**	38.4 j	71.1	130	<0.5	0.32	103	0.076 j	0.38	0.2 M0,R1,S1	0.89 S1	**18.4**	**532**	**4830**	4.8	0.57	0.12	**0.55**	14.8 S1	0.000069 j	<0.1
GWA-05S CCR	12/05/2018	**5.3**	34.7	58.8	153	<0.5	0.45 S1	107	0.092 j	0.41	NA	0.59 S1	**18.4**	NA	NA	NA	0.78 S1	0.12	NA	NA	NA	<0.1
GWA-06BRA	03/06/2018	6.9	26.7 j	124	373	**1.9**	0.19	102	<0.1	0.04 j	<0.025	3	0.73	115	**80.5**	3	<0.5	0.049 j	**6.7**	<10	0.0013	0.056 j
GWA-06BRA	05/30/2018	7.8	<50	127	369	**3.9**	0.22	97.4	<0.1	<0.08	0.045 TP	3.2	**3.1**	247	**230 M1**	2.8	<0.5	0.033 j	**4.4**	3.7 j,B	0.0015	0.088 j
GWA-06BRA	08/31/2018	6.5	<50	130	402	0.89	<0.1	110	<0.1	<0.08	<0.025	1.8	**5.1**	**398 BC**	**338**	2.1	<0.5	<0.1	**7.8**	3.6 j	0.0015	<0.1
GWA-06BRA	12/05/2018	6.8	<50	150	378	0.27 j	0.16	88.5	0.012 j	<0.08	0.063 S1	5.1	**6.3**	298	**334**	5.6	<0.5	0.019 j	**6.9**	<10	0.0012	<0.1
GWA-06DA	03/01/2018	6.9	32.5 j	**292**	**1280**	0.34 j	0.46	86.4	<0.1	<0.08	<0.025	2	0.23	**707**	**766**	0.85	<0.5	<0.1	0.27 j	<10	0.0015	0.073 j
GWA-06DA	05/30/2018	7.4	26 j	**306**	**726**	0.45 j	2.7	86	<0.1	<0.08	0.031 TP	5.7	0.93	**1830**	**698**	3.4	<0.5	<0.1	**1.7**	7.4 j,B	0.00087	0.081 j
GWA-06DA	08/31/2018	6.9	31.1 j	**325**	**784**	0.32 j	0.43	92	<0.1	<0.08	<0.025	2.2	0.26	**986 BC**	**794**	0.9	<0.5	<0.1	**0.48**	3.2 j	0.0012	0.094 j
GWA-06DA	12/05/2018	6.9	25.4 j	**406**	**801**	0.6	0.36	73.6	<0.1	<0.08	0.025 S1	2.3 S1	0.54	**790**	**950**	1.6	<0.5	<0.1	**1.1**	6.6 j,S1	0.0017	0.074 j
GWA-06DA CCR	12/05/2018	6.9	23.8 j,S1	**427**	**824**	0.41 j	0.33	75.9	<0.1	<0.08	NA	4.9	**1.2**	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.08 j
GWA-06S	03/01/2018	**3.7**	<2500 S1	**1510**	**2300**	0.19 j	**226**	<250	**44.8**	**7.8**	3.6	8	**3550**	<2500	**146000**	**791**	**376**	<20 D3	<1.5 D3	**1950**	0.0051	**5.7**
GWA-06S	05/30/2018	**3.7**	<2500 D3,S1	**1510**	**2320**	0.24 j	**103**	<250 D3	**43.1**	**7.9**	5.2 P4,TP,R0	**10.1**	**3580**	**2720**	**160000**	**781**	**62.2**	**0.56 j,D3**	**3.6**	**2250 B**	0.0048	**6.3**

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
GWA-06S	08/31/2018	**3.7**	<1000 D3	**1300**	**2260**	0.12 j	**157**	<100 D3	**32.4**	**6.5**	9.4	7.3	**2580**	<1000 BC	**117000**	**564**	**190**	<10 D3	<0.3	**1950**	0.004	**4.9**
GWA-06S	12/05/2018	**3.9**	<1250 D3	**1380**	**2160**	0.21 j	**98.9**	<125 D3	**23.5**	**6.9**	2.4	**42.6**	**3330**	<1250 D3,S1	**116000**	**475**	**36.8**	**0.61**	**0.36**	**1640**	NA	**4.7**
GWA-06S CCR	12/05/2018	**3.9**	190	**663**	**2210**	0.2 j	**120**	8.1	**23.5**	**6.9**	NA	**39.2**	**3190**	NA	NA	NA	**52.6**	**0.62**	NA	NA	NA	**6**
GWA-07D	03/05/2018	6.5	<50	111	297	<0.5	0.16	111	<0.1	<0.08	5.8	6.9	0.062 j	146	10.1	3.9	2.8	<0.1	**4.6**	<10	0.00042 j	<0.1
GWA-07D	06/01/2018	**6.3**	<50	106	302	<0.5	0.13	112	<0.1	<0.08	5.8	6.3	0.05 j	143	7.4	0.42 j	2.9	<0.1	**4.2**	<10	0.00041 j	<0.1
GWA-07D	08/29/2018	**6.3**	<50	106	296	<0.5	0.076 j	123	<0.1	<0.08	6.8	6.7	0.024 j	53.4	4.5 j	0.51	2.7	<0.1	**4.2**	3.7 j,B,1g	0.0004 j	<0.1
GWA-07D	12/06/2018	**6.2**	<50	117	299	<0.5	0.099 j	119	<0.1	<0.08	7	6.6	0.016 j	<50	3.1 j	<0.5	2.6	<0.1	**4.4 BC**	<10	0.0004 j	<0.1
GWA-07D CCR	12/06/2018	**6.2**	4.8 j,S1	93.2	313	<0.5	0.094 j	107	<0.1	<0.08	NA	6.2	0.024 j	NA	NA	NA	2.6	<0.1	NA	NA	NA	<0.1
GWA-07S	03/05/2018	**4.1**	<50	105	175	<0.5	1.4	63.9	1.1	0.25	6.3 M6	7.5	**73.8**	**444**	**305**	10.9	3.5	0.12	0.12 j	36.6 B	0.000066 j	0.66
GWA-07S	06/01/2018	**4.2**	<50 M1	110	194	<0.5	1.7	44.5 M1	1	0.25	6.2 M6,R1	6.2	**67.7**	182 M1	**292 M1**	9.8	3.3	0.1	0.084 j	34.3 M1	0.000071 j	0.66
GWA-07S	08/29/2018	**4.3**	<50	103	188	<0.5	2.1	60.1	1.2	0.27	5.4	6.3	**67.6**	**402**	**386**	10.5	6.4	0.086 j	<0.3	48.5 B,1g	<0.0005	0.62
GWA-07S	12/06/2018	**4.4**	<50	85.5	164	<0.5	0.77	59.6	0.83 S1	0.18	9.2	7.2	**56.6**	86	**310**	7.4	2.2	0.12	**0.33 BC,S1**	35.2	<0.0005	0.18
GWA-08D	02/28/2018	6.8	<50	1.1	123	<0.5	0.14	234	<0.1	<0.08	0.38	1	0.17	242	8.2	1.1	<0.5	<0.1	**7.8**	2.6 j	NA	0.05 j
GWA-08D	06/01/2018	6.7	<50	0.97 j	133	<0.5	0.096 j	182	<0.1	<0.08	0.51 M1	1.9	0.28	**580**	9.8	1.4	<0.5	<0.1	**7.2**	<10	NA	0.061 j
GWA-08D	08/29/2018	6.6	<50	1	133	<0.5	0.15	202	<0.1	<0.08	0.74	0.86	0.1	140	3.8 j	1	<0.5	<0.1	**5.9**	4.3 j	NA	0.056 j
GWA-08D	12/05/2018	6.9	<50	1.2	122	<0.5	0.1	198	<0.1	<0.08	0.76 S1	0.9 S1	0.11 S1	<50	2.6 j	1.7	<0.5	<0.1	**7.2**	<10	NA	0.05 j
GWA-08S	02/28/2018	**6.0**	<50	1.3	203	0.13 j	0.14	326	0.04 j	0.044 j,B	**11.8**	**60.4**	0.87	**2120**	44.1	39.7	<0.5	<0.1	0.059 j	42.9	NA	<0.1
GWA-08S	06/01/2018	**6.0**	<50	1.5	218	<0.5	<0.1	260	<0.1	0.049 j	3.6	5.6	0.2	**1090**	19.9	6.1	<0.5	<0.1	**3**	20.4	NA	<0.1
GWA-08S	08/29/2018	**5.8**	<50	1.6	198	<0.5	<0.1	239	<0.1	<0.08	4.2	4	0.09 j	**736**	13.5	4.8	<0.5	<0.1	**2.5**	8.1 j	NA	<0.1
GWA-08S	12/05/2018	**5.6**	<50	2.3	204	<0.5	0.07 j	339	0.023 j	<0.08	3.8	4.3	0.14 S1	58.3	10	7.7	<0.5	<0.1	**0.93**	9.5 j,S1	NA	<0.1
GWA-09BR	03/05/2018	8.2	<50	12.2 M1	121	**2.3**	0.51	24.7	<0.1	0.19	0.095	0.49 j	0.1	26.1 j	24.7	0.72	0.23 j	<0.1	**9.8**	<10	0.00013 j	0.1
GWA-09BR	06/04/2018	7.2	<50	12.5	150	0.53	0.36	28.4	<0.1	0.079 j	0.26	0.85 B	0.052 j	<50	12.9	0.72 B	0.17 j	<0.1	**9.4**	<10	0.00012 j	0.074 j
GWA-09BR	08/27/2018	7.6	<50	12.4	139	0.49 j	0.43	28.3	<0.1	0.07 j	0.26	0.4 j	0.042 j	<50	25.8	0.57	0.21 j	<0.1	**10.1**	3 j	0.00018 j	0.083 j
GWA-09BR	12/07/2018	8.0	<50	12	143	0.43 j	0.46	26.7	<0.1	0.063 j	0.21 S1	0.3 j,S1	0.061 j	<50	21.2	0.5	<0.5	<0.1	**9.3**	<10	0.00017 j	0.1
GWA-09D	03/05/2018	6.7	<50	2.5	97	<0.5	0.22	24.9	<0.1	<0.08	0.54	1	0.12	<50	6.7	0.55	<0.5	<0.1	**6.3**	<10	0.000037 j	0.06 j
GWA-09D	06/04/2018	6.7	<50	2.2	106	<0.5	0.17	26.4	0.04 j	<0.08	0.51	0.7 B	0.075 j	200	11	0.31 j,B	<0.5	<0.1	**6**	<10	0.000033 j	0.054 j
GWA-09D	08/27/2018	**5.9**	<50	2.6	111	0.1 j	0.22	24.3	<0.1	<0.08	0.86	0.96	0.022 j	<50	<5	0.66	<0.5	<0.1	**5.6**	5.3 j	<0.0005	0.067 j
GWA-09D	12/07/2018	6.8	<50	2.7	102	<0.5	0.21	26.3	0.011 j	<0.08	0.36	0.83 S1	0.14	**306**	11.8	0.44 j	<0.5	<0.1	**5.8**	<10	<0.0005	0.07 j
GWA-09S	03/05/2018	**5.4**	<50	21.4	91	<0.5	0.14	41.6	0.17	0.058 j	0.087	0.25 j	**5.5**	55.8	**586**	2.4	<0.5	<0.1	0.28 j	9.6 j,B	0.000036 j	<0.1
GWA-09S	06/04/2018	**5.4**	28.1 j	18.5	98	<0.5	0.12	39	0.041 j	0.044 j	<0.025	0.61 B	**6.4**	166	**633**	2.3 B	<0.5	<0.1	**0.59**	7.8 j	0.000035 j	<0.1
GWA-09S	08/27/2018	**5.6**	<50	14.2	106	<0.5	0.32	44.4	0.11	0.052 j	<0.025	0.22 j	**9**	**907**	**827**	2.4	<0.5	0.027 j	0.22 j	12.3	<0.0005	<0.1
GWA-09S	12/07/2018	**5.1**	<50	14.9 M1	98	<0.5	0.15	46.9	0.12	<0.08	0.045 S1	4.9	**5.8**	217	**637**	4.5	<0.5	0.021 j	**0.62 S1**	8.4 j	<0.0005	<0.1 M1
GWA-14DA	03/02/2018	**9.7**	<50	5.9	127	**1.8**	0.85	23.3	<0.1	<0.08	0.92	1.4	0.079 j	50.5	3 j	0.54	0.17 j	<0.1	**14.1**	<10	NA	0.11
GWA-14DA	05/30/2018	**9.5**	<50	5.3	135	**1.6**	0.73	23.3	<0.1	<0.08	0.97 TP	1.1	0.12	33.1 j	<5	0.43 j	<0.5	<0.1	**13.1**	<10	NA	0.11
GWA-14DA	08/28/2018	**9.4**	<50	4.4	144	0.91	0.61	27.5	<0.1	<0.08	1.1	1.2	0.1	<50	6.1	0.31 j	<0.5	<0.1	**12.5**	<10	NA	0.11
GWA-14DA	12/12/2018	**10.1**	<50	1.9	145	0.45 j	0.29	54	<0.1	<0.08	2.3 M6	2.4 S1	0.16	<50	15.8	0.52	<0.5	<0.1	**10.8**	6.3 j	NA	0.088 j
GWA-14S	03/02/2018	**5.0**	<50	<1	<25	0.14 j	0.17	92.5	0.15	<0.08	0.36	0.62	**2.7**	**414**	33.2	1.8	<0.5	0.03 j	0.21 j,B	6.2 j	NA	<0.1
GWA-14S	05/30/2018	**4.7**	<50	<1	<25	<0.5	<0.1	87	0.17	<0.08	0.17 TP	0.3 j	**3.3**	65.4	23.2	1.5	<0.5	0.036 j	<0.3	5.9 j,B	NA	<0.1
GWA-14S	08/28/2018	**4.7**	<50	<1 M1,R1	31	<0.5	0.047 j	111	0.15	<0.08	0.18	0.32 j	**3.2**	34.5 j	25.3	1.6	<0.5	0.033 j	0.081 j	7.8 j	NA	<0.1 M1,R1
GWA-14S	12/12/2018	**5.2**	<50	<1	<25	<0.5	<0.1	78.1	0.12	0.28	0.13 S1	0.82 B,S1	**2.9**	96.7 B	19.7	1.9	<0.5	<0.1	0.26 j,B,S1	9 j	NA	<0.1
GWA-15D	03/02/2018	**6.2**	<50	4	152	<0.5	0.19	73.6	<0.1	<0.08	1	1.6	0.03 j	35.4 j	5.3	1.9	<0.5	<0.1	**5**	<10	NA	<0.1
GWA-15D	05/30/2018	**6.0**	<50	3.9	173	<0.5	0.13	72.6	<0.1	<0.08	1.5 TP	1.6	<0.1	36.1 j	5.4	0.46 j	<0.5	<0.1	**5.2**	3.6 j,B	NA	<0.1
GWA-15D	08/27/2018	**6.1**	<50	4	176	<0.5	0.15	77.2	<0.1	0.04 j	1.4	1.6	0.023 j	<50	3 j	0.3 j	<0.5	<0.1	**4.8**	3.3 j,B	NA	<0.1
GWA-15D	12/12/2018	**6.3**	<50	4.1	171	<0.5	0.13	72.5	<0.1	0.3	0.92	1.2 B,S1	0.042 j	<50	7.2	6.6	<0.5	<0.1	**4.7**	6.2 j	NA	<0.1
GWA-15S	03/02/2018	**6.0**	87.2	11.6	102	<0.5	0.17	34.4	<0.1	<0.08	0.54	0.96	0.15	**638**	**59.4**	3	0.3 j	<0.1	**4.4**	5 j	NA	0.06 j
GWA-15S	05/30/2018	6.8	66.1	10.9	115	<0.5	0.13	35.2	<0.1	<0.08	0.74 P4,TP,R0	0.93	0.2	**997**	**62**	2.8	0.32 j	<0.1	**4.9**	5 j,B	NA	0.063 j
GWA-15S	08/27/2018	**5.5**	43.7 j	10.6	118	<0.5	0.15	31.4	<0.1	<0.08	0.51	1.4	0.073 j	286	**61.7**	2.6	0.33 j	<0.1	**3.8**	4.3 j,B	NA	0.067 j
GWA-15S	12/12/2018	**6.1**	98.6	12.2	114	<0.5	0.14	32.8	0.012 j	<0.08	1.9	1.1 B,S1	0.12	162	18.4	2	<0.5	<0.1	**4.5**	7.2 j	NA	0.07 j
GWA-16D	02/28/2018	6.8	<50	1.2	67	<0.5	0.44	33.5	<0.1	<0.08	0.54	5.3	0.22	**463**	21.5	2.5	<0.5	<0.1	**8.5**	<10	NA	0.073 j
GWA-16D	06/01/2018	6.7	<50	0.85 j	76	<0.5	0.18	28.3	<0.1	<0.08	0.46	0.74	0.034 j	143	5.8	0.29 j	<0.5	<0.1	**7.7**	<10	NA	0.066 j
GWA-16D	08/28/2018	6.9	<50	0.92 j	92	<0.5	0.14	32.6	<0.1	<0.08	0.46	0.66	0.046 j	96.9	5.9	0.31 j	<0.5	<0.1	**7.6**	2.6 j	NA	0.079 j
GWA-16D	12/07/2018	6.6	<50	1.1	92	<0.5	0.14	30.6	<0.1	<0.08	0.54	0.54 S1	0.028 j	<50	<5	<0.5	<0.5	<0.1	**7.5**	2.6 j	NA	0.086 j
GWA-16S	02/28/2018	**6.4**	<50	0.85 j	99	<0.5	0.19	36	<0.1	<0.08	0.25 M1	2.4	0.43	**1040**	**352**	3.4	<0.5	<0.1	**1.6**	<10	NA	0.072 j
GWA-16S	06/01/2018	**6.1**	<50	0.78 j	103	0.15 j	0.4	36.4	<0.1	<0.08	0.49	1.2	0.42	**1170**	**213**	3	<0.5	<0.1	**1.7**	4.5 j	NA	0.07 j
GWA-16S	08/28/2018	**6.2**	<50	0.65 j	103	<0.5	0.12	30	<0.1	<0.08	0.47	0.78	0.071 j	112	27.8	1.8	<0.5	<0.1	0.3 j,B	5.6 j	NA	0.079 j
GWA-16S	12/07/2018	**6.4**	<50	0.71 j	95	<0.5	0.13	28.8	<0.1	<0.08	0.63	1.2	0.071 j	77.4	14.3	1.7	<0.5	<0.1	**0.74 S1**	6 j	NA	0.084 j
GWA-17D	02/28/2018	7.0	<50	2.8	121	0.25 j	0.25	70.9	<0.1	<0.08	0.28	2.1	0.57	**491**	**150**	1.5	<0.5	<0.1	**5.4**	3.4 j	0.00054	0.063 j
GWA-17D	06/01/2018	6.9	<50	3.2	123	0.14 j	0.26	60	0.043 j	0.047 j	0.29	1.2	0.46	**362**	**77.1**	1.1	<0.5	0.037 j	**5.1**	4 j	0.0005	0.074 j
GWA-17D	08/29/2018	6.7	<50	3.5	129	<0.5	0.1	70.8	<0.1	<0.08	0.36	0.97	**1.2**	**615**	**55.4**	0.61	<0.5	<0.1	**5.2**	4.6 j,B,1g	0.00073	0.075 j
GWA-17D	12/06/2018	6.8	<50	3.5	114	<0.5	0.24	63	0.028 j,S1	<0.08	0.3	2	**2**	**367**	**124**	1.3	<0.5	<0.1	**5**	3 j	0.00051	0.057 j
GWA-17S	02/28/2018	**6.1**	<50	4.4	83	0.13 j	0.21	39.5	0.04 j	<0.08	5.6	6.5	0.12	**327**	7.8	1.9	<0.5	<0.1	**2.4**	9.8 j	<0.0005	0.069 j
GWA-17S	06/01/2018	**6.1**	<50	4.7	79	<0.5	0.16	38.4	<0.1	<0.08	5.1	6	0.16	**581**	11.7	1.9	<0.5	<0.1	**2**	17.2	<0.0005	0.073 j
GWA-17S	08/29/2018	**5.9**	<50	4.9	73	<0.5	0.056 j	37.2	<0.1	<0.08	6.8	6.7	<0.1	<50	<5	1.5	<0.5	<0.1	**1.7**	3.4 j,B,1g	<0.0005	0.072 j
GWA-17S	12/06/2018	**6.1**	<50	4.7	79	<0.5	0.2	36.2	0.013 j,S1	<0.08	7.7	6.4	0.025 j,B	<50	14.4	1.5	<0.5	<0.1	**1.8 S1**	<10	<0.0005	0.068 j
GWA-18D	03/05/2018	7.1	<50	3.4	113	0.15 j	0.69	41.6	<0.1	<0.08	0.36	1.2	0.15	141	15.1	0.94	<0.5	<0.1	**8.4**	<10	0.000058 j	0.066 j
GWA-18D	06/01/2018	6.7	<50	2.8 M1	116	0.18 j	0.43	33.5	<0.1	<0.08	0.74	1.3	0.12	45.6 j	7.4	1.1	<0.5	<0.1	**10.3**	<10	NA	0.072 j
GWA-18D	08/28/2018	6.7	<50	2.2	111	<0.5	0.28	35.6	<0.1	<0.08	1.8	1.6	0.1	41.1 j	6	1.2	<0.5	<0.1	**7.5**	3.5 j,B	NA	0.067 j
GWA-18D	12/06/2018	6.9	<50	2.1	113	<0.5	0.31	36.9	<0.1	<0.08	0.62 M6	1.5	0.13 B	38.9 j	6.9	1.1	<0.5	<0.1	**5.9**	<10	NA	0.057 j
GWA-18S	03/05/2018	**6.1**	<50	0.63 j	105	0.14 j	0.51	38.9	<0.1	<0.08	0.46	1.5	0.26	**1530**	**102**	2.6	<0.5	<0.1	**5.9**	11.8	0.00004 j	0.074 j

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

		LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)														ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride
GWA-18S	06/01/2018	**6.3**	<50	0.58 j	108	0.15 j	0.5	35.4	<0.1	<0.08	0.5	0.83	0.16	**1110**	**67.5**	1.4	<0.5	<0.1	**4.8**	38.4	NA	0.084 j
GWA-18S	08/28/2018	**6.3**	<50	<1	101	<0.5	0.39	26.8	<0.1	<0.08	0.93	1.1	0.035 j	234	44.5	1.8	<0.5	<0.1	**4.2**	5 j,B	NA	0.079 j
GWA-18S	12/06/2018	6.5	<50	<1	106	<0.5	0.41	28.2	<0.1	<0.08	1.9	2.1	0.13 B	176	**92.3**	2	<0.5	<0.1	**4.5**	3.1 j	NA	0.063 j
GWA-19D	03/01/2018	**9.1**	<50	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GWA-19D	05/30/2018	**8.8**	<50	4.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GWA-19D	08/28/2018	**8.6**	<50	4.9 M1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GWA-19D	09/06/2018	8.3	<50	4.2	165	0.52	0.26	9	<0.1	<0.08	0.54	0.86	0.045 j	65	<5	0.47 j	<0.5	<0.1	**10.4**	21 B	NA	0.092 j
GWA-19D	12/11/2018	8.0	<50	3.6	159	0.32 j	0.28	9	<0.1	<0.08	0.63	0.55	0.05 j	<50	<5	<0.5	<0.5	<0.1	**9.6**	9.3 j	NA	0.077 j
GWA-19S	03/01/2018	**6.2**	<50	<1	39	0.13 j	0.34	68.6	<0.1	<0.08	0.91	2	0.27	**631**	29.6	1.5	<0.5	<0.1	**1.2**	4.5 j	NA	0.058 j
GWA-19S	05/30/2018	**5.9**	<50	<1	58	0.13 j	0.24	59.7	<0.1	<0.08	0.65 TP	1.9	0.21	**368**	19.7	1.5	<0.5	<0.1	**1**	5.1 j	<0.0005	0.06 j
GWA-19S	08/28/2018	**5.9**	<50	<1	54	<0.5	0.27	67.3	<0.1	<0.08	0.65	0.71	0.11	88.4	9	0.8	<0.5	<0.1	**0.58**	6 j	NA	0.063 j
GWA-19S	12/11/2018	**5.9**	<50	<1	52	<0.5	0.25	58.4	<0.1	<0.08	0.83	1.2	0.24	78.6	9.2	0.75	<0.5	<0.1	**0.68**	2.7 j	NA	0.06 j
GWA-21BR	02/28/2018	8.5	<50	2.7	159	0.48 j	0.76	19.2	<0.1	<0.08	0.091	0.33 j	0.12	**467**	**204**	0.22 j	<0.5	<0.1	**8.6**	<10	0.00058	0.074 j
GWA-21BR	06/04/2018	8.5	<50	3	184	**3.9**	1.1	18.2	<0.1	<0.08	<0.025	2.5	0.2	**715**	**122**	2.7	<0.5	<0.1	**10.1**	6.6 j	0.00066	0.092 j
GWA-21BR	09/04/2018	8.3	<50	2.8	184	**2.4**	0.91	17.9	<0.1	<0.08	0.079	0.36 j	0.15	**305**	**126**	0.55	<0.5	<0.1	**9.7**	8.4 j	0.00067	0.071 j
GWA-21BR	12/12/2018	8.1	<50	3.3	185	**2.6**	0.86	17.5	<0.1	<0.08	0.3 S1	0.84 B,S1	0.13	170 B	**67.6**	0.59	<0.5	<0.1	**12.5**	<10	0.00066	0.081 j
GWA-21DA	03/01/2018	7.3	<50	2	124	<0.5	0.16	6.7	0.042 j	<0.08	1.2	1.1	0.063 j	185	18.4	0.38 j	<0.5	<0.1	**15.3**	3 j	0.0001 j	0.063 j
GWA-21DA CCR	03/01/2018	7.3	3.3 j	2	126	<0.5	0.12	6.6	<0.1	<0.08	NA	1.4	0.082 j	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.061 j
GWA-21DA	05/29/2018	7.1	<50	1.7	133	<0.5	0.17	6.2	<0.1	<0.08	0.95	1.1	0.035 j	**380**	6.6	0.31 j	<0.5	<0.1	**16.1**	5 j	0.000075 j	0.07 j
GWA-21DA CCR	05/29/2018	7.1	4.6 j,S1	1.7	126	<0.5	0.2	6.4	<0.1	<0.08	NA	1.2 S1	0.059 j,S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.071 j
GWA-21DA	08/31/2018	6.9	<50	1.1	147	<0.5	<0.1	6.5	0.04 j	<0.08	0.9	1.7	0.16	**452 BC**	7.7	0.49 j	<0.5	<0.1	**16.5**	4.4 j	0.00018 j	0.07 j
GWA-21DA	12/12/2018	7.0	<50	1.5	146	0.17 j	0.16	7.1	0.017 j	<0.08	1.3	2.6 S1	0.13	273	8.1	1.3	<0.5	<0.1	**14.3**	11.4	0.00013 j	0.071 j
GWA-21DA CCR	12/12/2018	7.0	4.6 j,S1	1.4	142	<0.5	0.15 S1	6.1	<0.1	<0.08	NA	2 S1	0.1 S1	NA	NA	NA	<0.5	<0.1	NA	NA	NA	0.064 j
GWA-21S	02/27/2018	**5.4**	<50	0.65 j	32	<0.5	0.084 j	82.9	0.14	0.047 j	0.1	0.23 j	0.44	72	**143**	0.76	<0.5	0.035 j	0.14 j,B	7.5 j	<0.0005	<0.1
GWA-21S CCR	02/27/2018	**5.4**	6.1 B	0.58 j	34	<0.5	0.05 j	80.3	0.11	0.053 j	NA	0.3 j	0.35	NA	NA	NA	<0.5	<0.1	NA	NA	NA	<0.1
GWA-21S	05/29/2018	**5.2**	<50	0.63 j	29	<0.5	<0.1	81.4	0.17	<0.08	0.22	0.51	0.41	56.8	**58.9**	0.93	<0.5	<0.1	0.076 j	11.9	<0.0005	<0.1
GWA-21S CCR	05/29/2018	**5.2**	6.5 S1	0.64 j	42	<0.5	0.053 j	87.1	0.21	0.05 j	NA	0.43 j,S1	0.42 S1	NA	NA	NA	<0.5	0.032 j	NA	NA	NA	<0.1
GWA-21S	08/29/2018	**5.1**	<50	0.68 j	37	<0.5	0.092 j	117	0.21	0.03 j	0.63 M1,R1	0.66	0.6	**998**	**96**	0.97	<0.5	<0.1	0.11 j	14.8	<0.0005	<0.1
GWA-21S	12/06/2018	**5.4**	<50	<1	33	<0.5	<0.1	89	0.23 S1	<0.08	1.2	1.1	0.53	<50	42.5	1.4	<0.5	0.025 j	0.18 j,BC,S1	11.4	<0.0005	<0.1
GWA-21S CCR	12/06/2018	**5.4**	6.1 j,S1	<1	40	<0.5	<0.1	87	0.22	<0.08	NA	1.8 S1	0.26 S1	NA	NA	NA	<0.5	0.023 j	NA	NA	NA	<0.1
GWA-22D	03/05/2018	6.9	<50	1.7	177	0.13 j	0.24	21.4	<0.1	0.052 j	0.56	1.4	0.15	125	14.6	1.4	<0.5	<0.1	**12.8**	3.8 j,B	0.00031 j	<0.1
GWA-22D	05/31/2018	6.8	<50	1.8	182	0.14 j	0.2	20.2	<0.1	<0.08	0.93	1.7	0.23	277	19.9	1.3	<0.5	<0.1	**13.1**	2.8 j	NA	0.054 j
GWA-22D	08/31/2018	**5.9**	<50	0.91 j	180	0.086 j	<0.1	19.8	<0.1	0.029 j	0.79	1.2	0.22	**470 BC**	17.3	0.92	<0.5	<0.1	**11.5**	6.4 j	NA	0.06 j
GWA-22D	12/12/2018	6.7	<50	0.85 j	176	0.3 j	0.17	18.7	<0.1	<0.08	0.82	**12.3**	0.6	**514**	22.6	8.6	<0.5	<0.1	**11.9**	7.3 j	NA	0.054 j
GWA-22S	03/05/2018	**5.5**	<50	0.92 j	<25	0.3 j	0.17	78.2	0.096 j	0.16	0.033	0.37 j	**16.4**	279	**561**	2.4	<0.5	0.1	0.19 j	9.1 j,B	<0.0005	<0.1
GWA-22S	05/31/2018	**4.8**	<50	0.87 j	<25	<0.5	0.06 j	80.4	0.13	0.14	0.15	0.81	**17**	194	**520**	2.4	<0.5	0.079 j	0.11 j	11	NA	<0.1
GWA-22S	08/30/2018	**4.5**	<50	0.56 j	<25	<0.5	0.093 j	78.6	0.11	0.097	0.04	0.58	**14**	**1540**	**478**	2.1	<0.5	0.083 j	**0.44**	10.1 B	NA	<0.1
GWA-22S	12/12/2018	**5.2**	<50	0.87 j	<25	<0.5	0.044 j	73.6	0.095 j	0.14	0.097 S1	0.52 B,S1	**17.1**	83.9	**632**	2.3	<0.5	0.035 j	0.23 j,S1	8 j	NA	<0.1
GWA-23D	03/05/2018	**11.1**	<50	9.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GWA-23D	05/31/2018	8.5	<50	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GWA-23D	08/29/2018	**9.1**	<50	3.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GWA-23D	09/06/2018	8.2	<50	2	134	0.18 j	0.36	11	<0.1	<0.08	<0.025	0.27 j	**1.8**	99.7	**659**	0.27 j	<0.5	<0.1	**3.5**	2.9 j,B	0.00047 j	0.064 j
GWA-23D	12/12/2018	7.5	<50	1.7	134	<0.5	0.37	13.9	<0.1	<0.08	0.17 S1	0.23 j,B,S1	**4.6**	27.5 j,B	**900**	<0.5	<0.5	<0.1	**3.8**	<10	0.00046 j	0.052 j
GWA-23S	03/05/2018	**4.6**	<50	1.1	<25	0.4 j	0.087 j	35.8	0.067 j	<0.08	0.1	**14.4**	0.7	106	29.2	12.9	<0.5	0.045 j	<0.3	17.5 B	<0.0005	<0.1
GWA-23S	05/31/2018	**5.0**	<50	0.98 j	30	0.17 j	<0.1	37.7	0.049 j	<0.08	0.15	0.39 j	0.43	<50	19.6	0.84 B	<0.5	0.031 j	0.088 j	13	<0.0005	<0.1
GWA-23S	08/29/2018	**5.1**	<50	0.74 j	<25	0.084 j	<0.1	39.7	<0.1	<0.08	1.2	**11.6**	0.67	99.1	23.4	8.1	<0.5	<0.1	<0.3	12.4 B,1g	<0.0005	<0.1
GWA-23S	12/12/2018	**5.0**	<50	0.96 j	26	<0.5	0.048 j	39.7	0.029 j	<0.08	<0.25	1.8 S1	0.38	<50	20.4	1.6	<0.5	<0.1	0.14 j,B,S1	11.4	<0.0005	<0.1
GWA-24BR	03/02/2018	7.9	<50	9.3	122	<0.5	0.6	20.4	<0.1	<0.08	0.15	1.3	0.33	**488**	43.1	1.1	0.21 j	<0.1	**10.1**	20.5	NA	0.075 j
GWA-24BR	06/01/2018	8.0	<50	9.2	147	0.15 j	0.64	19.6	<0.1	<0.08	0.14	0.26 j	0.16	**808**	26	0.65	0.21 j	<0.1	**7.7**	18.9	NA	0.081 j
GWA-24BR	08/31/2018	7.9	<50	10.1	147	0.11 j	0.4	31	<0.1	<0.08	0.18	0.91	0.35	**1080 BC**	44.3	0.89	<0.5	<0.1	**10.5**	11.3	NA	0.072 j
GWA-24BR	12/12/2018	8.3	<50	11.5	163	0.3 j	0.86	27.6	<0.1	<0.08	0.2 S1	1 B,S1	0.4	**787**	26.6	1.8	<0.5	<0.1	**8.5**	49	NA	0.099 j
GWA-24D	03/01/2018	7.1	<50	2.5	105	<0.5	0.19	33.6	<0.1	<0.08	1.5	1.2	0.083 j	**332**	6.2	0.23 j	<0.5	<0.1	**12**	31.7	<0.0005	0.07 j
GWA-24D	05/31/2018	7.3	<50	3.1	107	<0.5	0.2	31.5	<0.1	<0.08	1.4	1.6	0.13	**380**	11.3	0.19 j	<0.5	<0.1	**13**	30	<0.0005	0.064 j
GWA-24D	08/31/2018	7.2	<50	1.9	114	<0.5	<0.1	30.4	<0.1	<0.08	1.3	1.6	0.11	**332 B,BC**	9	0.27 j	<0.5	<0.1	**13.2**	17.7	NA	0.075 j
GWA-24D	12/12/2018	7.2	<50	4.7	162	<0.5	0.4	43.3	<0.1	<0.08	0.25 S1	0.54 B,S1	0.16	**481**	4.3 j	0.78	<0.5	<0.1	**3.6**	149	NA	0.079 j
GWA-24SA	03/01/2018	**5.5**	<50	<1	34	<0.5	0.049 j	65.1	0.043 j	0.028 j	0.2	**10.8**	0.88	**314**	**156**	10.3	<0.5	<0.1	<0.3	7.5 j	<0.0005	<0.1
GWA-24SA	06/01/2018	**5.2**	<50	<1	52	0.16 j	0.079 j	61.1	<0.1	<0.08	0.47	0.8	0.32	**311**	**79.5**	1.6	<0.5	0.028 j	**0.37**	10.8	<0.0005	<0.1
GWA-24SA	08/31/2018	**5.3**	<50	<1	44	<0.5	<0.1	63.6	0.053 j	<0.08	0.29	2.7	0.28	139 B,BC	37.2	3.2	<0.5	0.035 j	**0.39**	7.7 j	NA	<0.1
GWA-24SA	12/12/2018	**5.4**	<50	<1	35	<0.5	0.043 j	60.6	0.039 j	<0.08	0.15 S1	1.3 S1	0.28	179 B	25.6	1.9 S1	<0.5	<0.1	**0.46 B,S1**	12.8	NA	<0.1
GWA-26D	03/01/2018	7.6	<50	10.2	108	0.3 j	0.58	15.3	<0.1	<0.08	<0.025	0.47 j	0.19	95.2	**172**	0.73	<0.5	<0.1	**2.4**	<10	8.5E-05 j	0.084 j
GWA-26D	05/31/2018	7.4	<50	12.7	121	0.52	0.76	23.6	<0.1	<0.08	<0.025	0.72	0.12	200	**230**	0.82	<0.5	<0.1	**1.9**	2.9 j	NA	0.09 j
GWA-26D	08/28/2018	7.5	<50	11.2	132	0.44 j	0.57	17.9	<0.1	<0.08	0.027	0.62	0.24	250	**230**	1.3	<0.5	<0.1	**1.9**	4.9 j,B	NA	0.089 j
GWA-26D	12/07/2018	7.4	<50	13.4	132	0.46 j	0.88	19.1	0.017 j	<0.08	0.052 S1	1 S1	0.18	244	**256**	0.72	<0.5	<0.1	**1.2**	<10	NA	0.12
GWA-26S	03/01/2018	7.2	<50	0.81 j	66	0.16 j	0.3	17.2	<0.1	<0.08	1.6	4.8	0.21	**906**	32.5	1.5	<0.5	<0.1	**2.6**	3.7 j	0.000038 j	<0.1
GWA-26S	05/31/2018	6.7	<50	0.59 j	69	<0.5	0.19	13.7	<0.1	<0.08	0.73	2	0.12	**571**	20.9	0.55	<0.5	<0.1	**2.6**	2.9 j	NA	<0.1
GWA-26S	08/28/2018	6.8	<50	0.79 j	68	0.096 j	0.24	11.5	<0.1	<0.08	1	0.96	0.046 j	110	7	0.14 j	<0.5	<0.1	**2.1**	2.7 j,B	NA	<0.1
GWA-26S	12/07/2018	6.5	<50	0.62 j	73	<0.5	0.2	11.2	<0.1	<0.08	<0.25	0.84 S1	0.038 j	42.5 j	7	<0.5	<0.5	<0.1	**2**	3.7 j	NA	0.05 j

COLOR NOTES

	LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)															ADIONUCLID	HER PARAMETE
Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/mL	mg/L
15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	4*	2	10	10	1*	300	50	100	20	0.2*	0.3*	1000	0.03^	2
rovisional Background Threshold Values (Shallow Unit)	5.2-7.5	50	3.641	180.957	0.876	0.42	125.4	0.127	0.08	7.742	6.927	4.338	834.8	577.9	4.024	0.5	0.1	5.33	80.02	0.001937	NE
Provisional Background Threshold Values (Deep Unit)	6.7-8.4	50	16.2	126	0.69	1.4	52.4	0.2	0.08	1.2	6.8	0.5	555	60.4	8.1	0.5	0.1	9.6	17.3	0.0005	NE
rovisional Background Threshold Values (Bedrock Unit)	7.5-7.8	50	2.9	147	0.5	0.4	21	0.1	0.08	0.23	5.6	0.27	284	39.1	3.4	0.5	0.1	10.8	15.3	0.00039	NE

		LD PARAMET	40CFR257 APPENDIX III CONSTITUEN			INORGANIC PARAMETERS (TOTAL CONCENTRATION)														ADIONUCLID	HER PARAMETE
Sample ID	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium	Zinc	Total Uranium	Fluoride

Bold highlighted concentration indicates exceedance of the 15A NCAC 02L .0202 Standard or the IMAC. (Effective date for 15A NCAC 02L .0202 Standard and IMAC is April 1, 2013)

Turbidity of Sample ≥ 10 NTUs

Sample result deemed an outlier and excluded from statistical evaluation (NCDEQ, September 1, 2017).

Sample results excluded from statistical evaluation (NCDEQ, September 1, 2017) for auto-correlation.

Soil sample with elevated boron concentrations detected

Provisional Background Threshold Values reflect the values represented in the NCDEQ letter dated 10/11/2017.

Analytical data review has not been completed for this dataset.

ABBREVIATION NOTES

AB - Active Basin	ND - Not detected
BGS - below ground surface	NE - Not established
BOD - Biologic Oxygen Demand	NM - Not measured
CB - Compliance Boundary	NTUs - Nephelometric Turbidity Units
COD - Chemical Oxygen Demand	NW - Northwest
Deg C - Degrees Celsius	pCi/L - picocuries per liter
DIS - Dissolved	PSRG - Primary Soil Remediation Goals
DMAs - dimethylarsinic acid	RB - Retired Basin
DUP - Duplicate	RL - Reporting Limit
Eh - Redox Potential	S - South
ft - Feet	SeCN - selnocynante
GPM - gallons per minute	SeMe (IV) - Selenomethionine
IMAC - Interim Maximum Allowable Concentrations. From the 15A NCAC 02L	SPLP - Synthetic Precipitation Leaching Procedure
MDC - Minimum Detectable Concentration	S.U. - Standard Units
MeSe - Methylseleninic acid	TCLP - Toxicity Characteristic Leaching Procedure
mg/kg - milligrams per kilogram	ug/L - micrograms per liter
mg/L - milligrams per liter	ug/mL - microgram per milliliter
mg-N/L - Milligram nitrogen per liter	umhos/cm - micromhos per centimenter
MMAs - monomethylarsonic acid	W - West
mV - millivolts	Well Locations referenced to NAD83 and elevations referenced to NAVD88
NA - Not available or Not Applicable	

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Feb 18 2020

LINED RETENTION BASIN
GYPSUM PAD
ALLEN STEAM STATION
CATAWBA RIVER (LAKE WYLIE)
PLANT WATER INTAKE STRUCTURE
DISCHARGE CANAL
BG-4S
BG-4D
BG-4BR
BG-3S
BG-3D
CCR-26S
CCR-26D
CCR-26BR
CP-3S
CP-3D
GWA-8S
GWA-8D
GWA-7S
GWA-7D
PLANT ALLEN ROAD
CP-1S
CP-1D
CP-2S
CP-2D
CP-4S
CP-4D
ACTIVE COAL PILE
GWA-17S
GWA-17D
AB-1
AB-1R
CCR-1S
CCR-1DA
CCR-1D
GWA-18S
GWA-18D
CCR-2S
CCR-2D
CCR-3S
CCR-3DA
CCR-3D
GWA-6S
GWA-6DA
GWA-6BRA
GWA-6D/BR
CCR-4SA
CCR-4DA
CCR-4S/D
COAL PILE
CP-5S
CP-5D
HOLDING BASIN
BG-2S
BG-2D
BG-2BR
BG-2BRA-2
AB-38S
AB-38SS
AB-38D
AB-38BR
AB-39S
AB-39D
CCR-5S
CCR-5D
CCR-6S
CCR-6D
CCR-7S
CCR-7D
CP-6S
CP-6D
CP-6BR
GWA-16S
GWA-16D
CCR-BG-1S
CCR-BG-1DA
CCR-BG-1D
ASH STORAGE
STRUCTURAL FILL
STRUCTURAL FILL
AB-33S
AB-33SS
AB-33D
CCR-8S
CCR-8D
CCR-9S
CCR-9D
AB-32S
AB-32D
GWA-5S
GWA-5D
GWA-5BRA
GWA-5BR
GWA-19S
GWA-19D
ASH STORAGE
AB-34S
AB-34D
CCR-11S
CCR-11D
CCR-11DA
RETIRED ASH BASIN ASH LANDFILL
AB-37S
AB-37D
AB-36S
AB-36D
AB-35S
AB-35PWS
AB-35D
AB-35BR
AB-35SS/PWA/OWAU/OWAL30/OWAL
AB-31S
AB-31D
GWA-4S
GWA-4D
GWA-4BR
GWA-15S
GWA-15D
INACTIVE ASH BASIN
AB-14D
AB-14BR
AB-2
AB-2D
AB-29S/SL
AB-29SS
AB-29D
AB-9S
AB-9D
GWA-14S
GWA-14DA
GWA-14D
AB-30S
AB-30D
AB-27S
AB-27D
AB-27BR
AB-28S
AB-28D
GWA-22S
GWA-22D
CCR-14S
CCR-14D
PRIMARY POND 1
PRIMARY POND 2
PRIMARY POND 3
GWA-21S
GWA-21D
GWA-21DA
GWA-21BR
AB-13S
AB-13D
AB-24S/SL
AB-24D
AB-24BR
AB-25S/SL
AB-25SS
AB-25BR/BRU
AB-26S
AB-26D
GWA-3S
GWA-3D
GWA-3BRA
GWA-3BR
ARMSTRONG ROAD
AB-4S
AB-4D
AB-4BR
GWA-23S
GWA-23D
AB-23S
AB-23BRU
CCR-16S
CCR-16D
CCR-16BR
ACTIVE ASH BASIN
SOUTHPOINT ROAD
GWA-24SA
GWA-24D
GWA-24BR
GWA-24S
GWA-9S
GWA-9D
GWA-9BR
AB-20S
AB-20D
AB-21S/SL
AB-21SS
AB-21D
AB-21BR/BRL
AB-21PWA/PWS/OWAU/OWAL
AB-22S
AB-22D
AB-22BR/BRL
AB-10S
AB-10D
CCR-17S
CCR-17D
AB-6R/A
CCR-18S
CCR-18D
CCR-21S
CCR-21D
PH WELL
ANSP005
CCR-20S
CCR-20D
AB-12S
AB-12D
AB-5
CCR-22S
CCR-22DA
CCR-22D
PH ADJ BLDG
GWA-26S
GWA-26D
CCR-23S
CCR-23D
GWA-1S
GWA-1D
GWA-1BR
GWA-2S
GWA-2D
BG-1S
BG-1DA
BG-1BR
BG-1D
AB-11D
CATAWBA RIVER (LAKE WYLIE)

LEGEND

- MONITORING WELL IN ASH PORE
- MONITORING WELL IN SAPROLITE
- MONITORING WELL IN TRANSITION ZONE
- MONITORING WELL IN BEDROCK
- ABANDONED MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE
- ACTIVE ASH BASIN COMPLIANCE
- RETIRED ASH BASIN WASTE
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY

NOTES:

SAMPLE LOCATIONS WERE DERIVED FROM VARIOUS SOURCES AND ARE A MIX OF SURVEYED AND APPROXIMATE LOCATIONS. THEREFORE, SAMPLE LOCATIONS ARE TO BE DEEMED APPROXIMATE.

AERIAL PHOTOGRAPHY OBTAINED FROM GOOGLE EARTH PRO ON DECEMBER 13, 2018. AERIAL WAS COLLECTED ON MARCH 30, 2018.

DRAWING HAS BEEN SET WITH A PROJECTION OF NORTH CAROLINA STATE PLANE COORDINATE SYSTEM FIPS 3200 (NAD83).

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DUKE ENERGY CAROLINAS

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PROJECT MANAGER: C. SUTTELL
CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 1-2
SITE MAP WITH MONITORING WELL LOCATIONS
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA

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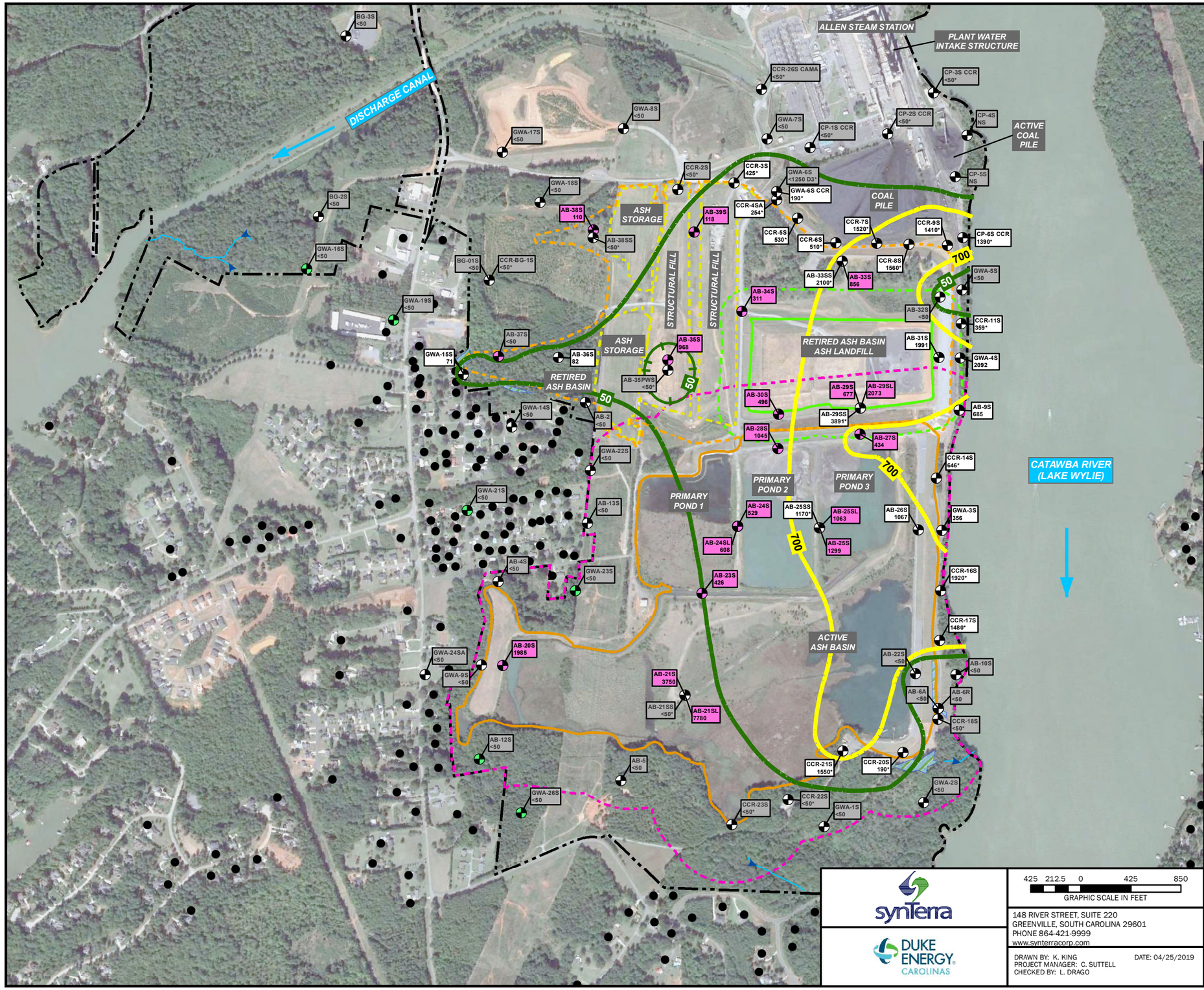

LEGEND

- 1 — TOTAL BORON CONCENTRATION (µg/L)
- 1 — TOTAL BORON CONCENTRATION IN ASH PORE WATER (µg/L)
- <1 — NOT DETECTED ABOVE REPORTING LIMIT
- NS — NOT SAMPLED
- NORTH CAROLINA 2L CONTOUR
- BTV CONTOUR (HASH MARKS INDICATE DIRECTION OF LESSER CONCENTRATIONS)
- INFERRED BTV CONTOUR
- WELL IN ASH PORE WATER
- BACKGROUND MONITORING WELL
- DOWNGRADIENT MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE BOUNDARY
- ACTIVE ASH BASIN COMPLIANCE BOUNDARY
- RETIRED ASH BASIN WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)
- WETLAND (AMEC NRTR 2015)

NOTES:

THE NORTH CAROLINA 2L FOR BORON IS 700 µg/L.

BACKGROUND THRESHOLD VALUE IS 50 µg/L.

ASH PORE WATER WELL RESULTS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT USED FOR CONTOURING.

BORON DATA INCLUDED IN THIS FIGURE ARE THE GEOMEAN FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE OBTAINED IN 2018. FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE NOT OBTAINED IN 2018, THE MOST RECENT VALID DATA ARE INCLUDED. (REFERENCE TABLE 3-5).

*CONSTITUENT CONCENTRATION SHOWN IS MOST RECENT VALID SAMPLE AVAILABLE DUE TO INSUFFICIENT DATASET FOR GEOMEAN CALCULATION.

† CONCENTRATION GREATER THAN CURRENT SITE SPECIFIC BTV BUT WITHIN THE BACKGROUND CONCENTRATION RANGE FOR SIMILAR PIEDMONT GEOLOGIC SETTINGS. DUE TO GROUNDWATER FLOW DIRECTION AND OTHER CONSTITUENT MIGRATION PATTERNS, CONCENTRATION DOES NOT SUGGEST IMPACT FROM THE ASH BASIN.

DATA PRESENTED MAY INCLUDE LAB-QUALIFIED RESULTS. REFER TO ANALYTICAL DATA TABLE NOTES FOR QUALIFIER DEFINITIONS.

PROPERTY BOUNDARY PROVIDED BY DUKE ENERGY CAROLINAS.

AERIAL PHOTOGRAPHY OBTAINED FROM GOOGLE EARTH PRO ON OCTOBER 11, 2017. AERIAL WAS COLLECTED ON OCTOBER 8, 2016.

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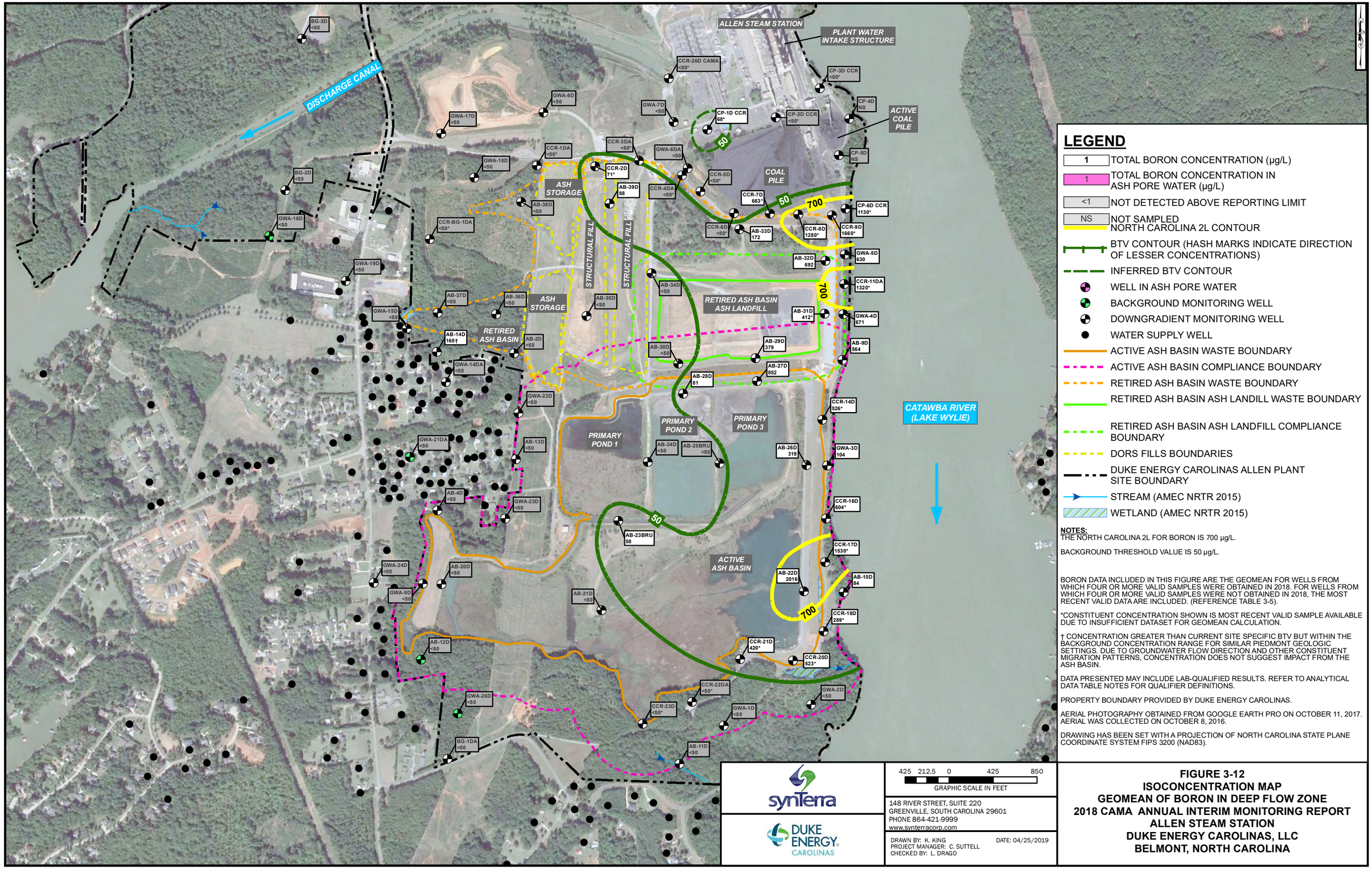
PROJECT MANAGER: C. SUTTELL
CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 3-11
ISOCONCENTRATION MAP
GEOMEAN OF BORON IN SHALLOW FLOW ZONE
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA



LEGEND

- 1 — TOTAL BORON CONCENTRATION (µg/L)
- 1 — TOTAL BORON CONCENTRATION IN ASH PORE WATER (µg/L)
- <1 — NOT DETECTED ABOVE REPORTING LIMIT
- NS — NOT SAMPLED
- NORTH CAROLINA 2L CONTOUR
- BTV CONTOUR (HASH MARKS INDICATE DIRECTION OF LESSER CONCENTRATIONS)
- INFERRED BTV CONTOUR
- WELL IN ASH PORE WATER
- BACKGROUND MONITORING WELL
- DOWNGRADIENT MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE BOUNDARY
- ACTIVE ASH BASIN COMPLIANCE BOUNDARY
- RETIRED ASH BASIN WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)
- WETLAND (AMEC NRTR 2015)

NOTES:

THE NORTH CAROLINA 2L FOR BORON IS 700 µg/L.

BACKGROUND THRESHOLD VALUE IS 50 µg/L.

BORON DATA INCLUDED IN THIS FIGURE ARE THE GEOMEAN FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE OBTAINED IN 2018. FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE NOT OBTAINED IN 2018, THE MOST RECENT VALID DATA ARE INCLUDED. (REFERENCE TABLE 3-5).

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† CONCENTRATION GREATER THAN CURRENT SITE SPECIFIC BTV BUT WITHIN THE BACKGROUND CONCENTRATION RANGE FOR SIMILAR PIEDMONT GEOLOGIC SETTINGS. DUE TO GROUNDWATER FLOW DIRECTION AND OTHER CONSTITUENT MIGRATION PATTERNS, CONCENTRATION DOES NOT SUGGEST IMPACT FROM THE ASH BASIN.

DATA PRESENTED MAY INCLUDE LAB-QUALIFIED RESULTS. REFER TO ANALYTICAL DATA TABLE NOTES FOR QUALIFIER DEFINITIONS.

PROPERTY BOUNDARY PROVIDED BY DUKE ENERGY CAROLINAS.

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PROJECT MANAGER: C. SUTTELL
CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 3-12
ISOCONCENTRATION MAP
GEOMEAN OF BORON IN DEEP FLOW ZONE
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA

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ALLEN STEAM STATION
PLANT WATER INTAKE STRUCTURE
DISCHARGE CANAL
CCR-26BR CAMA <50*
ACTIVE COAL PILE
GWA-6BRL NS
GWA-6BRA <50
COAL PILE
BG-2BRA-2 <50
ASH STORAGE
AB-38BR <50
STRUCTURAL FILL
STRUCTURAL FILL
CP-6BR <50*
GWA-5BRL NS
GWA-5BRA 748
700
ASH STORAGE
AB-35BR <50
RETIRED ASH BASIN ASH LANDFILL
GWA-4BRL NS
GWA-4BR 380
AB-14BR <50
RETIRED ASH BASIN
AB-27BR 141
CATAWBA RIVER (LAKE WYLIE)
PRIMARY POND 1
PRIMARY POND 2
PRIMARY POND 3
50
AB-24BR <50
AB-25BR <50
GWA-3BRL NS
GWA-3BRA 85
GWA-21BR <50
AB-4BR <50
CCR-16BR CAMA 477*
ACTIVE ASH BASIN
AB-22BRL 1936
AB-10BR NS
AB-22BR 1869
700
AB-10BRL NS
GWA-24BR <50
GWA-9BR <50
AB-21BR <50*
AB-21BRL <50
GWA-1BR <50
BG-1BR <50*

LEGEND

- 1 — TOTAL BORON CONCENTRATION (µg/L)
- 1 — TOTAL BORON CONCENTRATION IN ASH PORE WATER (µg/L)
- <1 — NOT DETECTED ABOVE REPORTING LIMIT
- NS — NOT SAMPLED
- NORTH CAROLINA 2L CONTOUR
- BTV CONTOUR (HASH MARKS INDICATE DIRECTION OF LESSER CONCENTRATIONS)
- INFERRED BTV CONTOUR
- WELL IN ASH PORE WATER
- BACKGROUND MONITORING WELL
- DOWNGRADIENT MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE BOUNDARY
- ACTIVE ASH BASIN COMPLIANCE BOUNDARY
- RETIRED ASH BASIN WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)
- WETLAND (AMEC NRTR 2015)

NOTES:

THE NORTH CAROLINA 2L FOR BORON IS 700 µg/L.

BACKGROUND THRESHOLD VALUE IS 50 µg/L.

BORON DATA INCLUDED IN THIS FIGURE ARE THE GEOMEAN FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE OBTAINED IN 2018. FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE NOT OBTAINED IN 2018, THE MOST RECENT VALID DATA ARE INCLUDED. (REFERENCE TABLE 3-5).

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DATA PRESENTED MAY INCLUDE LAB-QUALIFIED RESULTS. REFER TO ANALYTICAL DATA TABLE NOTES FOR QUALIFIER DEFINITIONS.

PROPERTY BOUNDARY PROVIDED BY DUKE ENERGY CAROLINAS.

AERIAL PHOTOGRAPHY OBTAINED FROM GOOGLE EARTH PRO ON OCTOBER 11, 2017. AERIAL WAS COLLECTED ON OCTOBER 8, 2016.

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PROJECT MANAGER: C. SUTTELL
CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 3-13
ISOCONCENTRATION MAP
GEOMEAN OF BORON IN BEDROCK FLOW ZONE
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA

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ALLEN STEAM STATION

PLANT WATER INTAKE STRUCTURE

DISCHARGE CANAL

ACTIVE COAL PILE

COAL PILE

ASH STORAGE

ASH STORAGE

STRUCTURAL FILL

STRUCTURAL FILL

RETIRED ASH BASIN

RETIRED ASH BASIN ASH LANDFILL

PRIMARY POND 1

PRIMARY POND 2

PRIMARY POND 3

ACTIVE ASH BASIN

CATAWBA RIVER (LAKE WYLIE)

BG-3D <0.1

BG-2D <0.1

GWA-16D <0.1

GWA-19D <0.1*

GWA-15D <0.1

GWA-17D 0.9

GWA-18D 0.1

GWA-8D 0.2

CCR-1DA 0.9*

AB-38D 0.9

CCR-8G-1DA 0.3*

AB-37D <0.1

AB-36D <0.1

AB-35D NS

AB-14D 0.9†

AB-2D <0.1

GWA-14DA 0.1

GWA-22D 0.3

GWA-21DA <0.1

AB-13D <0.1

AB-4D <0.1

GWA-23D 5†

GWA-24D 0.1

AB-20D <0.1

GWA-9D <0.1

AB-12D <0.1

GWA-26D 0.2

BG-1DA 0.1

CCR-26D CAMA <0.1*

GWA-7D <0.1

CP-1D CCR 4*

CP-2D CCR 6*

CP-3D CCR 7*

CP-4D NS

CP-5D NS

CP-6D CCR 1*

CCR-2D 0.4*

CCR-3DA <0.1*

GWA-6DA 0.4

CCR-4DA 0.2*

CCR-5D 0.2*

AB-39D <0.1

CCR-7D 0.2*

CCR-6D 0.1*

CCR-9D 0.2*

AB-33D <0.1

CCR-8D 0.2*

AB-32D 0.2

AB-34D 0.2

GWA-5D 0.3

CCR-11DA <0.1*

GWA-4D <0.1

AB-31D <0.1

AB-9D <0.1

AB-29D 0.4

AB-30D <0.1

AB-28D <0.1

AB-27D 0.7

CCR-14D 0.2*

AB-24D NS

AB-25BRU NS

AB-26D 0.3

GWA-3D 0.1

CCR-16D <0.1*

CCR-17D 0.1*

AB-22D 0.4

AB-10D 0.2

CCR-18D 0.2*

AB-23BRU 0.1*

AB-21D NS

CCR-21D <0.1*

CCR-20D 0.6*

CCR-22DA <0.1*

CCR-23D 0.3*

GWA-2D <0.1

GWA-1D <0.1

AB-11D <0.1

0.5

7

LEGEND

- 1 — TOTAL COBALT CONCENTRATION (µg/L)
- 1 — TOTAL COBALT CONCENTRATION IN ASH PORE WATER (µg/L)
- <1 — NOT DETECTED ABOVE REPORTING LIMIT
- NS — NOT SAMPLED
- NORTH CAROLINA 2L CONTOUR
- BTV CONTOUR (HASH MARKS INDICATE DIRECTION OF LESSER CONCENTRATIONS)
- INFERRED BTV CONTOUR
- WELL IN ASH PORE WATER
- BACKGROUND MONITORING WELL
- DOWNGRADIENT MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE BOUNDARY
- ACTIVE ASH BASIN COMPLIANCE BOUNDARY
- RETIRED ASH BASIN WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)
- WETLAND (AMEC NRTR 2015)

NOTES:

THE INTERIM MAXIMUM ALLOWABLE CONCENTRATION (IMAC) FOR COBALT IS 1 µg/L.

BACKGROUND THRESHOLD VALUE IS 0.5 µg/L.

COBALT DATA INCLUDED IN THIS FIGURE ARE THE GEOMEAN FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE OBTAINED IN 2018. FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE NOT OBTAINED IN 2018, THE MOST RECENT VALID DATA ARE INCLUDED. (REFERENCE TABLE 3-5).

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DATA PRESENTED MAY INCLUDE LAB-QUALIFIED RESULTS. REFER TO ANALYTICAL DATA TABLE NOTES FOR QUALIFIER DEFINITIONS.

PROPERTY BOUNDARY PROVIDED BY DUKE ENERGY CAROLINAS.

AERIAL PHOTOGRAPHY OBTAINED FROM GOOGLE EARTH PRO ON OCTOBER 11, 2017. AERIAL WAS COLLECTED ON OCTOBER 8, 2016.

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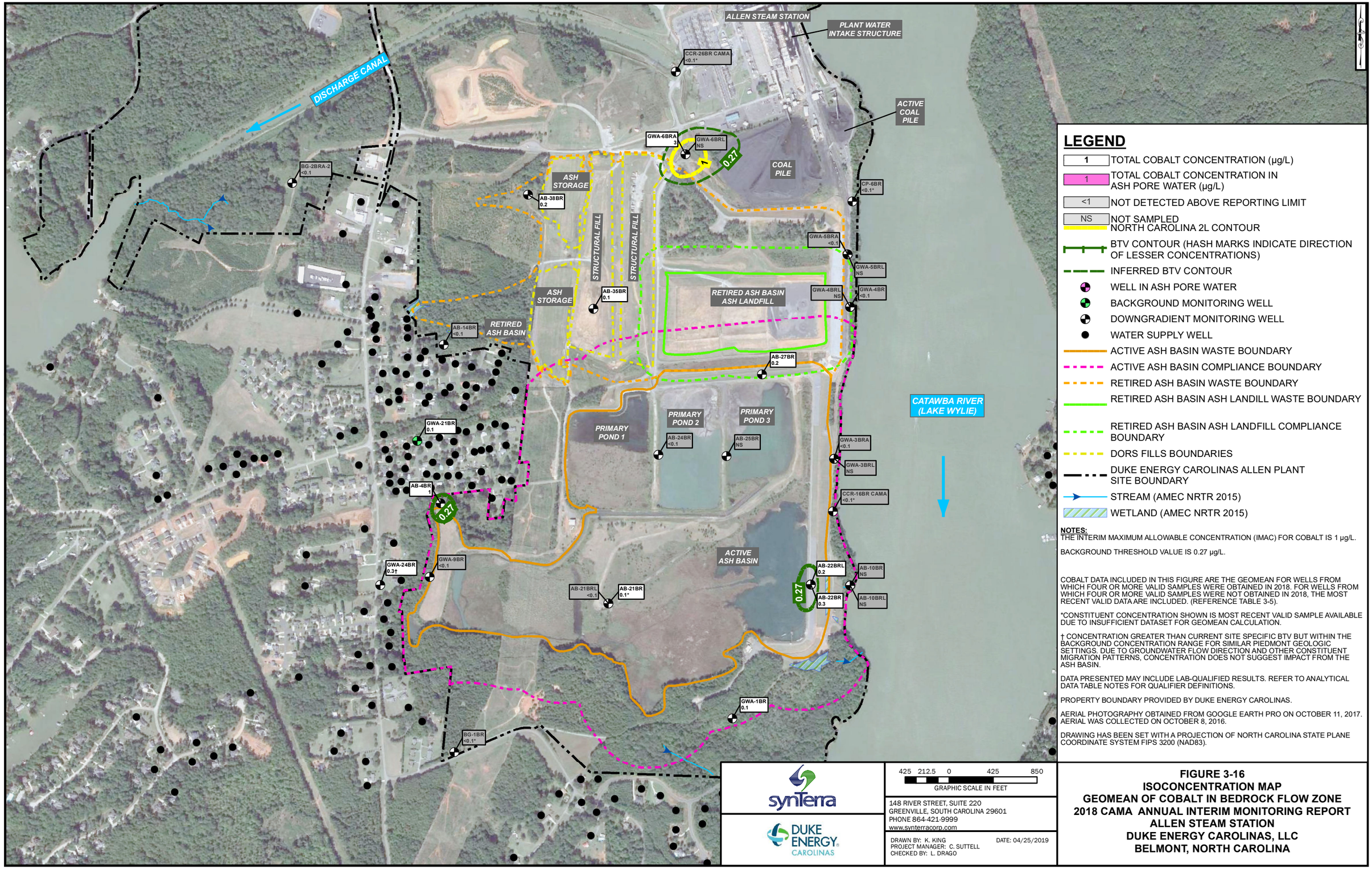
CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 3-15
ISOCONCENTRATION MAP
GEOMEAN OF COBALT IN DEEP FLOW ZONE
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA



LEGEND

- 1 — TOTAL COBALT CONCENTRATION (µg/L)
- 1 — TOTAL COBALT CONCENTRATION IN ASH PORE WATER (µg/L)
- <1 — NOT DETECTED ABOVE REPORTING LIMIT
- NS — NOT SAMPLED
- NORTH CAROLINA 2L CONTOUR
- BTV CONTOUR (HASH MARKS INDICATE DIRECTION OF LESSER CONCENTRATIONS)
- INFERRED BTV CONTOUR
- WELL IN ASH PORE WATER
- BACKGROUND MONITORING WELL
- DOWNGRADIENT MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE BOUNDARY
- ACTIVE ASH BASIN COMPLIANCE BOUNDARY
- RETIRED ASH BASIN WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)
- WETLAND (AMEC NRTR 2015)

NOTES:

THE INTERIM MAXIMUM ALLOWABLE CONCENTRATION (IMAC) FOR COBALT IS 1 µg/L.

BACKGROUND THRESHOLD VALUE IS 0.27 µg/L.

COBALT DATA INCLUDED IN THIS FIGURE ARE THE GEOMEAN FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE OBTAINED IN 2018. FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE NOT OBTAINED IN 2018, THE MOST RECENT VALID DATA ARE INCLUDED. (REFERENCE TABLE 3-5).

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CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 3-16
ISOCONCENTRATION MAP
GEOMEAN OF COBALT IN BEDROCK FLOW ZONE
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA

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ALLEN STEAM STATION
PLANT WATER INTAKE STRUCTURE
DISCHARGE CANAL
ACTIVE COAL PILE
COAL PILE
ASH STORAGE
STRUCTURAL FILL
STRUCTURAL FILL
ASH STORAGE
RETIRED ASH BASIN
RETIRED ASH BASIN ASH LANDFILL
PRIMARY POND 1
PRIMARY POND 2
PRIMARY POND 3
ACTIVE ASH BASIN
CATAWBA RIVER (LAKE WYLIE)

BG-3S <1
GWA-8S 1.6
CCR-26S CAMA 4.1*
CP-3S CCR 987*
GWA-7S 100.4
CP-2S CCR 1700*
CP-4S NS
GWA-17S 4.7
CCR-2S <1*
CCR-3S 113*
CP-1S CCR 413*
GWA-6S 1422.1
CP-5S NS
BG-2S <1
GWA-18S <1
GWA-6S CCR 663*
CCR-4SA 1340*
AB-39S 3.1
CCR-5S 804*
CCR-6S 2560*
CCR-7S 271*
CCR-9S 209*
CP-6S CCR 187*
GWA-16S <1
AB-38S 5.1
AB-38SS 4.8*
CCR-8S 272*
BG-01S <1
CCR-BG-1S 1.3*
AB-33SS 125*
AB-33S 212.9
AB-32S 2.1
GWA-5S 8.8
GWA-19S <1
AB-34S 234.8
CCR-11S 123*
AB-37S 1.9
AB-35S 121.7
AB-31S 121.6
GWA-4S 146.1
AB-36S 3.2
AB-35PWS 4.6*
AB-29SL 139.1
AB-29S 55.9
AB-9S 34.8
GWA-15S 11.3
AB-30S 88.8
AB-29SS 88.6*
GWA-14S <1
AB-2 1
AB-28S 192.9
AB-27S 16.9
GWA-22S <1
CCR-14S 33.1*
GWA-21S <1
AB-13S 1.2
AB-24SL 15.9
AB-25SS 24.3*
AB-26S 68.4
GWA-3S 39.4
AB-24S 58
AB-25S 50.2
AB-25SL 36.2
AB-4S 9.6
GWA-23S <1
AB-23S 17.8
CCR-16S 126*
CCR-17S 47.3*
GWA-9S 17
GWA-24SA <1
AB-20S 149.2
AB-22S 1.9
AB-10S 19.1
AB-21SS 1.1*
AB-6A 30.3
AB-6R 29.7
AB-21SL 132.9
AB-21S 77.5
CCR-18S 52.6*
CCR-20S 13.7*
AB-12S <1
CCR-21S 26.1*
AB-5 1
CCR-22S 4.1*
GWA-2S <1
GWA-26S <1
CCR-23S <1*
GWA-1S <1

250
3.64
3.64

LEGEND

- 1 — SULFATE CONCENTRATION (mg/L)
- 1 — TOTAL SULFATE CONCENTRATION IN ASH PORE WATER (mg/L)
- <1 — NOT DETECTED ABOVE REPORTING LIMIT
- NS — NOT SAMPLED
- NORTH CAROLINA 2L CONTOUR
- BTV CONTOUR (HASH MARKS INDICATE DIRECTION OF LESSER CONCENTRATIONS)
- INFERRED BTV CONTOUR
- WELL IN ASH PORE WATER
- BACKGROUND MONITORING WELL
- DOWNGRADIENT MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE BOUNDARY
- ACTIVE ASH BASIN COMPLIANCE BOUNDARY
- RETIRED ASH BASIN WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)
- WETLAND (AMEC NRTR 2015)

NOTES:

THE NORTH CAROLINA 2L FOR SULFATE IS 250 mg/L.

BACKGROUND THRESHOLD VALUE IS 3.64 mg/L.

ASH PORE WATER WELL RESULTS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT USED FOR CONTOURING.

SULFATE DATA INCLUDED IN THIS FIGURE ARE THE GEOMEAN FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE OBTAINED IN 2018. FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE NOT OBTAINED IN 2018, THE MOST RECENT VALID DATA ARE INCLUDED. (REFERENCE TABLE 3-5).

*CONSTITUENT CONCENTRATION SHOWN IS MOST RECENT VALID SAMPLE AVAILABLE DUE TO INSUFFICIENT DATASET FOR GEOMEAN CALCULATION.

† CONCENTRATION GREATER THAN CURRENT SITE SPECIFIC BTV BUT WITHIN THE BACKGROUND CONCENTRATION RANGE FOR SIMILAR PIEDMONT GEOLOGIC SETTINGS. DUE TO GROUNDWATER FLOW DIRECTION AND OTHER CONSTITUENT MIGRATION PATTERNS, CONCENTRATION DOES NOT SUGGEST IMPACT FROM THE ASH BASIN.

DATA PRESENTED MAY INCLUDE LAB-QUALIFIED RESULTS. REFER TO ANALYTICAL DATA TABLE NOTES FOR QUALIFIER DEFINITIONS.

PROPERTY BOUNDARY PROVIDED BY DUKE ENERGY CAROLINAS.

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PROJECT MANAGER: C. SUTTELL
CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 3-21
ISOCONCENTRATION MAP
GEOMEAN OF SULFATE IN SHALLOW FLOW ZONE
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA

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Feb 18 2020

ALLEN STEAM STATION
PLANT WATER INTAKE STRUCTURE
DISCHARGE CANAL
ACTIVE COAL PILE
COAL PILE
ASH STORAGE
ASH STORAGE
STRUCTURAL FILL
STRUCTURAL FILL
RETIRED ASH BASIN
RETIRED ASH BASIN ASH LANDFILL
PRIMARY POND 1
PRIMARY POND 2
PRIMARY POND 3
ACTIVE ASH BASIN
CATAWBA RIVER (LAKE WYLIE)

BG-3D <1
GWA-8D 1.1
GWA-17D 3.2
CCR-26D CAMA 54.5*
GWA-7D 109.9
CP-3D CCR 750*
CP-4D NS
CP-2D CCR 2090*
CP-1D CCR 678*
CCR-1DA <1*
CCR-2D 13.5*
CCR-3DA 11.1*
GWA-6DA 329.5
CP-5D NS
GWA-18D 2.6
BG-2D 1.1
CCR-4DA 176*
AB-39D 32.9
CCR-7D 92.5*
CCR-9D 134*
CP-6D CCR 87.4*
AB-38D 17.2
CCR-5D 43.8*
GWA-16D 1
CCR-BG-1DA <1*
CCR-6D 14.6*
CCR-8D 98.1*
GWA-5D 38.8
AB-33D 4.6
AB-32D 31.8
GWA-19D 3.9
AB-34D 1.3
CCR-11DA 83*
AB-37D 2.5
AB-36D 4
AB-35D 5.1
AB-31D 45.5*
GWA-4D 65.4
GWA-15D 4
AB-14D 28.4†
AB-2D <1
AB-30D 26.4
AB-29D 49.2
AB-9D 48.2
GWA-14DA 4
AB-28D 18.1
AB-27D 68
GWA-22D 1.2
CCR-14D 42.9*
GWA-21DA 1.5
AB-13D <1
AB-24D 19.9
AB-25BRU 10.9
AB-26D 37
GWA-3D 10
AB-4D 1.6
GWA-23D 3.1
AB-23BRU 46.1
CCR-16D 40.7*
GWA-24D 2.9
AB-20D 6.2
CCR-17D 51.2*
AB-22D 38.1
AB-10D 28.9
GWA-9D 2.5
AB-21D 7.3
CCR-18D 47.8*
AB-12D 4
CCR-21D 48.5*
CCR-20D 46.8*
CCR-22DA 29.8*
GWA-26D 11.8
GWA-2D 1.6
GWA-1D 11.4
CCR-23D 2.6*
BG-1DA 2.6
AB-11D <1

16.2
250

LEGEND

- 1 — SULFATE CONCENTRATION (mg/L)
- 1 — TOTAL SULFATE CONCENTRATION IN ASH PORE WATER (mg/L)
- <1 — NOT DETECTED ABOVE REPORTING LIMIT
- NS — NOT SAMPLED
- NORTH CAROLINA 2L CONTOUR
- BTV CONTOUR (HASH MARKS INDICATE DIRECTION OF LESSER CONCENTRATIONS)
- INFERRED BTV CONTOUR
- WELL IN ASH PORE WATER
- BACKGROUND MONITORING WELL
- DOWNGRADIENT MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE BOUNDARY
- ACTIVE ASH BASIN COMPLIANCE BOUNDARY
- RETIRED ASH BASIN WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)
- WETLAND (AMEC NRTR 2015)

NOTES:

THE NORTH CAROLINA 2L FOR SULFATE IS 250 mg/L.

BACKGROUND THRESHOLD VALUE IS 16.2 mg/L.

SULFATE DATA INCLUDED IN THIS FIGURE ARE THE GEOMEAN FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE OBTAINED IN 2018. FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE NOT OBTAINED IN 2018, THE MOST RECENT VALID DATA ARE INCLUDED. (REFERENCE TABLE 3-5).

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† CONCENTRATION GREATER THAN CURRENT SITE SPECIFIC BTV BUT WITHIN THE BACKGROUND CONCENTRATION RANGE FOR SIMILAR PIEDMONT GEOLOGIC SETTINGS. DUE TO GROUNDWATER FLOW DIRECTION AND OTHER CONSTITUENT MIGRATION PATTERNS, CONCENTRATION DOES NOT SUGGEST IMPACT FROM THE ASH BASIN.

DATA PRESENTED MAY INCLUDE LAB-QUALIFIED RESULTS. REFER TO ANALYTICAL DATA TABLE NOTES FOR QUALIFIER DEFINITIONS.

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CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 3-22
ISOCONCENTRATION MAP
GEOMEAN OF SULFATE IN DEEP FLOW ZONE
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA

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Feb 18 2020

ALLEN STEAM STATION
PLANT WATER INTAKE STRUCTURE
DISCHARGE CANAL
CCR-26BR CAMA 149*
ACTIVE COAL PILE
GWA-6BRL NS
GWA-6BRA 132.4
COAL PILE
BG-2BRA-2 19.7†
ASH STORAGE
AB-38BR 14.8
CP-6BR 20.3*
STRUCTURAL FILL
STRUCTURAL FILL
GWA-5BRL NS
GWA-5BRA 51.4
2.9
ASH STORAGE
RETIRED ASH BASIN ASH LANDFILL
GWA-4BRL NS
GWA-4BR 42.4
AB-35BR 2.6
AB-14BR 4.7†
RETIRED ASH BASIN
AB-27BR 14.5
CATAWBA RIVER (LAKE WYLIE)
PRIMARY POND 1
PRIMARY POND 2
PRIMARY POND 3
GWA-21BR 2.9†
AB-24BR 3.7
AB-25BR 3.6
GWA-3BRL NS
GWA-3BRA 17.3
AB-4BR 4.5
CCR-16BR CAMA 38.9*
ACTIVE ASH BASIN
GWA-24BR 10†
GWA-9BR 12.3
AB-22BR 27.7
AB-22BRL 44
AB-10BR NS
AB-21BR 37.5*
AB-21BRL 11.1
AB-10BRL NS
2.9
GWA-1BR 14.9
BG-1BR 5.5†*

LEGEND

- 1 — SULFATE CONCENTRATION (mg/L)
- 1 — TOTAL SULFATE CONCENTRATION IN ASH PORE WATER (mg/L)
- <1 — NOT DETECTED ABOVE REPORTING LIMIT
- NS — NOT SAMPLED
- NORTH CAROLINA 2L CONTOUR
- BTV CONTOUR (HASH MARKS INDICATE DIRECTION OF LESSER CONCENTRATIONS)
- INFERRED BTV CONTOUR
- WELL IN ASH PORE WATER
- BACKGROUND MONITORING WELL
- DOWNGRADIENT MONITORING WELL
- WATER SUPPLY WELL
- ACTIVE ASH BASIN WASTE BOUNDARY
- ACTIVE ASH BASIN COMPLIANCE BOUNDARY
- RETIRED ASH BASIN WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDILL WASTE BOUNDARY
- RETIRED ASH BASIN ASH LANDFILL COMPLIANCE BOUNDARY
- DORS FILLS BOUNDARIES
- DUKE ENERGY CAROLINAS ALLEN PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)
- WETLAND (AMEC NRTR 2015)

NOTES:

THE NORTH CAROLINA 2L FOR SULFATE IS 250 mg/L.

BACKGROUND THRESHOLD VALUE IS 2.9 mg/L.

SULFATE DATA INCLUDED IN THIS FIGURE ARE THE GEOMEAN FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE OBTAINED IN 2018. FOR WELLS FROM WHICH FOUR OR MORE VALID SAMPLES WERE NOT OBTAINED IN 2018, THE MOST RECENT VALID DATA ARE INCLUDED. (REFERENCE TABLE 3-5).

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DATA PRESENTED MAY INCLUDE LAB-QUALIFIED RESULTS. REFER TO ANALYTICAL DATA TABLE NOTES FOR QUALIFIER DEFINITIONS.

PROPERTY BOUNDARY PROVIDED BY DUKE ENERGY CAROLINAS.

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DRAWN BY: K. KING
PROJECT MANAGER: C. SUTTELL
CHECKED BY: L. DRAGO
DATE: 04/25/2019

FIGURE 3-23
ISOCONCENTRATION MAP
GEOMEAN OF SULFATE IN BEDROCK FLOW ZONE
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC
BELMONT, NORTH CAROLINA

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TABLE 3-6
CONSTITUENTS OF INTEREST EVALUATION
2018 CAMA ANNUAL INTERIM MONITORING REPORT
ALLEN STEAM STATION
DUKE ENERGY CAROLINAS, LLC, BELMONT, NC

Constituent of Interest (2018 CSA Update)	2L Criterion	Groundwater Zone Statistically Derived Background Value[1]	Maximum 2018 Geomean Concentration Near or Outside of Compliance Boundary[2]	Exceedance Ratio[3]	Number of Wells Above Criterion Near or Outside of Compliance Boundary	Rationale for Exclusion from Mapping in Annual Report
Constituents with 2L Criterion						
Arsenic	10 (µg/L)	Shallow: 0.42	138	13.8	2	AB-36S Potential APW influence; GWA-06S Coal Pile area well, low pH likely mobilizing constituent; no discernible plume
		Transition Zone: 1.4	0.66	0.10	0	No geomeans exceed comparative criteria
		Bedrock: 0.4	8.2	0.82	0	No geomeans exceed comparative criteria
Boron	700 (µg/L)	Shallow: 50	3891	5.6	4	**Figure 3-11**
		Transition Zone: 50	692	0.99	0	**Figure 3-12**
		Bedrock: 50	748	1.1	1	**Figure 3-13**
Cadmium	2 (µg/L)	Shallow: 0.8	7.3	3.6	1	Coal Pile area well, low pH likely mobilizing constituent, no discernible plume
		Transition Zone: 0.8	<0.08	0	0	No geomeans exceed comparative criteria
		Bedrock: 0.8	<0.08	0	0	No geomeans exceed comparative criteria
Chromium (Total)	10 (µg/L)	Shallow: 6.927	12.6	1.3	2	Strong decreasing trend at AB-06A, most recent value < 2L (also many results Cr(vi) > Cr(tot)); GWA-06S Coal Pile area well, low pH likely mobilizing constituent; no discernible plume
		Transition Zone: 6.8	6.9	0.70	0	No geomeans exceed comparative criteria
		Bedrock: 5.6	3.1	0.31	0	No geomeans exceed comparative criteria
Iron	300 (µg/L)	Shallow: 834.8	44600	53.4	7	Historically high background values, plume is encompassed by boron and sulfate plume
		Transition Zone: 555	1002	1.8	1	Historically high background values, plume is encompassed by boron and sulfate plume
		Bedrock: 284	241	0.8	0	Historically high background values, plume is encompassed by boron and sulfate plume
Manganese	50 (µg/L)	Shallow: 577.9	133438	230.9	9	Historically high background values, plume is encompassed by boron and sulfate plume
		Transition Zone: 60.4	797	13.2	2	Historically high background values, plume is encompassed by boron and sulfate plume
		Bedrock: 39.1	214	4.3	4	Historically high background values, plume is encompassed by boron and sulfate plume
Nickel	100 (µg/L)	Shallow: 4	638	6.4	1	GWA-06S Coal Pile area well, low pH likely mobilizing constituent; no discernible plume
		Transition Zone: 8	36.2	0.36	0	No geomeans exceed comparative criteria
		Bedrock: 3	3.2	0.03	0	No geomeans exceed comparative criteria
Selenium	20 (µg/L)	Shallow: 0.50	113	5.7	1	Coal Pile well, low pH mobilizing likely constituent; no discernible plume
		Transition Zone: 0.5	4.6	0.23	0	No geomeans exceed comparative criteria
		Bedrock: 0.5	1.2	0.06	0	No geomeans exceed comparative criteria
Sulfate	250 (mg/L)	Shallow: 3.641	1422	5.7	1	**Figure 3-21**
		Transition Zone: 16.2	330	1.3	1	**Figure 3-22**
		Bedrock: 2.9	149	0.60	0	**Figure 3-23**
Total Dissolved Solids	500 (mg/L)	Shallow: 180.957	2259	4.5	1	Mirrors Sulfate exceedances
		Transition Zone: 126	874	1.8	1	Mirrors Sulfate exceedances
		Bedrock: 147	380	0.76	0	No geomeans exceed comparative criteria
Constituents with IMAC Criterion						
Antimony	1 (µg/L)	Shallow: 0.876	<0.5	0	0	No geomeans exceed comparative criteria
		Transition Zone: 0.69	0.88	0.88	0	No geomeans exceed comparative criteria
		Bedrock: 0.5	1.5	1.5	2	Decreasing trend at GWA-03BRA, most recent sample < 2L; GWA-06BRA two recent samples < 2L (last one was j-flagged); no discernible plume
Beryllium	4 (µg/L)	Shallow: 0.127	34.8	8.7	1	Coal Pile area well, low pH likely mobilizing constituent; no discernible plume
		Transition Zone: 0.2	<0.1	0	0	No geomeans exceed comparative criteria
		Bedrock: 0.1	<0.1	0	0	No geomeans exceed comparative criteria
Cobalt	1 (µg/L)	Shallow: 4.338	3233	745.2	9	**Figure 3-14**
		Transition Zone: 0.5	0.86	0.86	0	**Figure 3-15**
		Bedrock: 0.27	2.9	2.9	1	**Figure 3-16**
Thallium	0.2 (µg/L)	Shallow: 0.1	2.9	14.4	1	Coal Pile area well, low pH likely mobilizing constituent; no discernible plume
		Transition Zone: 0.1	<0.1	0	0	No geomeans exceed comparative criteria
		Bedrock: 0.1	<0.1	0	0	No geomeans exceed comparative criteria
Vanadium	0.3 (µg/L)	Shallow: 5.33	8.7	1.6	1	No discernible plume
		Transition Zone: 9.6	11.9	1.2	2	New BTV value is 13, geomeans < BTV; no discernible plume
		Bedrock: 10.8	7.9	0.73	0	No geomeans exceed comparative criteria
Background Criterion						
Chromium (Hexavalent)	10 (µg/L)	Shallow: 7.74	9.8	0.98	0	No geomeans exceed comparative criteria
		Transition Zone: 1.2	6.3	0.60	0	No geomeans exceed comparative criteria
		Bedrock: 0.23	1.6	0.16	0	No geomeans exceed comparative criteria
Molybdenum	NE	Shallow: 0.849	1.2	1.4	1	Potential APW influence; no discernible plume
		Transition Zone: 30.2	1.2	0.04	0	No geomeans exceed comparative criteria
		Bedrock: 4.7	10.2	2.2	1	High original value (10.2), recent values are 3.5 and 3.4 (below BTV); no discernible plume
Strontium	NE	Shallow: 286	1439	5.0	5	No discernible plume
		Transition Zone: 200	1068	5.3	14	No discernible plume
		Bedrock: 106	731	6.9	9	No discernible plume

Prepared by: DAA Checked by: WJW

Notes:

1 - Background values shown reflect those accepted by NCDEQ in May 14, 2018 letter. These values are currently being updated for re-approval from NCDEQ in 2019.

2 - The following wells were used to calculate geomean concentrations at or near the compliance boundary: AB-02/D, AB-05, AB-06A, AB-06R, AB-09S/D, AB-10S/D, AB-11D, AB-29SS/D, AB-30D, AB-31S/D, AB-32S/D, AB-33SS/D, AB-34D, AB-35PWS/D, AB-36S/D, AB-37D, AB-38SS/D/BR, AB-38BR, AB-39D, CCR-16BR, CCR-26S/D/BR, CP-06BR, GWA-01S/D/BR, GWA-02S/D, GWA-03S/D/BRA, GWA-04S/D/BR, GWA-05S/D/BRA, GWA-06S/DA/BRA, GWA-07S/D, GWA-08S/D

3 - The exceedance ratio is the ratio of the observed constituent concentration divided by the reference criterion

NE - Not Established

µg/L = micrograms per liter

mg/L = milligrams per liter

Highlighted value reference criterion

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Feb 18 2020

ENVIRONMENTAL AUDIT IN SUPPORT OF THE COURT APPOINTED MONITOR

Belews Creek Steam Station
Belews Creek, North Carolina
USA

June 2019

Final Report Issued To:

Duke Energy and the Court Appointed Monitor

Prepared By:

Advanced GeoServices Corp.
and
The Elm Consulting Group International LLC

Hart Exhibit 50
Docket No. E-7, Sub 1214

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Feb 18 2020

ENVIRONMENTAL AUDIT IN SUPPORT OF THE COURT APPOINTED MONITOR

Buck Steam Station
Salisbury, North Carolina
USA

August 2019

Final Report Issued To:

Duke Energy and the Court Appointed Monitor

Prepared By:

Advanced GeoServices Corp.
and
The Elm Consulting Group International LLC

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1.0 INTRODUCTION

Advanced GeoServices Corp. (AGC) and The Elm Consulting Group International LLC (Elm) (collectively, the Audit Team) are conducting environmental compliance audits (the Audits) of certain coal combustion residuals (CCR) management locations owned or operated by Duke Energy Business Services LLC, Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc. (collectively, Duke Energy). The Audits are being conducted under the direction of Mr. Benjamin Wilson, the Court Appointed Monitor (CAM), pursuant to an Order issued by the U.S. District Court, Eastern District of North Carolina, in case numbers 5:15-CR-62-H, 5:15-CR-67-H, and 5:15-CR-68-H.

The scope of the Audits is set forth in the plea agreements entered into by Duke Energy and the United States in the above cases, the Court's judgments in these cases, and a written Audit scoping document agreed to by Duke Energy and the United States.

1.1 BACKGROUND INFORMATION

The subject of this report is the Audit completed at Duke Energy's Buck Steam Station located in Salisbury, North Carolina (Buck Facility). The Audit was conducted on June 26-27, 2019 for a total of two days on-site. The Audit Team members were:

- Mr. Christopher Reitman, P.E., AGC — Project Director, Audit Team Leader, Sr. Subject Matter Expert (on-site)
- Mr. Joseph Cotier, CPEA, Elm — Sr. Environmental Auditor (on-site)
- Mr. Bernie Beegle, P.G., AGC — Sr. Subject Matter Expert (off-site)

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Key representatives of the Buck Facility were:

- Mr. Scott Harris, CCP System Owner
- Mr. John Kwon, CCP Engineering & Closure Engineering
- Mr. Tim Hill, General Manager, Regional CCP Operations and Maintenance
- Mr. Chris Varner, CCP Projects
- Mr. Jeff Jones, CCP Projects
- Mr. Bobby Smith, PMC Projects
- Mr. Issa Zarzar, General Manager, CCP Projects
- Ms. Elizabeth Glenn, EHS CCP Permitting and Compliance
- Mr. Ryan Czop, EHS CCP Waste & Groundwater
- Ms. Diana Kooser, Regulatory Affairs
- Ms. Keeley McCormick, EHS CCP Compliance
- Mr. Mike Phillips, Manager, EHS CCP Compliance
- Mr. Jason Jomp, EHS CCP Environmental Field Support
- Mr. Dale Wooten, Station Environmental Field Support
- Mr. Ian Barrett, Station Health & Safety Field Support
- Mr. Keith Higgins, EHS CCP Compliance

1.2 FACILITY OVERVIEW

The Buck Facility is located at 1555 Dukeville Road, Salisbury, North Carolina in Rowan County, about three miles east of the Town of Spencer. Duke Energy personnel stated the facility began operation in 1926. Units 1 through 6 were coal-fired units and units 7 through 9 were gas-fired combustion turbine units added in the 1970s for peaking capacity. Decommissioning of units 1 through 9 was completed in 2013.

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Currently, the Buck Facility operates combined cycle gas and steam units 10 through 12 which began operations in 2011 and continue to operate. These units have a combined capacity of 640 MW.

The combined cycle units were operating during the Audit Team's visit.

1.2.1 Ash Management Activities

Duke Energy personnel provided the following information regarding the three basins on-site:

- Additional Primary Pond (Basin 1) – Basin 1, which is also identified as the New Additional Primary Basin, is located on the western side of the facility and was constructed in 1982 to increase the capacity of the ash basin system. Ash is no longer sluiced to Basin 1. Basin 1 was historically used to manage wastewater from the combined cycle. The Buck station ceased discharge of wastewater to Basin 1 on February 11, 2019. Since then, wastewater has been diverted to Outfall 001A to enable the Ash Basin 1 decanting/dewatering in accordance with Duke Energy's NPDES Permit. An estimated 3,550,000 tons of CCR are present in Basin 1.

- Primary Pond (Basin 2) – Basin 2, which is also identified as the Primary Basin, was constructed in the 1950s as the primary ash retention basin. In the 1970s, as the ash pond capacity diminished, the original ash pond was divided into two separate basins (the Primary and Secondary Basin with the Secondary Basin also identified as Basin 3) by construction of a divider dam. The western section of the Basin 3 Main Dam was raised approximately 10 feet in the 1970s when the ash basin was divided. Basin 2 receives discharges from Basin 1 and from the yard drain for the Buck Facility. Basin 2 discharges to Basin 3 through a discharge structure located on the eastern side of Basin 2. An estimated 2,000,000 tons of CCR are present in Basin 2.

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- Secondary Pond (Basin 3) – Basin 3, which is also identified as the Secondary Basin, is impounded by the Main Dam. The Main Dam was constructed in the 1950s to support the original ash pond. Basin 3 serves as the final polishing pond before effluent is discharged to the Yadkin River. The discharge structure is located on the northwest side of Basin 3. The discharge had historically been regulated through NPDES Outfall 002, but the discharge was relocated and the new location is identified as NPDES Outfall 007. There is an emergency spillway located on the southeastern side of the basin. An estimated 860,000 tons of CCR are present in Basin 3.

Duke Energy's closure plans for the ash basin system call for removal of the CCR. Duke Energy plans to process the CCR removed from the ash basin system at an on-site beneficiation facility capable of processing approximately 300,000 tons of CCR annually. Beneficiation will consist of heating the ash to make the ash properties more suitable for use in cement. To the extent there is any remaining CCR in the basin system after beneficiation operations permanently cease at the Buck Facility, Duke Energy plans on moving the remaining CCR to a permitted disposal facility.

At the time of the Audit, stop logs had been removed from the discharge structure in Basin 1 to accelerate passive decanting, water was being decanted (pumped) from Basin 2 to Basin 3, and water from Basin 3 was being treated as necessary and discharged through Outfall 007.

1.2.2 Environmental Permits and Programs

The Buck Facility operates under a number of environmental permits and programs, including:

- **National Pollutant Discharge Elimination System (NPDES) Permit and Special Order by Consent Discharges** – The period of review included review of two separate NPDES permits for the Buck Facility and a Special Order by Consent (SOC), as follows:

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1. North Carolina Department of Environmental Quality (NCDEQ) issued NPDES permit No. NC0004774 on December 2, 2011. The NPDES permit had an effective date of January 1, 2012 and an expiration date of August 31, 2016. A timely permit renewal application was submitted to NCDEQ on February 26, 2016, and the expired NPDES permit remained effective until NCDEQ issued the renewed permit on September 17, 2018. As it related to ash and ash management activities, the expired permit covered:
   - Outfall 002 - ash pond treated wastewater discharges from Basin 3 to the Yadkin River.
   - Outfall 002A – powerhouse yard sump overflow discharging to the Yadkin River

   The expired permit also required groundwater monitoring for 14 compliance wells three times a year pursuant to 15A NCAC 02L.0200. The final sampling event under the expired permit was completed on July 30, 2018.

2. NCDEQ issued the renewal of NPDES permit No. NC0004774 on September 17, 2018. The renewed permit became effective on November 1, 2018 and has an expiration date of October 31, 2023. As it relates to ash and ash management activities, the renewed permit covers:
   - Outfall 002 – discharge from the ash basin system to the Yadkin River during normal Buck Facility operations, decanting, and/or dewatering. Discharge from Outfall 002 was discontinued on January 14, 2019, and new Outfall 007 now receives those discharges, as described below. This was reported to the NCDEQ in the February 2019 discharge monitoring report (DMR), which was dated April 29, 2019. During the site visit, the Audit Team observed Outfall 002 to be permanently capped and a section of its piping removed.

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- Outfall 007 – the newly constructed location for the discharge from the ash basin system to the Yadkin River during normal operations, decanting, and/or dewatering. Outfall 007 commenced decant discharge on February 7, 2019.
- Outfall 111 – a constructed seep (former AOW S-11) which flows from an unnamed tributary to the Yadkin River; and
- Outfall 117 – a constructed seep (former AOW S-17) which flows from an unnamed tributary to the Yadkin River.

3. On July 12, 2018, the North Carolina Environmental Management Commission Special Order by Consent No. EMC SOC WQ S17-009 (SOC) became effective at the Buck Facility. The SOC has an expiration date of "no later than June 30, 2022." At Buck, the SOC covers both constructed and non-constructed seeps, including: S-01, S-02, S-03, S-04, S-05, S-06, S-07, S-08, S-09, S-10, S-11, S-12, S-13, S-14, S-15, S-16, and S-17. Seeps S-11 and S-17 are constructed seeps and have been included in the renewed NPDES permit as Outfalls 111 and 117, respectively. Constructed seeps are features on or within a dam structure to collect seepage, and the collected wastewater is conveyed via pipe or constructed channel directly to a receiving water. The remaining seeps are considered non-constructed seeps. Non-constructed seeps are not on or within a dam structure and do not convey wastewater via a pipe or constructed channel directly to a receiving water. The following seeps have been dispositioned due to no CCR impacts: S-02, S-03, S-06, S-07, S-09, S-10, S-12, S-13, and S-16. Seep S-09 was a sampling location, not a seep, and has been dispositioned. Seep S-12 was a channeled seep through a terracotta pipe. The terracotta pipe has been plugged; discharge was eliminated and has been dispositioned. Seep S-13 was a minimal AOW with no flow; it was identified as a damp area near pump house with insufficient flow to perform sampling and has been dispositioned.

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Quarterly monitoring is required at S-01, S-04, S-05, and S-08 for parameters specified in the SOC. Seeps S-14 and S-15 are considered to be represented by the sampling for S-05. Seeps S-04, S-05, and S-08 include interim action levels for pH and total hardness. Seep S-01 is represented by instream monitoring both upstream and downstream of the seep locations and must meet the 15A NCAC 2B standards, as listed in attachment B to the SOC. At the time of the Audit, four rounds of sampling had been conducted. No exceedances of Interim Action Levels or other relevant standards were noted.

Additional requirements of the SOC included:

- Payment of an upfront civil penalty within 30 days of SOC effectiveness. This penalty was paid August 3, 2018.
- Initiation of the decanting (at the Active Ash Basin via Outfall 002 or 007) by March 31, 2019. Decanting commenced via Outfall 007 on February 7, 2019.
- Completion of decanting by March 31, 2020.
- Annual completion of a comprehensive survey of existing and potential new seeps: Any new non-constructed seeps are required to be identified and reported to NCDEQ in the Annual Seep Report and are deemed covered by the SOC. The Annual Seep Survey was conducted on November 20, 2018 with a subsequent report submitted to NCDEQ on April 24, 2019. The SOC requires the Annual Seep Survey to be submitted by April 30 each year. No new seeps were reported.
- Posting of a copy of the Buck Facility NPDES Permit, SOC, and related reports on Duke Energy's external website. All required documents have been posted.

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- **NPDES Individual Stormwater Permit** – As there are no current coal-related power generation operations and there are no projects associated with coal combustion activities at the facility, the facility's industrial stormwater activities are not related to CCR management activities and therefore industrial stormwater permitting did not fall within the scope of the Audit.

- **Stormwater Construction Permit** – NCDEQ has issued six stormwater construction permits governing activities at the Buck Facility. Two permits are related to Buck Steam Station demolition, two permits are related to Buck Combined Cycle operations, and two permits are related to construction of the Staged Turbulent Air Reactor (STAR) system. None of the six permits were deemed to be related to CCR management activities.

  Based on an NCDEQ inspection completed on April 12, 2019, the following two stormwater construction permits were closed:

  - ROWAN-2017-001 for the Buck Facility Stormwater and Wastewater Reroute project; and
  - ROWAN 2018-001 for the Basin 3 Spillway Modification.

- **Title V Permitting** – NCDEQ issued Title V permit No. 03786T35 with an effective date of February 23, 2015, a revised date of May 10, 2018, and an expiration date of January 31, 2020. The latest revision added sources related to installation of the beneficiation unit's Staged Turbulent Air Reactor system for which construction had recently commenced. The Insignificant Source list includes ash and ash handling as Source I-2 and fugitive dust sources I-F-1 through I-F-6 which include wet ash handling, the ash basin, ash handling, and haul roads. Fugitive dust control is included in Section 3.MM of the permit. The Annual Compliance Certification (ACC) for 2018 was submitted to NCDEQ on February 11, 2019.

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- **Spill Prevention, Control and Countermeasure (SPCC) Plan** – Activities related to coal ash or basin management were addressed in a Buck Facility SPCC Plan that covered oil storage related to ash basins (one 264-gallon diesel tank). The SPCC Plan was dated May 16, 2019.

- **Tier II Reporting** – Duke Energy submitted a Tier II report, listing hazardous materials storage for reporting year 2018, on February 20, 2019.

- **Waste Unit Compliance Boundaries** – NCDEQ issued a letter dated August 25, 2017 to Duke Energy regarding compliance boundaries for North Carolina coal ash facilities. On February 15, 2018, Duke Energy submitted to the NCDEQ an updated compliance boundary map for the Buck Facility. NCDEQ responded on February 27, 2018, with requested revisions regarding the establishment of compliance boundaries at the Buck Facility. On March 7, 2018, Duke Energy submitted to NCDEQ an updated compliance boundary map for the Buck Facility in accordance with the request by the NCDEQ. The updated compliance boundary map for the Buck Facility is included in the new NPDES permit No. NC0004774, which became effective on November 1, 2018.

- **CCR Rule** – The Coal Combustion Residuals Rule (CCR Rule, 40 CFR, part 257, Subpart D) identifies standards for the disposal of CCR in landfills and surface impoundments. Basins 1, 2, and 3 are subject to the CCR Rule since the Buck Facility continues to be used for power generation. Basin 1 has a CCR groundwater monitoring network consisting of 26 downgradient wells and two background wells. Basins 2 and 3 are part of a separate multi-unit CCR groundwater monitoring network that consists of 26 downgradient wells and four background wells. Tables 1a, 1b, and 1c summarize the CCR reports and plans posted by Duke Energy on its publicly available website in accordance with the CCR Rule for the Buck Facility.

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On March 14, 2018, Duke Energy provided notice on Duke Energy's public website that Basins 1, 2, and 3 are now in the CCR assessment monitoring program due to statistically significant increases over the background values of the Appendix III parameters.

On November 7, 2018, Duke Energy posted on Duke Energy's public website the required location restrictions for impoundments, which stated Basins 1, 2 and 3 did not meet the surface impoundment standard for placement above the uppermost aquifer (40 CFR § 257.60(a)). Basins 1 and 3 also did not meet the surface impoundment standard for wetlands (40 CFR § 257.61(a)). Failure to meet the wetlands restriction requires Duke Energy to cease placing CCR and non-CCR waste streams into Basins 1 and 3 and begin closure by April 12, 2019. On February 7, 2019, the placement of waste streams into Basins 1, 2 and 3 permanently ceased. On March 26, 2019, Duke Energy provided notice on Duke Energy's public website the Notice of Intent to Close Basins 1, 2 and 3.

On December 14, 2018, Duke Energy provided notice on Duke Energy's public website that the following CCR Rule Appendix IV constituents were detected at levels above the applicable Groundwater Protection Standard (GWPS).

Basin 1

- Cobalt

Basin 2

- Cobalt
- Lithium

Basin 3

- Cobalt
- Lithium

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On February 19, 2019, Duke Energy provided notice on Duke Energy's public website that an assessment of corrective measures was initiated for Basins 1, 2, and 3 in accordance with 40 CFR § 257.96(a). Duke Energy posted to their operational record a CCR Assessment of Corrective Measures Reports dated April 10, 2019 for Basins 1, 2, and 3.

- **Coal Ash Management Act of 2014 (CAMA)** – NCDEQ assigned each of the three ash basins at the facility an "Intermediate Risk" classification under CAMA. An intermediate risk classification requires excavation, removal, and safe storage of the Buck Facility's coal ash by December 31, 2024. Since then, Duke Energy completed the measures outlined in House Bill 630, including installation of alternative potable water supplies for residents living near the facility and obtaining NCDEQ approval for structural improvements to the basins. As a result, NCDEQ revised the site's ash basins' risk ranking to low on November 14, 2018. The low-risk ranking extends the closure deadline to June 2030.

  Other CAMA requirements include identification of drinking water supply wells within one-half mile of the facility, submittal of Groundwater Assessment Plans, installation of and multiple rounds of sampling from assessment wells, submission of Groundwater Assessment Reports summarizing groundwater investigations, submission of an Annual Groundwater Protection and Restoration Report, submission of Discharge Assessment Plans to characterize seeps, submission of a Groundwater Corrective Action Plan, and ash basin closure. To date, these activities have been completed in accordance with the schedule required under CAMA.

  On December 21, 2018, NCDEQ issued Duke Energy optimized Interim Monitoring Plans (IMPs) for all 14 Duke Energy facilities handling coal ash in North Carolina, with groundwater sampling to begin in the first quarter of 2019.

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Under CAMA, Duke Energy submitted to NCDEQ the 2018 Groundwater Protection and Restoration Annual Report on January 25, 2019 and the required Submittal of 2018 Surface Water Protection and Restoration Annual Report on January 21, 2019, both regarding the Buck Facility.

In a letter dated March 20, 2019, Duke Energy responded to NCDEQ's December 21, 2018 letter regarding the optimized IMPs for all 14 Duke Energy Facilities. Duke Energy's letter provided clarification and requested NCDEQ's concurrence on a few monitoring and reporting details related to the IMPs. NCDEQ approved these details for several sites, including the Buck Facility, on April 4, 2019. Pursuant to Duke Energy's March 20, 2019 letter, the Buck Facility CAMA groundwater monitoring network consists of sampling 32 wells quarterly and 61 wells sampled semi-annually beginning the first quarter 2019.

1.2.3 Dam and Other Structural Permits and Approvals

Five active dams associated with the ash management operations exist on-site. The dams were grandfathered in under North Carolina's Session Law 2009-390 (Senate Bill 1004, effective January 1, 2010). Under this grandfathering, the original design of the dams is not subject to the current design standards for new construction, although modifications after the effective date may be subject to these standards.

The five dams are identified as follows:

- Main Dam (ROWAN-047)
- New Additional Primary (ROWAN-068)
- Basin 1 to Basin 2 Dam (ROWAN-069)
- Basin 2 to Basin 3 Dam (ROWAN-070)
- Divider Dam (ROWAN-071)

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Each of these dams has a high hazard classification under the North Carolina Dam Safety system.

Over the last year, a modification was completed to the Basin 3 spillways to facilitate better mixing of discharged water. As-built drawings showing final construction details for this project were completed on June 10, 2019 and an inspection by NCDEQ is scheduled for early July 2019. Utilities associated with dewatering activities were also installed in the Main Dam and Intermediate Dam, and a Water Treatment Pad and associated infrastructure were installed in the Intermediate Dam.

1.2.4 Audit Observations and Update of Buck Facility Activities

While on-site, the Audit Team observed the passive decanting of Basin 1 and the active (pumping) decanting of water in Basins 2 and 3. The Audit Team also observed the ongoing installation of the ash beneficiation system for the CCR materials at the Buck Facility, which is expected to be completed and fully operational by May 2020. A new entrance road to the plant had also been constructed to minimize the impact of beneficiation truck traffic to local residents.

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2.0 AUDIT SCOPE AND SUBJECT MATTER

The Audit was completed in accordance with the court documents and the Audit scoping document agreed to by Duke Energy and the United States. A description of the scope is provided in Attachment A. The Audit included ash management activities, including aspects of generation that affect the nature of the waste streams from the point of generation into surface impoundments or ash management basins, landfills, and/or storage piles. The Audit focused on the activities at the facility since the date of the last Audit, which was June 13-14, 2018.

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3.0 AUDIT FINDINGS

The following Finding at the Buck Facility was identified by the Audit Team.

3.1 EXCEEDANCES OF THE STATE GROUNDWATER QUALITY STANDARDS

Requirement – The State groundwater rules establish maximum contaminant levels for groundwater at or beyond the compliance boundaries for the ash basins. *See* 15A NCAC 02L.0202. 15A NCAC 02L.0103(d) provides that "[n]o person shall conduct or cause to be conducted, any activity which causes the concentration of any substance to exceed that specified" under the Class GA standards or the interim maximum acceptable concentrations (IMACs) established for groundwater quality pursuant to 15A NCAC 02L.0202. Further, under N.C.G.S.A. § 143-215.1(i), "[a]ny person … who is required to obtain an individual permit … for a disposal system under the authority of N.C.G.S.A. § 143-215.1 [water pollution control] … shall have a compliance boundary … beyond which groundwater quality standards may not be exceeded." *See also* 15A NCAC 02L.0102(3) (defining "compliance boundary" as "a boundary around a disposal system at and beyond which groundwater quality standards may not be exceeded").

In addition, under N.C.G.S.A. § 143-215.6A(a)(1), civil penalties may be assessed against any person who violates any standard established by the NCDEQ under the authority of N.C.G.S.A. § 143-214.1, which covers groundwater standards.

Finding – Constituents exceeding the standards for Class GA waters, established in 15A NCAC 2L.0202, were documented in monitoring wells located at or beyond the compliance boundaries for Basins 1, 2, and 3. Based on the review of the 2018 and 2019 CAMA groundwater monitoring analyses and the 2018 NPDES groundwater monitoring analyses, boron, cobalt, iron, manganese, sulfate, and total dissolved solids (TDS) were noted to exceed the 2L or IMAC groundwater standards, or the NCDEQ-approved provisional background threshold values (PBTVs) if the PBTV was greater than the 02L or IMAC groundwater standards, one or more times at or beyond the compliance boundaries of Basins 1, 2, and 3. The compliance boundaries, well locations, and

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a summary of the 2018 and 2019 groundwater data are provided in Attachment B to this report. Attachment C provides the 2018 NPDES groundwater data.

Duke Energy has stated the opinion that, pursuant to a September 2015 Settlement Agreement with the NCDEQ, "Duke Energy is not subject to any further financial penalties for exceedances of groundwater standards" and "Duke Energy is not subject to any further enforcement action based on exceedances of groundwater standards as long as it remains in substantial compliance with CAMA groundwater requirements."

The CAM has advised the Audit Team that the Audit scope does not include an evaluation of compliance with the September 2015 Settlement Agreement. Therefore, the Audit Team does not take a position on Duke Energy's opinion.

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4.0 OPEN LINES OF INQUIRY

Open Lines of Inquiry are items identified by the Audit Team while on-site that, due to limited available information or the need for additional research, could not be determined as being in compliance or out of compliance. The Audit Team did not identify any Open Lines of Inquiry.

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5.0 AUDIT APPROACH

5.1 ON-SITE ACTIVITIES

During its time on-site, the Audit Team conducted an opening conference with facility personnel to discuss the scope of work and the plan for accomplishing necessary tasks while at the facilities. A site tour of the coal ash management and program support areas was subsequently completed. Following the tour, the Audit Team conducted a review of pertinent files, interviews with facility representatives, and verification of facility activities related to the ECPs, written programs, and permits. A debrief was conducted each audit day to advise the facility representatives of audit progress, open lines of inquiry, possible audit findings, and needs for the next day. At the completion of the Audit, the Audit Team led a verbal discussion of draft Audit findings with facility representatives.

5.2 STANDARDS OF PRACTICE

The fieldwork portion of the Audit was conducted on June 26-27, 2019 with compliance reporting commencing May 14, 2015, the date of the Court's judgments. The Audit focused on the activities at the facility since the date of the last Audit, which was June 13-14, 2018 and was based on:

- Physical inspections of the facility;
- Examination of selected administrative and operating records made available by facility staff at the Audit Team's request;
- Interviews and discussions with key facility management and staff; and
- Verification procedures designed to assess the facility's application of, and adherence to, terms of the Probation, environment laws and regulations, and site policies and procedures. In addition, the Audit Team reviewed the facility's adherence to good management practices.

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The Audit followed established audit protocols and procedures. It should be understood that the Audit consisted of evaluating a sample of practices and was conducted over a short period of time. Efforts were made toward sampling major facets of environmental performance during the period under review. This method is intended to uncover major system deficiencies and the Audit may not have identified all potential problems.

To support the overall independence of the audit process, the Audit included an auditing professional certified by the Board of Environmental, Health and Safety Auditor Certifications (BEAC). BEAC is an accredited professional certification board that issues the Certified Professional Environmental Auditor (CPEA) designation to qualified auditors. Under BEAC, auditor independence is a key criterion for the implementation of an effective third-party audit program. The Audit was implemented in accordance with the standards related to auditor independence.

The process by which the Audit was conducted was consistent with the general state of the art of environment auditing and the best professional judgment of the Audit Team. To conduct the Audit, the team implemented a formal approach, drawing on process guidance from both BEAC and the Auditing Roundtable (AR) guidance documents. Guidance documents included:

- *Standards for the Professional Practice of Environmental, Health and Safety Auditing*. Prepared by the Board of Environmental, Health and Safety Auditor Certifications, 2008.

- ISO 19011:2002 – Guidelines for Quality and/or Environmental Management Systems Auditing. Prepared by the International Organization for Standardization, 2002.

- Standard for the Design and Implementation of an Environmental, Health and Safety Audit Program. Prepared by The Auditing Roundtable, Inc., 1995.

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- Minimum Criteria for the Conduct of Environmental, Health and Safety Audits, Prepared by The Auditing Roundtable, Inc.

5.3 REPRESENTATIVE SAMPLING

When confronted with a large population of data to review or equipment to inspect, auditors employed representative sampling techniques to evaluate records over the audit period requested, and as necessary, for physical inspection of some types of common equipment. The sample size for records reviews or equipment inspections required professional judgment.

The auditor's judgement considered the following:

- The outcome of the evaluation of the records sampled. If problems are found in the representative sample, more records may need to be examined to evaluate compliance status.
- Potential for or severity of non-compliance.
- The general appearance and observed practices of certain operating areas.
- Information obtained during an interview that indicates a potential problem.
- Other specific information or guidance from the CAM.
- Time available during the Audit.

Auditors also employed the following types of sampling techniques, depending upon the characteristics of a specific population:

- Random sampling – every item has an equal chance of being selected.

- Interval sampling – select every nth item, (e.g., every third manifest in chronological order as contained in facility files).

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- Block sampling – auditor uses his/her judgment to select a specific block of items, (e.g., petroleum storage tank inspections from April to October).

- Stratified sampling – population is divided into groups, which are then sampled through random or judgmental techniques.

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TABLES

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TABLE 1A
Additional Primary Pond (Basin 1)
Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
Annual Meeting with Local Emergency Responders 2019	Design Criteria	05/29/2019
CCR Assessment of Corrective Measures Report	Groundwater Monitoring and Corrective Action	05/07/2019
Notification of Intent to Close	Closure and Post Closure Care	03/26/2019
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Fugitive Dust Control Plan	Operating Criteria	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan for Buck Ash Basins	Design Criteria	10/01/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	07/17/2018
Annual Meeting with Local Emergency Responders 2018	Design Criteria	06/28/2018
Notice of Establishment of an Assessment Monitoring Program - Buck Additional Primary Pond - Ash Basin 1	Groundwater Monitoring and Corrective Action	03/14/2018

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TABLE 1A
(Continued)

Document Name	Category	Release Date
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Emergency Action Plan for Buck Ash Basins Revision 007A	Design Criteria	01/25/2018
Buck Inundation Maps	Design Criteria	01/25/2018
2017 Annual CCR Fugitive Dust Control Report-Buck	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Buck Additional Primary Pond (Ash Basin 1)	Groundwater Monitoring and Corrective Action	10/25/2017
Groundwater Monitoring System Certification-Buck Additional Primary Pond (Ash Basin 1)	Groundwater Monitoring and Corrective Action	10/25/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	07/11/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	06/29/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report	Operating Criteria	06/23/2016
Coal Combustion Residual Fugitive Dust Control Plan	Operating Criteria	11/12/2015
Annual Surface Impoundment Report (Initial)	Operating Criteria	02/12/2016

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TABLE 1A
(Continued)

Document Name	Category	Release Date
Annual Surface Impoundment Report Revision 1	Operating Criteria	02/19/2016

*Tables generated from information on Duke Energy's CCR website on June 13, 2019

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TABLE 1B
Primary Pond (Basin 2)
Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
Annual Meeting with Local Emergency Responders 2019	Design Criteria	05/29/2019
CCR Assessment of Corrective Measures Report	Groundwater Monitoring and Corrective Action	05/07/2019
Notification of Intent to Close	Groundwater Monitoring and Corrective Action	03/26/2019
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Fugitive Dust Control Plan	Operating Criteria	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan for Buck Ash Basins	Design Criteria	10/01/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	07/17/2018
Annual Meeting with Local Emergency Responders 2018	Design Criteria	06/28/2018
Notice of Establishment of an Assessment Monitoring Program - Buck Primary Pond - Ash Pond 2	Groundwater Monitoring and Corrective Action	03/14/2018

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TABLE 1B
(Continued)

Document Name	Category	Release Date
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Emergency Action Plan for Buck Ash Basins Revision 007A	Design Criteria	01/25/2018
Buck Inundation Maps	Design Criteria	01/25/2018
2017 Annual CCR Fugitive Dust Control Report-Buck	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Buck Primary Pond (Ash Basin 2)	Groundwater Monitoring and Corrective Action	10/25/2017
Groundwater Monitoring System Certification-Buck Primary Pond (Ash Basin 2)	Groundwater Monitoring and Corrective Action	10/25/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	07/11/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	06/29/2017
Periodic Structural Stability Assessment Revision 2	Design Criteria	04/28/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment Revision 1	Design Criteria	11/16/2016
Initial Structural Stability Assessment Revision 0	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report	Operating Criteria	06/23/2016
Coal Combustion Residual Fugitive Dust Control Plan	Operating Criteria	11/12/2015
Annual Surface Impoundment Report (Initial)	Operating Criteria	02/12/2016

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TABLE 1B
(Continued)

Document Name	Category	Release Date
Annual Surface Impoundment Report Revision 1	Operating Criteria	02/19/2016

*Tables generated from information on Duke Energy's CCR website on June 13, 2019

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TABLE 1C
Secondary Pond (Basin 3)
Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
Annual Meeting with Local Emergency Responders 2019	Design Criteria	05/29/2019
CCR Assessment of Corrective Measures Report	Groundwater Monitoring and Corrective Action	05/07/2019
Notification of Intent to Close	Groundwater Monitoring and Corrective Action	03/26/2019
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Fugitive Dust Control Plan	Operating Criteria	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan for Buck Ash Basins	Design Criteria	10/01/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	07/17/2018
Notice of Establishment of an Assessment Monitoring Program - Buck Secondary Ash Pond - Ash Pond 3	Groundwater Monitoring and Corrective Action	03/14/2018

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TABLE 1C
(Continued)

Document Name	Category	Release Date
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Emergency Action Plan for Buck Ash Basins Revision 007A	Design Criteria	01/25/2018
Buck Inundation Maps	Design Criteria	01/25/2018
2017 Annual CCR Fugitive Dust Control Report-Buck	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Buck Secondary Pond (Ash Basin 3)	Groundwater Monitoring and Corrective Action	10/25/2017
Groundwater Monitoring System Certification-Buck Secondary Pond (Ash Basin 3)	Groundwater Monitoring and Corrective Action	10/25/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	07/11/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	06/29/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report	Operating Criteria	06/23/2016
Coal Combustion Residual Fugitive Dust Control Plan	Operating Criteria	11/12/2015

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TABLE 1C
(Continued)

Document Name	Category	Release Date
Annual Surface Impoundment Report (Initial)	Operating Criteria	02/12/2016
Annual Surface Impoundment Report Revision 1	Operating Criteria	02/19/2016

*Tables generated from information on Duke Energy's CCR website on June 13, 2019

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ATTACHMENT A

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ATTACHMENT A
AUDIT SCOPE

A-1 GENERAL AUDIT SCOPE ITEMS

The general audit scope items included:

- Review and evaluation of documentation for maintenance and repair of structures and equipment used for coal ash disposal,

- Review and evaluation of documentation of modifications, failures, leaks, damage, disrepair and other problems at the coal ash management units,

- Review and evaluation of documentation of efforts to correct failures, leaks, damage, disrepair and other problems where they determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding,

- Review and evaluation of documentation of communication of the items above within the organization,

- Review and evaluation of documentation associated with the specific environmental compliance items described below and laws, regulations, and policies associated these items and

- Review of compliance with administrative aspects and regulatory submissions related to coal ash management-specific regulations, including:

  - Coal Combustion Residuals — 40 CFR Part 257 Subpart D
  - NC Coal Ash Management Act of 2014 — NC General Statutes Chapter 130A, Article 9

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More specific items which were addressed in the audits to comply with the General Audit Scope are described below.

A-2 SPECIFIC COMPLIANCE WITH THE ECP-NC

The following items related to specific ECP-NC compliance were reviewed as part of the audit:

1. Verify maintenance and sufficient funding of corporate compliance organizations (ABSAT, CCP organization, National Ash Management Advisory Board). Where a root cause of a compliance finding appears in an auditor's judgment to result from inadequate funding, the AGC/ELM audit team will identify this in the audit finding.

2. Verify timely production of satisfactory Compliance Officer (CO) reports to the CAM relating to the development, implementation, and enforcement of the ECP-NC. No auditing work is associated with this work at this time.

3. Evaluate existence and efficacy of toll-free hotline/e-mail inbox for violation reporting, including the appropriateness of the follow-up investigation and disposition of each reported matter. This requirement will be evaluated for the first year of audits and then reassessed.

4. Evaluate completion and efficacy of periodic notices (via Internet, Intranet, email, notices in employee work areas, and publication in community outlets) to employees and the public of the availability of the toll-free hotline and electronic mail inbox.

5. Evaluate training materials and curricula utilized in the mandated training program, particularly those tailored to employee's specific job descriptions, to determine whether it advances the goal of "ensuring that every domestic employee of Duke

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Energy Corporation and its wholly-owned or operated affiliates understands applicable compliance policies and is able to integrate the compliance objectives in the performance of his/her job." Ensure that the subjects specifically named in the plea agreements are covered by the training (namely, notice and reporting requirements in the event of a release or discharge and the safe and proper handling of pollutants, hazardous substances and/or wastes.)

6. Evaluate whether Defendants are using "Best Efforts" to comply with the obligations under the ECP-NC. Where the Audit Team makes compliance findings, the audit team will, upon request, provide their opinion on whether this best efforts standard applies, and if so, whether best efforts have been used.

7. Verify compliance at each facility with the specific procedures and protocols set forth in the ECP-NC.

A-3 SPECIFIC COMPLIANCE WITH OTHER PROVISIONS OF THE PLEA AGREEMENT

The following items related to specific items in the Plea Agreement were reviewed as part of the audit:

1. Determine whether Defendants have opened, expanded, or reopened any coal ash or coal ash wastewater impoundment and, if so, verify that they are lined and do not allow unpermitted discharges of coal ash or coal ash wastewater to waters of the United States.

2. Verify that Defendants have determined the volume of wastewater and coal ash in each wet-storage coal ash impoundment in North Carolina as described in the plea agreements and that written or electronic records of this information is maintained

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in a location available to facility staff and employees responsible for making environmental or emergency reports.

3. Review citations/notices of violation/notices of deficiency related to violations of federal, state, or local law to assure that they have been properly relayed to the Court and, as appropriate under the plea agreements, determine their materiality.

4. Evaluate Defendants' efforts to close coal ash impoundments at Dan River, Riverbend, Asheville, and Sutton for legal compliance.

5. Note any observations made during the audit that cause concern regarding the assets and/or security available to the Defendants to meet the obligations imposed by the Judgment in this case.

A-4 GENERAL ENVIRONMENTAL COMPLIANCE SUBJECT AREAS

The following items related to General Environmental Compliance were reviewed as part of the audit:

1. Assess all waste streams from Duke Energy facilities with coal ash impoundments. Review Duke Energy's processes, procedures, and practices, as well as compliance with those processes, procedures, and practices, for:

   a. identifying waste streams (especially, but not limited to, waste streams with discharge points into bodies of water),
   b. identifying and communicating any modifications or changes, or potential modifications or changes, to waste streams,
   c. ensuring proper handling/disposal of waste streams,
   d. identifying, preventing, and mitigating any risks or hazards that could affect waste streams and/or the disposal of waste streams, and

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e. ensuring proper permitting for waste streams.

For Item 1.d., the Audit Team evaluated such risk/hazard issues where there were compliance findings associated with waste streams.

2. Review and evaluate documentation of:

   a. Maintenance and repair of structures and equipment related to coal ash disposal,
   b. Modification of the coal ash impoundments and related pollution prevention equipment and structures,
   c. Failures, leaks, damage, disrepair, and other problems,
   d. Communication of the information described in a-c within the organization, and
   e. Efforts to correct failures, leaks, damage, disrepair, and other problems.

3. Assess the employees responsible for inspection, maintenance, and repair of coal ash basins and related structures and equipment. The assessment included an assessment of the workloads of such employees to assure that Duke Energy's facilities are adequately staffed. These assessments were made where the Audit Team determines that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

4. Review the results and recommendations of any other audits (internal or external/state mandated) and assess Duke Energy's implementation of those recommendations.

5. Review and assess Duke Energy's processes, procedures, and practices for identifying, communicating, and addressing problems and potential problems at its coal ash basins (leaks, unpermitted discharges, etc.).

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6. Review and assess Duke Energy's policies, procedures, practices, and equipment for handling emergency releases from its coal ash basins and evaluate the personnel with duties in such situations.

7. Verify that Duke Energy is complying with its NPDES wastewater and stormwater permits, as well as other relevant environmental permits. This should include verifying Duke Energy's timely submission of permit applications, permit renewal applications, and responses to requests for additional information from the relevant regulatory authority.

8. Review and assess any actions or measures Duke Energy has undertaken to assure accountability and prevent recurrences when problems and/or failures occur (i.e. disciplinary actions, re-training, revision to policies and procedures, etc.). This review will be completed where the audit team determines that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

9. Review and assess compliance with the following environmental regulations, as applicable to the management of coal ash:

a. Wastewater Discharges	40 CFR 122; 15A NCAC 2H.0100 *et seq.*
b. Stormwater Discharges	40 CFR 122.26; 15A NCAC 2H.1000 *et seq;* NC General Permit (Construction) No. NCG010000
c. NC Groundwater Standards	15A NCAC 02L.0202(h)
d. Hazardous Waste Management	15A NCAC 13A.0100 to 13A.0107
e. Oil Pollution Prevention	40 CFR Part 112
f. Air Pollution (Title V)	15A NCAC 2Q, and
g. Hazardous Chemicals (Tier II)	40 CFR Part 370.

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Reviews also included an analysis of overall compliance and the status and security of the asset. Subsequent reviews of individual facilities will evaluate the movement towards compliance. The Audit did not include an evaluation of compliance with the September 2015 Settlement Agreement with NCDEQ.

A–5 LIST OF PERMITS AND PROGRAMS DEEMED TO BE EITHER DIRECTLY OR INDIRECTLY IN SUPPORT OF ASH MANAGEMENT

During the audit, the Audit Team reviewed a variety of written programs developed and implemented by Duke Energy and facility staff. State-issued permits and supporting documentation relative to environmental programs and geotechnical aspects of ash basin management were also requested and reviewed.

Requested documents, pertinent to management of ash in basins, landfills, ponds, etc. were outlined in the pre-audit questionnaire for each facility and included, but were not limited to:

1. The Compliance Register developed for ETrac for the Site.

2. The Duke Energy Operations Manual for the facility.

3. A site plan, site map, or aerial photo which shows the entire facility and key features of the facility, including NPDES outfalls associated environmental monitoring locations, storage tanks, etc.

4. Most recent 2 years of maintenance, monitoring, and inspection records for each coal ash/CCR basin (just the physical inspections, not the groundwater records).

5. A “Phase 1 and Phase 2” summary of ash basin conditions prepared by an outside consultant.

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6. Duke Energy's permitting plans for addressing ash impoundments and landfills at this facility.

7. Applicable pages from the Duke Energy basin-by-basin coal ash/CCR project tracking document for this facility.

8. Original basin/landfill/coal ash management unit construction records.

9. Documentation of changes to these units.

10. Coal ash unit construction permit application and approval.

11. State-issued permits and application materials for permits associated with coal ash/CCR management (including, e.g., dam permits).

12. Any currently effective state order, consent order, or similar state direction that addresses coal ash/CCR management at the site.

13. Records required to be maintained in the site's operating record under the federal CCR regulation and/or any state CCR regulatory program.

14. Records of off-site ash shipments from May 2015 forward.

15. Stormwater permit application and approval for all outfalls.

16. Industrial wastewater (NPDES/POTW) permit application and approval for all outfalls/discharges.

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17. Industrial and stormwater sampling and monitoring records, and any corrective action plans (last 2 years).

18. Stormwater pollution prevention plan.

19. Landfill operating permit with maintenance and monitoring requirements.

20. Landfill leak detection and groundwater monitoring records from the last 2 years along with any workplans that describes the rationale for the monitoring system at the Site.

21. Landfill operating permit with maintenance and monitoring requirements.

22. Copies of any air permits and applications for coal ash units and ancillary operations.

23. Any testing and monitoring records completed to comply with the air permits.

24. Any notices of violations associated with the coal ash/CCR management activities received over the last 2 years.

25. Copy of SPCC Plan.

26. Community Right-to-Know
    a. Copies of lists of hazardous chemicals or MSDSs submitted;
    b. Copies of Tier I or II reports; and
    c. Copies of Form R (toxic release inventory) reports.

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27. Copies of communications with employees and the public regarding availability of toll-free hotline and electronic mail inbox for reporting suspected environmental violations.

28. Management Systems:
    a. List of responsible party for each environmental activity.
    b. All environmental-related training records.
    c. All environmental policies and procedures.
    d. Organization chart.
    e. Site diagram identifying storage areas, tanks, etc.

29. Employee training records related to environmental programs and ash management policies.

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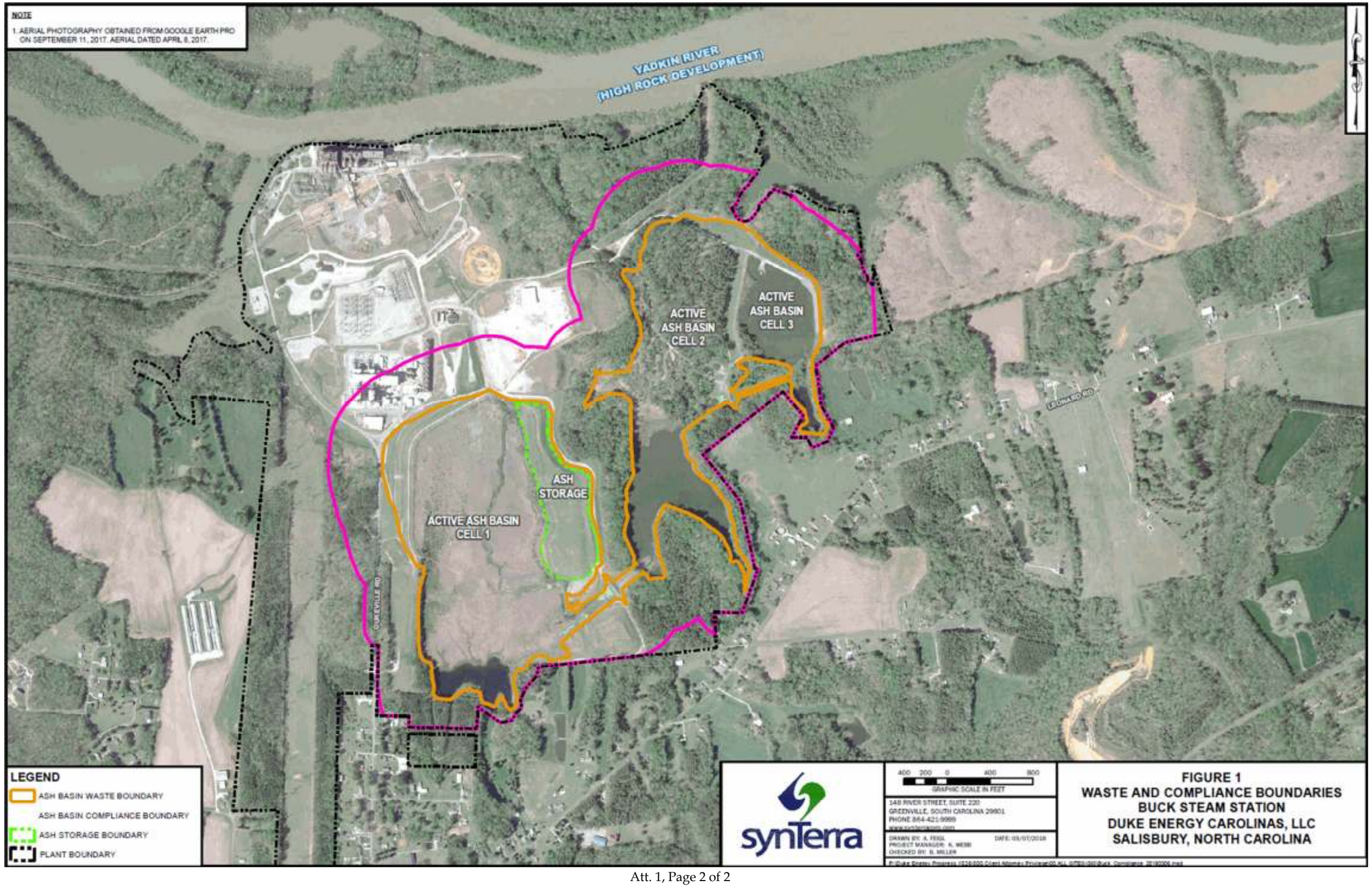
ATTACHMENT B

Compliance Boundaries, Well Locations and 2018 and 2019 Groundwater Data



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NOTES:

SAMPLE LOCATIONS WERE DERIVED FROM VARIOUS SOURCES AND ARE A MIX OF SURVEYED AND APPROXIMATE LOCATIONS. THEREFORE, SAMPLE LOCATIONS ARE TO BE DEEMED APPROXIMATE.

AERIAL PHOTOGRAPHY OBTAINED FROM GOOGLE EARTH PRO ON NOVEMBER 2, 2018. AERIAL WAS COLLECTED ON JULY 8, 2018.

DRAWING HAS BEEN SET WITH A PROJECTION OF NORTH CAROLINA STATE PLANE COORDINATE SYSTEM FIPS 3200 (NAD83).

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YADKIN RIVER (HIGH ROCK DEVELOPMENT)

DUKEVILLE ROAD

LEONARD ROAD

BUCK STEAM STATION

ASH BASIN CELL 3

ASH BASIN CELL 2

ASH STORAGE

ASH BASIN CELL 1

CCR-27D
GWA-12S/BRU
GWA-5S/BRU
CCR-18S/D
BS SW001AA
PUMPHOUSE
GWA-18S/DA
GWA-18D
S-5
S-15
S-13
CCR-28D
GWA-6S/BR
S-14
GWA-6BRL/BRU
CCR-17S/D
MW-11S/D/BR/BRL
S-6
MW-3S/D
AB-9BRA/BRUA
GWA-4S
MW-10D
CCR-16SA/DA
AB-9S
GWA-4D
MW-4S/D
CCR-26BR
CCR-16S/D
AB-9BR/BRU
S-4
GWA-7S
GWA-7D
CCR-19S/D
CCR-15S/D
AB-6BRU
S-3
AB-7S/SL
SW-AB-7
CCR-20S/D
GWA-19S/D
AB-7BRU
GWA-3S/BR
GWA-3BRU
CCR-21S/D
AB-5S/SL
S-2
AB-8S/D
S-7
GWA-9S/BRA
AB-5BRU
AB-8BRU
GWA-17S
SW-1
GWA-9D
GWA-8D
CCR-14S/D
SW-AB-6
S-1
MW-5S/D
S-8
GWA-9BR
AB-4S/SL
CCR-22S/D
BSSW001S00
S-12
CCR-7S/D
CCR-8S/D
AB-4BR/BRU/BRL
SW-AB-5
S-11
CCR-9S/D
GWA-2S/BRA
MW-9S/D
MW-2S/D
TCP-1
AS-1S
GWA-2BR
SW-AB-4
CCR-23S/D
GWA-22D
CCR-6S/D
AB-1D
AS-1D
GWA-2BRU
MW-12S/D
S-17
AB-10S
SW-AB-3
CCR-24S/D
AB-10D/BR/BRL
S-9
CCR-10S/D
BC-18
CCR-5S/D
AS-2D
BS SW003AA
MW-1S/D
AB-2S/SL/BR
GWA-15S/D/BR
GWA-20S/D
AB-2D
S-16
CCR-11S/D
SW-AB-2
GWA-10S/D
CCR-4S/D
GWA-16S/D/BR
BGSB-GWA-10
AS-3S
AS-3D
GWA-14S/D/BR
CCR-25S/D
CCR-3S/D
AB-3S
AB-3D
CCR-12S/D
GWA-13S
S-10
GWA-11S/D
GWA-13D/SR
MW-13D
BGSB-GWA-11
CCR-13S/D
BG-3S/BRU
CCR-2S/D
BGSB-BG-3
MW-6S/D/BR
SW-AB-1
MW-7S/D
CCR-1S/D
GWA-1S/D
BGSB-GWA-1
GWA-1SB
MW-8S/D/BRA
MW-8BR
SW-2
BG-1S
BG-1DA/BRA
BG-1D/BR
BGSB-BG-1
BG-2S/D
BGSB-BG-2

LEGEND

- GROUNDWATER SAMPLING LOCATION
- SOIL SAMPLING LOCATION
- SOIL AND GROUNDWATER SAMPLING LOCATION
- AREA OF WETNESS (AOW) SAMPLING LOCATION
- SURFACE WATER SAMPLING LOCATION
- ABANDONED MONITORING WELL
- ASH BASIN WASTE BOUNDARY
- ASH BASIN COMPLIANCE BOUNDARY
- ASH STORAGE BOUNDARY
- DUKE ENERGY CAROLINAS BUCK PLANT SITE BOUNDARY

synTerra

DUKE ENERGY CAROLINAS

400 0 400 800
GRAPHIC SCALE IN FEET

148 RIVER STREET, SUITE 220
GREENVILLE, SOUTH CAROLINA 29601
PHONE 864-421-9999
www.synterracorp.com

DRAWN BY: J. KIRTZ DATE: 01/24/2019
PROJECT MANAGER: P. WALDREP
CHECKED BY: J. THAO

P:\Duke Energy Progress.1026\00 GIS BASE DATA\Buck Combined Cycle Station\MapDocs\DEQ MONTHLY\BUCK_Monthly_AllMedia_2019_Working.mxd

FIGURE 1
SAMPLE LOCATION MAP
BUCK STEAM STATION
DUKE ENERGY CAROLINAS, LLC
SALISBURY, NORTH CAROLINA

		PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)										
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
AB-01D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/20/2018	6.1	1510	115	367	<0.5	<0.1	69	0.04	<0.5	0.33	<50	<5	1.2	<0.5	<0.1	3.4
AB-01D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	5.8	1430	107	370	<0.5	0.052 j	72.9	0.082	1	0.39	79	3.8 j	1.3	<0.5	<0.1	3.5
AB-01D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/17/2018	6.0	401	24.7	287	<0.5	0.23	16.9	0.086	0.25 j,B	0.038 j	<50	16.2	0.6	0.3 j	<0.1	10.9
AB-01D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	6.0	1550	73.1	311	<0.5	0.041 j	60.8	0.053	0.66 B	0.22	<50	<5	0.7	<0.5	<0.1	3.4
AB-01D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	6.2	1430	105	320	<0.5	0.088 j	63.4	0.076 S1	<0.5	0.31	<50	<5	0.79	<0.5	<0.1	3.3
AB-02BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/21/2018	11.4	117	19.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-02BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	11.1	124	20.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-02BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/20/2018	11.0	127	21.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-02BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	10.6	158	30.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-02BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	8.8	159	20.2	169	0.21 j	0.89	26.9	0.06 S1	<0.5	0.087 j	<50	4.6 j	<0.5	<0.5	<0.1	5.7
AB-02D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/21/2018	7.4	610	22.7	204	<0.5	0.9	20.3	<0.025	<0.5	1.9	336	461	3.2	<0.5	<0.1	<0.3
AB-02D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	6.7	747	25.1	209	<0.5	0.89	25.7	<0.025 M1,R1	0.26 j	1.6	412	604	1.2	<0.5	<0.1	0.35
AB-02D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/20/2018	6.6	848	27.1	208	0.14 j	0.78	25.4	<0.025	3.5	1.6	373	574	1.2	<0.5	<0.1	0.56
AB-02D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	6.7	924	29.3	219	<0.5	0.68	29.2	<0.025	1.1 B	1.6	279	713	2.5	<0.5	<0.1	0.78 B
AB-02D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	6.8	870	28.5	210	<0.5	0.95	28.7	0.029 S1	<0.5	1.8	386	770	0.86	<0.5	<0.1	0.46
AB-02S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/21/2018	6.5	540	65.2	444	10.2	55.2	180	<0.025	1	21.8	<50	139	33.8	11.8	0.81	70.5
AB-02S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	6.4	720	71.6	457	10.7	44.4	221	<0.025	<0.5	18.9	108	167	28.8	13.9	0.93	103
AB-02S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/20/2018	6.5	1020	70.9 M1	484	20.2	117	259	<0.025	0.28 j	23.2	176	252	26.8	6.6	2.3	246
AB-02S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	6.4	936	80.3	502	11.2	50.8	253	0.034	12.8	24.3	372	185	44.4	7	1	109
AB-02S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	6.5	749	58.6	408	8.5	29.1	196	<0.025	<0.5	21.3	128	152	31	7	0.62	83.8
AB-02SL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/21/2018	8.8	1250	119	636	5	1150	707	<0.025	3.2	0.91	302	131	14.6	<0.5	0.12	39.1
AB-02SL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	7.9	1160	97	600	4.4	1280	781	<0.025	1.1	1	607	163	12.9	<0.5	0.092 j	31.5
AB-02SL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/20/2018	7.8	1020	91	604	4.9	1280	742	<0.025	0.79	1.1	529	142	12.2	<0.5	0.096 j	32.4
AB-02SL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	7.9	1120	94.8 M1	636	4.6	1030 M6	692	<0.025	0.3 j	1.1	169	137	15	<0.5	0.11	36 BC
AB-02SL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	7.9	1030	87.2	626	4	1170	779	<0.025	<0.5	1.3	167	148	15	<0.5	0.12	28.7
AB-03D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/19/2018	6.9	<50	4.3	120	<0.5	0.17	72.1	0.29	<0.5	<0.1	<50	55.4	1.3	<0.5	<0.1	7.2
AB-03D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	6.6	<50	6.5	136	<0.5	0.21	78	0.1	0.33 j	0.54	31.3 j	104	1.2	<0.5	<0.1	7
AB-03D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/17/2018	6.5	<50	2.6	118	<0.5	0.11	65.7	0.62	0.82 B	0.032 j	<50	14	0.2 j	0.22 j	<0.1	9
AB-03D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	6.7	<50	2.3	123	0.13 j	0.19	69.5	0.52	0.76 B	0.071 j	<50	13.4	<0.5	<0.5	<0.1	9
AB-03D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	6.6	<50	2.7 S1	126	<0.5	0.079 j	74.7	0.7	0.63	<0.1	<50	7.3	<0.5	<0.5	<0.1	7.8
AB-03S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/19/2018	7.3	2010	140	610	9.3	114	210	<0.025	<0.5	7.2	759	936	11.5	<0.5	0.32	27.9
AB-03S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	7.1	2120	100	588	5.7	166	220	<0.025	0.14 j	7.8	1370	938	11.5	<0.5	0.3	22.9
AB-03S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/17/2018	6.9	203	126	656	6.6	125	26.2	<0.025	0.18 j,B	5.3	41.6 j	91.4	13.5	0.15 j	0.82	49
AB-03S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	7.2	2060	80.4	588	9.3	61.8	268	<0.025 M1	0.15 j,B	8.2	157	920	15.2	<0.5	0.52	36.1
AB-03S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	7.2	1670	70	479	6.3	59	264	<0.025	1.9	8.5	478	1040	14.2	<0.5	0.48	31.1
AB-04BRL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/19/2018	11.1	<50	107	251 D6	0.76	0.5	64	0.25	<0.5	<0.1	<50	6.2	<0.5	<0.5	<0.1	1.2
AB-04BRL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/17/2018	11.0	27.3 j	118	317	0.56	0.47	82	0.23	0.48 j	0.023 j	<50	25.5	0.33 j	0.21 j	<0.1	1.7
AB-04BRL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	11.3	<50	66.5	374	0.53	0.6	117	<0.025	0.26 j	0.044 j	<50	<5	0.34 j	0.21 j	<0.1	2.5
AB-04BRL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/20/2018	9.6	<50	118	275	1	0.36	39.1	<0.025	0.24 j	0.018 j	<50	48	<0.5	<0.5	<0.1	0.55 BC
AB-04BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/19/2018	8.2	54.8	46.8	366	<0.5	2.8	16.8	<0.025	<0.5	<0.1	<50	20.2	0.76	<0.5	<0.1	0.58
AB-04BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/17/2018	7.6	33.6 j	63.4	296	0.45 j	2.1	24.4	0.071	0.66	0.057 j	76	34.9	1	<0.5	<0.1	0.61
AB-04BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	8.7	47.2 j	57.7	317	0.3 j	2.8	24.7	<0.025	0.32 j	0.055 j	46.8 j	27.4	0.8	<0.5	<0.1	0.57
AB-04BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/20/2018	8.3	61.5	56.6	307	0.22 j	3.5	22.5	0.095	0.37 j	0.066 j	34 j	26.3	0.83	<0.5 M1	<0.1	0.52
AB-04S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/19/2018	6.3	201	151	454	1.5	21.6	52	<0.025 M1	<0.5	33.4	4960	307	58.4	1.4	0.96	12.1
AB-04S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/17/2018	6.8	245	148	417	0.2 j	229	41.7	<0.025	0.22 j	14.1	7320	1330	11.5	0.24 j	0.39	17.3
AB-04S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	6.4	232	161	404	0.68	124	56.1	<0.025	0.65	29.3	1730	371	49	0.3 j	0.96	16.3
AB-04S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/20/2018	6.8	285	143	365	1.1	28.5	64.9	<0.025	0.28 j	24.5	5310	273	44.5	0.42 j	1.1	19.3
AB-04S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/12/2019	6.5	264	119	363	0.41 j	87.2	58.9	<0.025	0.45 j	22.6	6780	393	27.2	<0.5	0.6	13
AB-04SL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/19/2018	9.1	8530 M1	149 M1	363	1.7	439	170	<0.025	<0.5	<0.1	<50	24	4.3	<0.5	<0.1	<0.3
AB-04SL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/17/2018	8.3	7100	34.2 M1,R1	283	0.78	439	225	<0.025	0.41 j	0.17	402	71.1	2.7	0.18 j	<0.1	1.2
AB-04SL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	8.4	8280	135	321	3.4	541	458	<0.025	0.18 j	0.12	828	124	5.3	0.29 j	<0.1	0.4
AB-04SL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/20/2018	9.8	8790	157	339	1.2	512	273	<0.025	0.18 j,B	0.058 j	88	33.9	5.7	<0.5	<0.1	0.36 B,BC
AB-05S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/16/2018	6.9	553	150	845 D6	<0.5	598	230	<0.025	<0.5	1.3	11900	2050	1.9	<0.5	<0.1	2.2
AB-05S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/18/2018	7.1	603	93.4	391	0.43 j	865	277	<0.025	0.28 j	0.25	13000	1780	0.88	<0.5	<0.1	4.5
AB-05S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	6.8	486	78	335	0.12 j	720	361	<0.025	<0.5	0.39	7490	1530	0.72	<0.5	0.037 j	1.6
AB-05S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/13/2018	7.1	665	115	451	0.79	830 M1	324	0.029	0.26 j,B	0.37	9480	1640	0.91	<0.5	0.059 j	5.2
AB-05S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/12/2019	7.0	900	94.1	501	0.98	565	195	<0.025	<0.5	0.93	10600	1370	1.6	<0.5	0.11	10
AB-05SL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/16/2018	6.6	117	<1	128	<0.5	63.2	134	<0.025	<0.5	12.9	17800	3190	0.94	<0.5	0.16	0.74
AB-05SL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/17/2018	6.5	161	0.5 j	136	<0.5	67.7	137	<0.025	<0.5	11.8	18600	3270	0.48 j	<0.5	0.079 j	0.54
AB-05SL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	6.4	139	0.99 j	145	<0.5	72.4	143	<0.025	0.18 j	12	18000	2940	0.6	<0.5	0.08 j	0.55
AB-05SL	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/13/2018	6.3	159	<1	144	<0.5	68	143	<0.025	0.24 j,B	11.1	16900	3010	0.53	<0.5	0.071 j	0.48
AB-06BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/16/2018	6.8	<50	46.3	239	<0.5	1.3	54.9	0.12	1.1	0.22	560	177	1.1	<0.5	<0.1	3

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		PARAMETERS - 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS - 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
AB-06BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/21/2018	6.6	34.5 j	49.8	231	<0.5	0.92	44.5	0.11	0.47 j	0.029 j	300	**118**	2.2	<0.5	<0.1	**2.5**
AB-06BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/16/2018	**6.5**	<50	50.5	236	0.14 j	0.92	46.4	0.1	0.91	0.021 j	**325**	**123**	0.68	<0.5	<0.1	**2.6**
AB-06BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/20/2018	6.7	<50	52.2	234	<0.5	0.55	49.4	0.041	0.4 j,B	0.041 j	**400**	**103**	<0.5	<0.5	<0.1	**3.6 BC**
AB-07BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/19/2018	8.2	<50	21.5	177	<0.5	0.62	12.2	0.038	0.74	<0.1	130	**156**	<0.5	<0.5	<0.1	<0.3
AB-07BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/17/2018	7.8	<50	28.3	176	<0.5	0.66	13.5	0.043	0.6	0.027 j	127	**157**	0.29 j	<0.5	<0.1	0.22 j
AB-07BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	7.8	36.8 j	37.2	184	0.14 j	0.65	15.6	<0.025	0.44 j	<0.1	79.4	**134**	0.3 j	<0.5	<0.1	0.24 j
AB-07BRU	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/20/2018	7.7	32.5 j	39.2	191	0.13 j	0.67	14.6	0.028	0.6 B	0.023 j	101	**135**	0.9	<0.5	<0.1	**0.46 BC**
AB-07S	Between Ash Basin, Cell 2 & 3	Ash Basin, Cell 2 and 3	Source Area	02/19/2018	8.1	499	50.1	307	<0.5	**433**	361	<0.025	<0.5	<0.1	**348**	**226**	1.1	<0.5	<0.1	**0.36**
AB-07S	Between Ash Basin, Cell 2 & 3	Ash Basin, Cell 2 and 3	Source Area	05/17/2018	8.5	560	59.1	250 H1	0.15 j	**413**	301	<0.025	0.14 j	<0.1	194	**118**	0.64	<0.5	<0.1	0.14 j
AB-07S	Between Ash Basin, Cell 2 & 3	Ash Basin, Cell 2 and 3	Source Area	08/15/2018	7.9	607	57	296	0.16 j	**518**	417	<0.025	0.22 j	0.03 j	**490**	**216**	0.82	0.21 j	0.04 j	0.28 j
AB-07S	Between Ash Basin, Cell 2 & 3	Ash Basin, Cell 2 and 3	Source Area	11/21/2018	**8.6**	506	63.5	273	0.2 j	**510**	315	<0.025	0.81	0.015 j	148	**139**	1.1	<0.5	<0.1	0.16 j
AB-08BRU	Within Ash Basin, Cell 3	Ash Basin, Cell 3	Source Area	02/19/2018	7.2	87.1	12.3	205	<0.5	1.3	33.7	<0.025	0.72	0.41	**1080**	**203**	1.3	<0.5	<0.1	**0.62**
AB-08BRU	Within Ash Basin, Cell 3	Ash Basin, Cell 3	Source Area	08/16/2018	7.0	<50	8.8	234	<0.5	0.32	21.5	<0.025	1.2	0.47	**662**	**726**	2	<0.5	<0.1	**1.2**
AB-08BRU	Within Ash Basin, Cell 3	Ash Basin, Cell 3	Source Area	11/20/2018	7.1	65.4	7.5	243	<0.5	0.32	31	<0.025	0.68 B	0.45	188	**151**	1.8	<0.5	<0.1	**1.9 B,BC**
AB-08S	Within Ash Basin, Cell 3	Ash Basin, Cell 3	Source Area	02/19/2018	7.8	**2120**	28.3	332	<0.5	**1020**	**872**	<0.025	<0.5	0.64	**1460**	**265**	1.4	<0.5	<0.1	**3.4**
AB-08S	Within Ash Basin, Cell 3	Ash Basin, Cell 3	Source Area	05/22/2018	8.5	**1850**	27.4	291	0.42 j	**1160**	612	<0.025	0.51 B	0.21	**583**	**115**	2.1 B	<0.5	0.058 j	**3.4**
AB-08S	Within Ash Basin, Cell 3	Ash Basin, Cell 3	Source Area	08/16/2018	7.9	**2100**	31.3	306	0.5	**1290**	**796**	0.039	1.2	0.39	**1490**	**184**	1.5	0.17 j	0.1	**3.8**
AB-08S	Within Ash Basin, Cell 3	Ash Basin, Cell 3	Source Area	11/20/2018	8.1	**2160**	32.4	336	0.39 j	**1080**	**856**	<0.025	0.47 j,B	0.44	**1030**	**207**	1.6	<0.5	0.072 j	**4.2 BC**
AB-09BRA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/21/2018	8.1	117	47.8	265	0.74	0.31	8.3	<0.025	**27.8**	0.6	**391**	34.8	25	<0.5	<0.1	<0.3
AB-09BRA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/21/2018	7.7	174	49.5	258	0.75	0.38	8.6	<0.025	5.7	0.14	65.3	23.3	5.5	<0.5	<0.1	<0.3
AB-09BRA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	7.6	172	52.1	259	**1.7**	0.35	6.7	0.093	0.41 j	0.07 j	<50	5.3	5.4	<0.5	<0.1	**1.9**
AB-09BRA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/14/2018	7.8	139	54.3	271	0.37 j	0.3	6.9	<0.025	0.24 j,BC	0.052 j	<50	8.1	2.7	<0.5	<0.1	**1.1**
AB-09BRA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/07/2019	7.6	141	55.5	274	0.25 j	0.26	7.4	0.035 S1	0.56	0.16	41.2 j	15.6	3.2	<0.5	<0.1	**0.48**
AB-09BRUA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/20/2018	7.7	**1440**	33.7	217	0.85	0.38	37.2	0.031	1.5	<0.1	108	48	1.3	<0.5	<0.1	<0.3
AB-09BRUA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/21/2018	8.4	**1290**	36.2	225	**1.2**	0.45	34.9	<0.025	0.82	0.065 j	77.9	34.7	1.2	<0.5	<0.1	0.3 j
AB-09BRUA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/17/2018	**8.8**	**1370**	38.5	244	**1.5**	0.38	40.9	<0.025	0.96 B	0.081 j	192	**67**	1.1	<0.5	<0.1	0.25 j
AB-09BRUA	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/14/2018	7.5	**1340**	38.8	214	**1.3**	0.25	42.7	<0.025	0.54 BC	0.067 j	101	46.5	0.98	<0.5	<0.1	**0.44**
AB-09S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	02/20/2018	**5.6**	<50	<1	74	<0.5	0.21	44.2	<0.025	0.67	**25.6**	**4430**	**3540**	1.3	<0.5	0.15	**0.5**
AB-09S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	05/21/2018	**5.5**	<50	1.7	77	<0.5	0.26	34.7	<0.025	0.18 j	**27.6**	**4960**	**4370**	1.1	<0.5	0.092 j	0.17 j
AB-09S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	08/15/2018	**5.6**	<50	1.8	82	0.19 j	0.25	36.6	<0.025	0.34 j	**30.1**	**5210**	**4700**	4.4	<0.5	0.086 j	<0.3
AB-09S	Within Ash Basin, Cell 2	Ash Basin, Cell 2	Source Area	11/14/2018	**5.7**	<50	1.2	78	<0.5	0.24	37.4	<0.025	0.42 j,BC	**23.7**	**4360**	**3600**	2.9	<0.5	0.081 j	0.19 j
AB-10BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/19/2018	7.3	**2320**	78.4	325	<0.5	0.1	97.6	0.033	1.4	0.15	<50	30.5	11.7	<0.5	<0.1	**3.9**
AB-10BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	6.9	**2570**	84.7	348	0.26 j	0.12	119	0.12 M1	3.8	0.17	64.8	35.7	14.8	<0.5	<0.1	**8.8**
AB-10BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/16/2018	6.9	**1500**	63.8	339	0.27 j	0.12	60.1	<0.025	1.3	0.29	**411**	47.5	7.2	<0.5	<0.1	**1.8**
AB-10BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	7.4	**1580**	63.8	358	0.2 j	0.13	33.8	0.03	0.64 B	0.12	66.2	23.2	5	<0.5	<0.1	**1.1 B**
AB-10BR	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	7.2	**1350**	59.6	330	0.16 j	0.13	21.8	0.043 S1	1.3 S1	0.26	152 S1	28.4	4.7 S1	<0.5	<0.1	**0.91**
AB-10BRL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/20/2018	**11.6**	<50	79.6	416	<0.5	0.79	38.2	0.46	**20.8**	0.42	292	<5	15.8	<0.5	<0.1	**6.2**
AB-10BRL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/21/2018	**11.3**	25.8 j	85.5	**524**	0.15 j	1.2	27.8	0.22	6.2	0.13	73.1	<5	5.3	0.29 j	<0.1	**5**
AB-10BRL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/17/2018	**11.4**	41.2 j	83	432	**1.3**	0.86	25.8	0.24 M1	2.5	0.037 j	53.6	<5	1.4	0.27 j	<0.1	**5**
AB-10BRL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/19/2018	**11.5**	32.6 j	82.9	400	**1.1**	0.89	22.1	<0.025	1.4	0.029 j	<50	<5	0.86	<0.5	<0.1	**3.9**
AB-10BRL	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	**11.6**	30.2 j	81.7	378	0.99	0.9	18.6	0.47	1.1	<0.1	<50	<5	0.67	<0.5	<0.1	**3.3**
AB-10D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/19/2018	6.7	**2160**	88.8	280	<0.5	0.34	55	<0.025	3.8	0.66	114	**135**	10.7	<0.5	<0.1	**7.9**
AB-10D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/18/2018	6.5	**2380**	99.6	301	0.13 j	0.22	56.1	0.13	3.7	0.83	95.2	**134**	11.2	<0.5	<0.1	**7**
AB-10D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/16/2018	**6.4**	**2170**	98	295	0.11 j	0.16	55	0.038	4.4	**1.4**	**510**	**164**	14.5	<0.5	<0.1	**8.9**
AB-10D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/13/2018	6.5	**2210**	97.4	296	<0.5	0.16	58.4	0.036	7.1	**1.1**	275	**116**	13.9	<0.5	<0.1	**8.5**
AB-10D	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	6.5	**2220**	107	297	<0.5	0.16	53.2	0.069 S1	4.3	0.96	135	**104**	19.2	<0.5	<0.1	**7.3**
AB-10S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/19/2018	**5.4**	<50	1.2	33	<0.5	0.2	24.8	5.6	9.6	**23.3**	**788**	**593**	10.4	<0.5	<0.1	**1.1**
AB-10S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	05/21/2018	**5.3**	<50	1.2	35	0.42 j	0.28	20	2.8	**61.1**	**17.9**	**448**	**498**	59.9	<0.5	0.029 j	**0.74**
AB-10S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	08/16/2018	**5.2**	68.4	1.4	39	<0.5	0.12	28.1	0.2	1.9	**27.5**	224	**157**	7.2	0.24 j	0.039 j	**0.78**
AB-10S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	11/13/2018	**5.2**	<50	1.1	39	<0.5	0.14	27.6	0.065	2.4	**25.9**	**779**	**784**	6.4	<0.5	0.027 j	**1.7**
AB-10S	Within Ash Basin, Cell 1	Ash Basin, Cell 1	Source Area	02/12/2019	**5.1**	<50	0.81 j,S1	40	<0.5	0.086 j	22	0.083 S1	0.42 j	**35**	**416**	**812**	5.9	<0.5	<0.1	**0.97**
AS-01D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/16/2018	6.5	540	35.1	169	<0.5	0.1	49.4	0.098	0.51	<0.1	<50	<5	1	<0.5	<0.1	**2.5**
AS-01D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	05/17/2018	6.6	523	38	179	<0.5	0.1	54.8	0.13	0.98	0.079 j	<50	4.4 j	1.3	<0.5	<0.1	**2.6**
AS-01D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	08/16/2018	6.7	549	42	200	<0.5	<0.1	63.2	0.15	0.92	0.12	41.1 j	8.1	1.9	0.17 j	<0.1	**2.7**
AS-01D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	11/14/2018	6.8	488	40.3	186	<0.5	0.073 j	63	0.11	0.39 j,B	0.057 j	<50	<5	0.6	<0.5	<0.1	**2.4**
AS-01D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/07/2019	7.0	532	41.3	198	<0.5	<0.1	91.5	0.26	<0.5	0.077 j	<50	<5	0.57	<0.5	<0.1	**1.7**
AS-01S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/16/2018	**4.0**	**2330**	**713**	**1240**	<0.5	8.3	<25	2.8	4.5	**236**	**348**	**1510**	**107**	**27.2**	0.15	**0.68**
AS-01S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	05/18/2018	**4.0**	**2340**	**628**	**1080**	0.32 j	6	16.1	2.9	3.1	**259**	98.9	**2080**	**103**	**23.2**	0.17	0.17 j
AS-01S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	08/16/2018	**4.1**	**3150**	**795**	**1220**	<0.5	**11.9**	<50 D3	<0.025	2.1	**336**	<500 D3	**3750**	**118**	**47.4**	<2 D3	**0.46**
AS-01S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	11/14/2018	**4.1**	**2480 D3**	**869**	**1430**	<0.5	7.5	12.8 j,D3	<0.025 M1	1.8	**397**	<250 D3	**3090 D3**	**135**	**26**	**0.23**	**0.34 B**
AS-01S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/07/2019	**4.0**	**3190**	**899**	**1490**	<0.5	4.9	<50 D3	0.1 P4,R0	0.43 j	**426**	<500 D3	**3760**	**159**	**29.2**	**0.23**	**0.44 S1**
AS-02D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/16/2018	7.1	<50	1.8	113	<0.5	0.12	51.6	0.12	<0.5	<0.1	<50	27.6	0.98	<0.5	<0.1	**1.5**
AS-02D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	05/18/2018	6.5	<50	1.6	106	<0.5	0.073 j	44.6	0.15	0.23 j	0.046 j	<50	34.1	0.81	<0.5	<0.1	**1**
AS-02D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	08/16/2018	**8.7**	<50	2.3	147	<0.5	0.082 j	62.5	0.22	0.49 j	0.064 j	184	19.4	1.8	<0.5	<0.1	**1.4**

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			PARAMETERS - 40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS - 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
AS-02D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	11/14/2018	7.0	<50	1.8	110	<0.5	0.1	48.2	0.17	0.59 B	0.78	<50	19.4	1.7	<0.5	<0.1	**0.88**
AS-02D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/07/2019	6.5	<50	1.5 S1	107	<0.5	<0.1	49.6	0.2 S1	<0.5	0.07 j	<50	26	0.86	<0.5	<0.1	**0.82**
AS-03D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/15/2018	7.0	<50	<1	84	<0.5	0.23	16.2	6.8	7.8	<0.1	157	5.3	<0.5	<0.5	<0.1	**7.2**
AS-03D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	05/17/2018	7.2	<50	0.55 j	83	<0.5	0.2	14.4	8.2	6.9	<0.1	111	2.9 j	<0.5	<0.5	<0.1	**8.4**
AS-03D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	08/16/2018	7.2	<50	1.1	78	<0.5	0.24	15.7	7.4	8.5	0.2	**550**	18.8	2.5	<0.5	<0.1	**7.9**
AS-03D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	11/14/2018	7.1	<50	0.86 j	82	<0.5	0.27	13.5	7.2	7.2 BC	0.017 j	60.7	<5	<0.5	<0.5	<0.1	**7.6**
AS-03D	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/12/2019	7.1	<50	0.71 j,S1	82	<0.5	0.18	14.5	8.2	7	<0.1	49.5 j	<5	0.3 j	<0.5	<0.1	**6.8**
AS-03S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/15/2018	**5.3**	<50	<1	61	<0.5	0.21	23.3	0.18	0.52	**1.5**	295	29	0.71	<0.5	<0.1	**0.94**
AS-03S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	05/17/2018	**5.5**	<50	<1	62	0.14 j	0.35	32.5	0.056 M1,R1	3.6	**4.2**	**1280**	**146**	4.2	<0.5	<0.1	**1.3 B**
AS-03S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	08/16/2018	**5.4**	<50	<1	55	<0.5	0.16	24.4	<0.025	0.66	**2.2**	**351**	**57.7**	1.2	<0.5	<0.1	**1.5**
AS-03S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	11/14/2018	**5.5**	<50	<1 M1	60	<0.5	0.14	23.5	0.2	3.6 BC	**2.4**	184	**62.4**	12.8	<0.5	<0.1	**1.2**
AS-03S	Within Ash Basin, Cell 1 Ash Storage Area	Ash Basin, Cell 1	Source Area	02/12/2019	**5.7**	<50	<1	73	<0.5	0.36	31.8	<0.025	<0.5	**5**	**2980**	**250**	2.2	<0.5	<0.1	**0.9**
BG-01BRA	Background, southeast of Ash Basin 1	Background	Background	02/16/2018	8.0	<50	13.1	149	0.93	0.58	13	<0.025	**19.8**	0.39	254	21.9	16.4	<0.5	<0.1	**1.3**
BG-01BRA	Background, southeast of Ash Basin 1	Background	Background	05/21/2018	7.9	<50	8.3	136	0.31 j	0.48	5.2	0.063	0.59	0.037 j	29.2 j	9.4	0.86	<0.5	<0.1	**0.37**
BG-01BRA	Background, southeast of Ash Basin 1	Background	Background	08/16/2018	7.8	<50	13.3	149	0.66	0.48	13.8	0.1	1.3	0.04 j	121	4.8 j	1.4	<0.5	<0.1	**1.2**
BG-01BRA	Background, southeast of Ash Basin 1	Background	Background	11/19/2018	7.8	<50	12.6	166	**2.4**	0.58	15.2	0.038	2.4	0.087 j	83.3	11.4	2.4	<0.5	<0.1	**1.1 B,BC**
BG-01DA	Background, southeast of Ash Basin 1	Background	Background	02/16/2018	**11.6**	<50	7.4	**555**	**5.1**	1.8	65	0.21	5.5	0.17	137	<5	4.8	<0.5	<0.1	**6.9**
BG-01DA	Background, southeast of Ash Basin 1	Background	Background	05/22/2018	**11.6**	<50	6.4	**660**	**6.6**	1.9	41.4	1.6	3.9	0.11	51.2	<5	2	0.34 j	0.056 j	**5.3**
BG-01DA	Background, southeast of Ash Basin 1	Background	Background	08/16/2018	**11.1**	<50	6.2	**670**	**7.1**	1.1	58.6	0.042	0.71	0.051 j	<50	<5	1.3	0.33 j	0.05 j	**4.7**
BG-01DA	Background, southeast of Ash Basin 1	Background	Background	11/19/2018	**10.6**	<50	5.6	203	**1.7**	0.65	17.1	0.68	2.8	0.065 j	42.2 j	<5	1.5	<0.5	0.02 j	**3.3 BC**
BG-01DA	Background, southeast of Ash Basin 1	Background	Background	02/12/2019	**11.5**	<50	6.6 S1	278	**1.5**	0.62	30.7	1.1	1.3	0.054 j	<50	<5	0.54	<0.5	<0.1	**3.3**
BG-01S	Background, southeast of Ash Basin 1	Background	Background	02/16/2018	**6.0**	<50	<1	72	<0.5	0.14	14.6	1.3	1.8	0.52	**348**	**133**	0.96	<0.5	<0.1	**4**
BG-01S	Background, southeast of Ash Basin 1	Background	Background	05/21/2018	**5.5**	<50	0.64 j	40	<0.5	0.14	17.3	1.1	1.3	0.14	92.4	48.1	0.69	<0.5	<0.1	**2**
BG-01S	Background, southeast of Ash Basin 1	Background	Background	08/16/2018	**5.6**	<50	<1	79	<0.5	2.4	12.2	1.7	3.1	0.53	**545**	**82.7**	0.86	<0.5	<0.1	**5.2**
BG-01S	Background, southeast of Ash Basin 1	Background	Background	11/19/2018	**6.1**	<50	<1	80	<0.5	0.091 j	10.2	1.6	2	0.77	257	**110**	0.58	<0.5	<0.1	**7.2 BC**
BG-02D	Background, southeast of Ash Basin 1	Background	Background	02/16/2018	7.4	<50	9.4	131	<0.5	0.26	9.5	0.3	<0.5	<0.1	<50	<5	<0.5	<0.5	<0.1	**6.3**
BG-02D	Background, southeast of Ash Basin 1	Background	Background	05/21/2018	7.3	<50	6.3	116	<0.5	0.24	9.7	0.26	0.43 j	<0.1	<50	<5	0.22 j	<0.5	<0.1	**6**
BG-02D	Background, southeast of Ash Basin 1	Background	Background	08/17/2018	7.3	<50	9.4	133	<0.5	0.19	9.8	0.32	0.52 B	<0.1	27.5 j	<5	0.19 j	<0.5	<0.1	**6.5**
BG-02D	Background, southeast of Ash Basin 1	Background	Background	11/19/2018	7.1	<50	6.7	137	<0.5	0.15	11.1	0.29	0.47 j,B	0.012 j	<50	<5	<0.5	<0.5	<0.1	**6.3**
BG-02S	Background, southeast of Ash Basin 1	Background	Background	02/16/2018	**5.4**	<50	<1	48	<0.5	<0.1	39.2	0.041	<0.5	<0.1	201	8.1	0.82	<0.5	<0.1	<0.3
BG-02S	Background, southeast of Ash Basin 1	Background	Background	05/21/2018	**5.1**	<50	<1	32	<0.5	0.12	33.9	0.079	0.19 j	0.48	99.1	7.4	1	<0.5	<0.1	0.16 j
BG-02S	Background, southeast of Ash Basin 1	Background	Background	08/17/2018	**5.1**	<50	<1	53	<0.5	0.082 j	48.8	0.19	0.2 j,B	**1.4**	124	10.9	1	<0.5	<0.1	0.14 j
BG-02S	Background, southeast of Ash Basin 1	Background	Background	11/19/2018	**5.3**	<50	3.8	59	<0.5	0.085 j	54.1	0.12	0.22 j,B	**2**	<50	11.9	0.98	<0.5	<0.1	**0.41 B**
BG-03BRU	Background, south of Ash Basin 2 and 3	Background	Background	02/15/2018	7.3	<50	9.6	103	<0.5	0.51	17.6	<0.025	<0.5	<0.1	146	35.7	0.71	<0.5	<0.1	**9.3**
BG-03BRU CCR	Background, south of Ash Basin 2 and 3	Background	Background	02/15/2018	7.3	5.8	10.3	109	<0.5	0.58	17.3	NA	0.26 j	0.075 j	NA	NA	NA	0.2 j	<0.1	NA
BG-03BRU	Background, south of Ash Basin 2 and 3	Background	Background	05/16/2018	7.1	<50	10.1 M1	96	<0.5	0.63	18	<0.025 TP	0.32 j	0.083 j	210	**54.1**	0.96	<0.5	<0.1	**7.2**
BG-03BRU CCR	Background, south of Ash Basin 2 and 3	Background	Background	05/16/2018	7.1	7.1	16.3 M1	202	<0.5	0.9	22.4	NA	0.46 j	0.17	NA	NA	NA	<0.5	<0.1	NA
BG-03BRU	Background, south of Ash Basin 2 and 3	Background	Background	08/14/2018	7.1	<50	12.5	114	0.11 j	0.63	19.8	<0.025	0.22 j	0.027 j	144	34.6	0.45 j	<0.5	<0.1	**7.6**
BG-03BRU	Background, south of Ash Basin 2 and 3	Background	Background	11/13/2018	7.1	<50	14.3	116	<0.5	0.49	21	0.03	0.17 j,B	0.025 j	122	29.9	1.2	<0.5	<0.1	**8.6**
BG-03BRU CCR	Background, south of Ash Basin 2 and 3	Background	Background	11/13/2018	7.1	6.5 j,B	10.9	105	0.13 j	0.53	16.8	NA	0.64 B,S1	0.02 j	NA	NA	NA	<0.5	<0.1	NA
BG-03BRU CCR	Background, south of Ash Basin 2 and 3	Background	Background	02/05/2019	7.0	8.9 j	23.4	137	<0.5	0.72	23.6	NA	<0.5	0.11	NA	NA	NA	0.12 j	<0.1	NA
BG-03S	Background, south of Ash Basin 2 and 3	Background	Background	02/15/2018	**5.4**	<50	<1	34	<0.5	0.17	26.6	0.32	0.96	0.66	150	7.2	1	<0.5	<0.1	**0.42**
BG-03S CCR	Background, south of Ash Basin 2 and 3	Background	Background	02/15/2018	**5.4**	1.9 j	<1	37	<0.5	0.071 j	23.4	NA	1.5	0.68	NA	NA	NA	<0.5	<0.1	NA
BG-03S	Background, south of Ash Basin 2 and 3	Background	Background	05/16/2018	**5.5**	<50	<1	35	<0.5	0.058 j	23.2	0.3 TP	0.88	0.71	<50	3.5 j	1.5	<0.5	<0.1	0.23 j,B
BG-03S CCR	Background, south of Ash Basin 2 and 3	Background	Background	05/16/2018	**5.5**	2.5 j	<1	36	<0.5	0.079 j	23.2	NA	1.5	0.74	NA	NA	NA	<0.5	<0.1	NA
BG-03S	Background, south of Ash Basin 2 and 3	Background	Background	08/14/2018	**5.4**	<50	<1	35	<0.5	0.06 j	24.5	0.54	0.86	0.62	269	11.4	0.97	<0.5	<0.1	**0.34**
BG-03S	Background, south of Ash Basin 2 and 3	Background	Background	11/13/2018	**5.5**	<50	<1	32	<0.5	0.058 j	25	0.78	3.5	0.64	45.8 j	4 j	2.1	<0.5	<0.1	0.28 j
BG-03S CCR	Background, south of Ash Basin 2 and 3	Background	Background	11/13/2018	**5.5**	5.5 j,B	<1	39	<0.5	0.068 j	21.8	NA	4.4 S1	0.68	NA	NA	NA	<0.5	<0.1	NA
BG-03S CCR	Background, south of Ash Basin 2 and 3	Background	Background	02/05/2019	**5.4**	4.5 j	<1	33 D6	<0.5	0.075 j	23.7	NA	0.48 j	0.74	NA	NA	NA	<0.5	<0.1	NA
CCR-01D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	**6.4**	3.3 j	3.5	121	<0.5	<0.1	15.7	NA	0.81	0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-01D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	**6.3**	2.8 j,S1	3.5	127	<0.5	0.05 j	15.1	NA	0.34 j	0.048 j	NA	NA	NA	<0.5	<0.1	NA
CCR-01D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/20/2018	**6.3**	4.6 j,S1	3.4	134	<0.5	<0.1	14.1	NA	0.29 j,S1	0.035 j	NA	NA	NA	<0.5	<0.1	NA
CCR-01D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/07/2019	**6.3**	6.1 j	3.7	124	<0.5	0.073 j	13.6	NA	1.9	0.06 j	NA	NA	NA	<0.5	<0.1	NA
CCR-01S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	**5.4**	90.2	19	194	<0.5	0.1	37.4	NA	1.8	**5.5**	NA	NA	NA	<0.5	<0.1	NA
CCR-01S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	**5.3**	83.6	21.2	182	<0.5	0.072 j	31.8	NA	0.18 j	**4.7**	NA	NA	NA	<0.5	<0.1	NA
CCR-01S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/20/2018	**5.4**	86.8	15.1	140	<0.5	<0.1	25.3	NA	0.16 j,S1	**3.5**	NA	NA	NA	<0.5	<0.1	NA
CCR-01S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/07/2019	**5.4**	63.6	11.3	163	<0.5	0.081 j	21.8	NA	0.54	**3.5**	NA	NA	NA	<0.5	<0.1	NA
CCR-02D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	**6.1**	145	12.7	133	<0.5	0.067 j	46.7	NA	0.33 j	0.057 j	NA	NA	NA	<0.5	<0.1	NA
CCR-02D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	**6.1**	142	15 M1	133	<0.5	0.063 j	48	NA	0.14 j	0.055 j	NA	NA	NA	<0.5	<0.1	NA
CCR-02D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/13/2018	**6.1**	127	16.2	139	<0.5	0.06 j	47.1	NA	0.62 B,S1	0.074 j	NA	NA	NA	<0.5	<0.1	NA
CCR-02D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/06/2019	**6.1**	138 M1	16.5	144	<0.5	0.11 S1	48	NA	<0.5	0.11	NA	NA	NA	<0.5	<0.1	NA
CCR-02S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	**5.2**	652	26.4	90	<0.5	0.11	96.9	NA	0.95	**2.9**	NA	NA	NA	<0.5	0.032 j	NA
CCR-02S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	**4.9**	678	28.2	95	<0.5	0.08 j	85.9	NA	0.77	**3.1**	NA	NA	NA	0.32 j	<0.1	NA
CCR-02S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/13/2018	**5.1**	568	33.6	92	0.2 j	0.16	118	NA	2.6 S1	**4.1**	NA	NA	NA	<0.5	<0.1	NA

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			PARAMETERS - 40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS - 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
CCR-02S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/06/2019	4.9	735	28.3	99	0.61	0.28 S1	155	NA	7.1	5.1	NA	NA	NA	0.15 j	<0.1	NA
CCR-03D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	6.2	474	17.3	140	<0.5	0.054 j	48.5	NA	2.7	0.085 j	NA	NA	NA	<0.5	<0.1	NA
CCR-03D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	6.0	529	21	151	<0.5	<0.1	49.5	NA	2.7	0.083 j	NA	NA	NA	<0.5	<0.1	NA
CCR-03D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/13/2018	6.1	390	20.2 M1	150	<0.5	<0.1	45.9	NA	2.5 S1	0.077 j	NA	NA	NA	<0.5	<0.1	NA
CCR-03D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/06/2019	6.1	577	24.7	164	<0.5	0.082 j,S1	51.8	NA	2.3	0.1	NA	NA	NA	0.18 j	<0.1	NA
CCR-03S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	4.9	375	44.8	121	<0.5	0.094 j	75.9	NA	0.41 j	32.7	NA	NA	NA	<0.5	<0.1	NA
CCR-03S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	4.8	360	46.7	115	<0.5	0.062 j	70.9	NA	0.25 j	30.8	NA	NA	NA	<0.5	<0.1	NA
CCR-03S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/13/2018	5.0	318	45	115	<0.5	0.07 j	59.5	NA	0.92 B,S1	31.2	NA	NA	NA	<0.5	<0.1	NA
CCR-03S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/06/2019	4.8	364	38.6	113	<0.5	0.081 j,S1	57.8	NA	<0.5	23.5	NA	NA	NA	0.11 j	<0.1	NA
CCR-04D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	6.4	1.8 j	1.2	156	<0.5	<0.1	6.3	NA	0.64	0.97	NA	NA	NA	<0.5	<0.1	NA
CCR-04D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	6.0	2.1 j,S1	1.3	143	<0.5	0.055 j	6.3	NA	0.68	0.9	NA	NA	NA	<0.5	<0.1	NA
CCR-04D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/19/2018	6.4	1.6 j,S1	1.5	146	<0.5	<0.1	5.8	NA	0.64 B,S1	0.72	NA	NA	NA	<0.5	<0.1	NA
CCR-04D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/06/2019	6.2	4.3 j	1.4 M1	160	<0.5	0.085 j,S1	6.6	NA	0.65	0.75	NA	NA	NA	<0.5	<0.1	NA
CCR-04S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	7.0	6.1	1.9	285	<0.5	0.64	10.3	NA	3.3	0.096 j	NA	NA	NA	<0.5	<0.1	NA
CCR-04S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	7.0	5.2 S1	2.5	291	<0.5	0.68	11.7	NA	2.4	0.24	NA	NA	NA	<0.5	<0.1	NA
CCR-04S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/19/2018	7.1	3.8 j,S1	1.7	267	<0.5	0.34	9.7	NA	1.5 B,S1	0.2	NA	NA	NA	<0.5	<0.1	NA
CCR-04S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/06/2019	7.0	9.5 j	2	295	<0.5	0.5 S1	11.4	NA	2.4	0.43	NA	NA	NA	<0.5	<0.1	NA
CCR-05D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/15/2018	6.6	2160	63.8	295	<0.5	0.27	97.6	NA	0.2 j	0.68	NA	NA	NA	<0.5	<0.1	NA
CCR-05D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	6.5	2190	68.7	308	<0.5	0.23	92.4	NA	0.9	0.72	NA	NA	NA	<0.5	<0.1	NA
CCR-05D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/14/2018	6.6	1830	72.4	302	<0.5	0.2	85.3	NA	0.45 j,S1	0.74	NA	NA	NA	<0.5	<0.1	NA
CCR-05D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/05/2019	6.9	1940 M6	94.5	330	<0.5	0.45	118	NA	<0.5	0.95	NA	NA	NA	<0.5	<0.1	NA
CCR-05S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/15/2018	6.5	2100	59.9	276	<0.5	0.13	32.7	NA	0.13 j	0.59	NA	NA	NA	<0.5	<0.1	NA
CCR-05S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	6.4	2060	65.1	270	<0.5	0.078 j	32.4	NA	0.13 j	0.77	NA	NA	NA	<0.5	<0.1	NA
CCR-05S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/14/2018	6.3	1740	67.5	273	<0.5	0.068 j	28.9	NA	0.2 j,S1	0.5	NA	NA	NA	<0.5	<0.1	NA
CCR-05S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/05/2019	6.5	1870	73.1	288	<0.5	0.18	35.7	NA	<0.5	0.8	NA	NA	NA	<0.5	<0.1	NA
CCR-06D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/15/2018	6.6	1660	60.7	271	<0.5	0.15	111	NA	0.42 j	0.16	NA	NA	NA	<0.5	<0.1	NA
CCR-06D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	6.4	1550	65.7	269	<0.5	0.092 j	105	NA	0.27 j	0.13	NA	NA	NA	<0.5	<0.1	NA
CCR-06D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/13/2018	6.6	1240	69.7	277	<0.5	0.081 j	91.8	NA	0.54 B,S1	0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-06D	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/05/2019	6.4	1450	70.3	284	<0.5	0.18	105	NA	0.44 j	0.097 j	NA	NA	NA	<0.5	<0.1	NA
CCR-06S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/15/2018	6.2	2.3 j	76.2	257	<0.5	0.19	33.6	NA	1	0.046 j	NA	NA	NA	<0.5	<0.1	NA
CCR-06S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	6.1	4.4 j,S1	80.7	254	<0.5	0.097 j	34.1	NA	0.45 j	0.027 j	NA	NA	NA	<0.5	<0.1	NA
CCR-06S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/13/2018	5.9	73.3	83.3	263	<0.5	0.13	37.1	NA	0.9 B,S1	0.075 j	NA	NA	NA	<0.5	<0.1	NA
CCR-06S	West of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/05/2019	6.1	114	88.5	272	<0.5	0.12	36.1	NA	0.76	0.091 j	NA	NA	NA	<0.5	<0.1	NA
CCR-07D	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	5.3	883	142	356	<0.5	0.11	50.1	NA	0.46 j	60.5	NA	NA	NA	<0.5	0.033 j	NA
CCR-07D	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	5.3	837	151	361	<0.5	0.074 j	54.4	NA	1	75.3	NA	NA	NA	<0.5	0.034 j	NA
CCR-07D	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/14/2018	5.5	841	167	373	<0.5	0.059 j	46.4	NA	0.57 S1	63.9	NA	NA	NA	<0.5	0.026 j	NA
CCR-07D	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/05/2019	5.4	908	160	385	<0.5	0.13	54.1	NA	0.46 j	74.1	NA	NA	NA	<0.5	<0.1	NA
CCR-07S	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	6.0	219	92.9	287	<0.5	0.15	34.5	NA	0.54	69.7	NA	NA	NA	<0.5	<0.1	NA
CCR-07S	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	5.9	211	103	285	<0.5	0.13	30.3	NA	<0.5	65.2	NA	NA	NA	<0.5	<0.1	NA
CCR-07S	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/14/2018	5.9	218	122	282	<0.5	0.16	30.9	NA	0.49 j,S1	70.4	NA	NA	NA	<0.5	<0.1	NA
CCR-07S	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/05/2019	6.0	206	114	323	<0.5	0.14	31.7	NA	<0.5	54.1	NA	NA	NA	<0.5	<0.1	NA
CCR-08D	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	6.1	844	116	441	<0.5	0.18	32.5	NA	0.51	6.1	NA	NA	NA	<0.5	<0.1	NA
CCR-08D	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	6.1	709	126	435	<0.5	0.14	31.1	NA	0.75	6.2	NA	NA	NA	<0.5	<0.1	NA
CCR-08D	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/13/2018	6.0	645	135	411	<0.5	0.18	30.3	NA	0.59 B,S1	5.9	NA	NA	NA	<0.5	<0.1	NA
CCR-08D	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/05/2019	6.0	728	103	445	<0.5	0.18	33.1	NA	<0.5	6	NA	NA	NA	<0.5	<0.1	NA
CCR-08S	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/14/2018	6.0	19.4	6.7	90	<0.5	0.049 j	28.5	NA	0.2 j	0.67	NA	NA	NA	<0.5	<0.1	NA
CCR-08S	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	05/16/2018	5.9	10.5 S1	5.5	73	<0.5	0.065 j	29.1	NA	0.18 j	0.26	NA	NA	NA	<0.5	<0.1	NA
CCR-08S	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	11/13/2018	5.4	16.8 j,B,S1	<1	51	<0.5	0.059 j	28.1	NA	0.39 j,B,S1	2.2	NA	NA	NA	<0.5	<0.1	NA
CCR-08S	North of Ash Basin 1	Ash Basin, Cell 1	Downgradient	02/05/2019	5.5	12.1 j,B	1.7	63	<0.5	0.092 j	27.1	NA	3.4	1.4	NA	NA	NA	<0.5	<0.1	NA
CCR-09D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/14/2018	6.1	674	43.8	192	<0.5	0.099 j	89.5	NA	0.48 j	0.068 j	NA	NA	NA	1.7	<0.1	NA
CCR-09D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/16/2018	6.0	704 S1	54	192	<0.5	<0.1	91.2	NA	0.41 j	0.065 j,S1	NA	NA	NA	2.3 S1	<0.1	NA
CCR-09D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/14/2018	6.1	679	56.1	186	<0.5	<0.1	90.9	NA	0.88 S1	0.29	NA	NA	NA	2.1	<0.1	NA
CCR-09D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/04/2019	6.1	651 M6	57.4	190	<0.5	<0.1	86.4	NA	<0.5	0.052 j	NA	NA	NA	1.9	<0.1	NA
CCR-09S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/14/2018	4.9	1040	0.61 j	63	<0.5	0.075 j	79.7	NA	0.26 j	19.5	NA	NA	NA	<0.5	0.037 j	NA
CCR-09S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/16/2018	4.7	924	0.56 j	48 D6	<0.5	<0.1	75.8	NA	2.2	18.2	NA	NA	NA	<0.5	0.03 j	NA
CCR-09S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/13/2018	4.9	644	<1	49	<0.5	0.051 j	78.6	NA	0.5 B,S1	19.3	NA	NA	NA	<0.5	0.026 j	NA
CCR-09S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/04/2019	4.8	551	0.92 j	55	<0.5	<0.1	84.4	NA	<0.5	18.7	NA	NA	NA	<0.5	<0.1	NA
CCR-10D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/15/2018	6.2	4.6 j,M1,R1	0.77 j	80	<0.5	0.29	18.6	NA	0.18 j	0.074 j	NA	NA	NA	<0.5	<0.1	NA
CCR-10D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/15/2018	6.0	3.2 j,S1	0.84 j	89	<0.5	0.34	16.7	NA	1	0.07 j	NA	NA	NA	<0.5	<0.1	NA
CCR-10D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/19/2018	6.1	3 j,S1	1.1	96 D6	<0.5	0.5	10.2	NA	1.2 B,S1	0.053 j	NA	NA	NA	<0.5	<0.1	NA
CCR-10D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/04/2019	6.3	5.2 j	1.5	98	0.15 j	0.53 S1	11.3	NA	0.76	0.054 j	NA	NA	NA	<0.5	<0.1	NA
CCR-10S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/14/2018	5.2	3.5 j	<1	29	<0.5	0.12	21	NA	2.5	10.3	NA	NA	NA	<0.5	<0.1	NA
CCR-10S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/15/2018	4.8	<5	<1	29	<0.5	0.12	21.8	NA	1.6	11.8	NA	NA	NA	<0.5	<0.1	NA
CCR-10S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/14/2018	5.1	6.4 j,B,S1	<1	<25	<0.5	0.066 j	18.2	NA	0.26 j,S1	9.4	NA	NA	NA	<0.5	<0.1	NA

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		PARAM	40CFR257 APPENDIX III CONSTITUE			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAM	40CFR257 APPENDIX III CONSTITUE			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
CCR-10S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/04/2019	5.1	3.6 j	<1	31	<0.5	0.061 j,S1	18.4	NA	<0.5	10.1	NA	NA	NA	<0.5	<0.1	NA
CCR-11D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/15/2018	6.5	3.8 j	3.6	111	<0.5	0.079 j	95.7	NA	0.19 j	0.075 j	NA	NA	NA	<0.5	<0.1	NA
CCR-11D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/15/2018	6.4	2 j,S1	3.6	111	<0.5	0.14	102	NA	<0.5	0.05 j	NA	NA	NA	<0.5	<0.1	NA
CCR-11D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/14/2018	6.5	4.4 j,B,S1	4.3	109	<0.5	0.11	91.5	NA	0.48 j,S1	0.078 j	NA	NA	NA	<0.5	<0.1	NA
CCR-11D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/07/2019	6.5	3.5 j	4.8	121	<0.5	0.1	99.4	NA	<0.5	<0.1	NA	NA	NA	0.096 j	<0.1	NA
CCR-11S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/15/2018	5.3	3.5 j	<1	46	<0.5	0.074 j	10.1	NA	0.32 j	0.48	NA	NA	NA	<0.5	<0.1	NA
CCR-11S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/15/2018	5.1	<5	<1	56	<0.5	0.076 j	11	NA	0.14 j	0.42	NA	NA	NA	<0.5	<0.1	NA
CCR-11S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/14/2018	5.4	4.7 j,B,S1	<1	50	<0.5	0.058 j	10.2	NA	0.22 j,S1	0.44	NA	NA	NA	<0.5	<0.1	NA
CCR-11S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/07/2019	5.3	3.4 j	<1	49	<0.5	0.094 j	10.6	NA	<0.5	0.43	NA	NA	NA	<0.5	<0.1	NA
CCR-12D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/15/2018	7.3	256	18.9	201	<0.5	0.74	73.1	NA	0.23 j	0.03 j	NA	NA	NA	<0.5	<0.1	NA
CCR-12D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/15/2018	7.0	238	20.6	143	<0.5	0.72	78.6	NA	<0.5	0.024 j	NA	NA	NA	<0.5	<0.1	NA
CCR-12D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/19/2018	7.0	208	20.9	196	<0.5	0.39	76	NA	0.27 j,B,S1	0.11	NA	NA	NA	<0.5	<0.1	NA
CCR-12D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/05/2019	7.2	247	20.1	217	<0.5	1	80.7	NA	<0.5	<0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-12S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/15/2018	4.4	255	41.7	184	<0.5	0.62	233	NA	0.65	63.6	NA	NA	NA	0.83	0.051 j	NA
CCR-12S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/15/2018	4.4	254	54.2	246	<0.5	<0.5 D3	149	NA	0.68	77.7	NA	NA	NA	3.6	<0.5 D3	NA
CCR-12S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/19/2018	4.4	168	39.2	184	<0.5	0.7	88.2	NA	0.85 B,S1	67.9	NA	NA	NA	0.49 j	0.054 j	NA
CCR-12S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/05/2019	4.3	255	75.9 M1	266	<0.5	0.94	86.5	NA	0.54	93.1	NA	NA	NA	1.2	0.069 j	NA
CCR-13D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/15/2018	6.2	5.2	<1	99	<0.5	0.076 j	34.8	NA	0.96	0.075 j	NA	NA	NA	<0.5	<0.1	NA
CCR-13D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/16/2018	6.3	2 j,S1	0.59 j	89	<0.5	<0.1	24.5	NA	0.96	0.048 j	NA	NA	NA	<0.5	<0.1	NA
CCR-13D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/19/2018	6.4	3.1 j,S1	0.68 j	95	<0.5	0.069 j	24.4	NA	1.6 B,S1	0.11	NA	NA	NA	<0.5	<0.1	NA
CCR-13D	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/05/2019	6.3	3.8 j,B	0.62 j	97	<0.5	0.098 j	21.5	NA	1.2	<0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-13S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/15/2018	5.2	3.5 j	<1	<25	<0.5	0.14	20.7	NA	0.45 j	3.9	NA	NA	NA	<0.5	<0.1	NA
CCR-13S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	05/16/2018	4.8	2.1 j,S1	<1	32	<0.5	0.092 j	15.2	NA	0.19 j	3.4	NA	NA	NA	<0.5	<0.1	NA
CCR-13S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	11/19/2018	5.2	5.2 j,S1	<1	31	<0.5	0.096 j	12.6	NA	0.21 j,B,S1	2.5	NA	NA	NA	<0.5	<0.1	NA
CCR-13S	Between Ash Basins 1 and 2	Ash Basin, Cell 1 and 2	Downgradient	02/05/2019	5.2	5.4 j,B	<1	39	<0.5	0.11	15.2	NA	<0.5	3.3	NA	NA	NA	<0.5	<0.1	NA
CCR-14D	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/15/2018	7.0	4.9 j	38.2	186	<0.5	0.24	18.5	NA	0.25 j	0.67	NA	NA	NA	<0.5	<0.1	NA
CCR-14D	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/17/2018	6.9	8.3	41.9	186	<0.5	0.34	18.5	NA	0.29 j	0.57	NA	NA	NA	<0.5	<0.1	NA
CCR-14D	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/20/2018	7.0	6.2 j	42.8	184	<0.5	0.25	18.2	NA	0.17 j	0.68	NA	NA	NA	<0.5	<0.1	NA
CCR-14D	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/05/2019	7.0	14.1 j	44.2	183	<0.5	0.26	21.8	NA	0.59	0.86	NA	NA	NA	<0.5	<0.1	NA
CCR-14S	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/15/2018	5.3	5.6	9.8	55	<0.5	0.099 j	27.8	NA	0.24 j	14.6	NA	NA	NA	<0.5	<0.1	NA
CCR-14S	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/17/2018	5.1	4.8 j	4.9	70	<0.5	0.16	47.7	NA	0.35 j	13.3	NA	NA	NA	<0.5	<0.1	NA
CCR-14S	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/20/2018	5.1	9.7 j	3.9	96	<0.5	0.13	77.3	NA	0.7 S1	12.2	NA	NA	NA	<0.5	0.027 j	NA
CCR-14S	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/05/2019	5.1	8.6 j	4.2	87	<0.5	0.21	71.3	NA	1.8	9.4	NA	NA	NA	<0.5	<0.1	NA
CCR-15D	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/14/2018	7.5	9.9	740	1450	<0.5	1.4	68.3	NA	0.44 j	2.3	NA	NA	NA	<0.5	<0.1	NA
CCR-15D	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/16/2018	7.3	10.7	712	1320	<0.5	<0.1	9.5	NA	<0.5	<0.1	NA	NA	NA	0.22 j	<0.1	NA
CCR-15D	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/20/2018	7.3	9 j	897	1440	<0.5	1.1	54.4	NA	0.39 j,S1	1.7	NA	NA	NA	<0.5	<0.1	NA
CCR-15D	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/05/2019	7.2	10.8 j	947 M6	1280	<0.5	1.5	53.7	NA	28.3	1.9	NA	NA	NA	0.094 j	<0.1	NA
CCR-15S	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/14/2018	4.8	2 j	<1	67	<0.5	0.092 j	119	NA	0.49 j	13.2	NA	NA	NA	<0.5	0.038 j	NA
CCR-15S	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/16/2018	4.7	4.9 j	<1	60	<0.5	0.066 j	94.1	NA	0.33 j	0.066 j	NA	NA	NA	2.3	<0.1	NA
CCR-15S	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/20/2018	5.1	2.1 j	<1	59	<0.5	0.051 j	93.4	NA	0.53 S1	11.7	NA	NA	NA	<0.5	0.031 j	NA
CCR-15S	West of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/05/2019	5.1	3.5 j	<1	65	<0.5	0.097 j	102	NA	<0.5	12.1	NA	NA	NA	<0.5	<0.1	NA
CCR-16DA	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/15/2018	6.3	84.7	336	654	<0.5	0.085 j	56.3	NA	3.7	0.75	NA	NA	NA	<0.5	<0.1	NA
CCR-16DA	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/16/2018	6.8	97	330	694	<0.5	0.12	50.9	NA	0.43 j	0.66	NA	NA	NA	<0.5	<0.1	NA
CCR-16DA	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/20/2018	6.3	88.6	354	672	<0.5	<0.1	45.4	NA	0.47 j,S1	0.68	NA	NA	NA	<0.5	<0.1	NA
CCR-16DA	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/04/2019	6.3	109	354	711	<0.5	0.097 j	51	NA	<0.5	0.58	NA	NA	NA	0.12 j	<0.1	NA
CCR-16SA	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/16/2018	5.1	394	687	1180	<0.5	0.32	24.7	NA	2.6	16.2	NA	NA	NA	0.19 j	<0.1	NA
CCR-16SA	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/20/2018	5.0	350	731	1150	<0.5	0.12	21.1	NA	2.5 S1	14.8	NA	NA	NA	<0.5	<0.1	NA
CCR-16SA	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/04/2019	4.9	372 M1	640	1080	<0.5	0.14	19.7	NA	1.9	27.4	NA	NA	NA	0.19 j	<0.1	NA
CCR-17D	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/14/2018	6.4	338	154	411	<0.5	0.23	107	NA	<0.5	0.56	NA	NA	NA	<0.5	<0.1	NA
CCR-17D	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/16/2018	6.2	341	162	407	<0.5	0.29	104	NA	<0.5	0.47	NA	NA	NA	<0.5	<0.1	NA
CCR-17D	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/13/2018	6.2	307	160	412	<0.5	0.16	77.6	NA	0.22 j,B	0.64	NA	NA	NA	<0.5	<0.1	NA
CCR-17D	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/05/2019	6.3	322	163	410	<0.5	0.25	88.2	NA	<0.5	0.51	NA	NA	NA	<0.5	<0.1	NA
CCR-17S	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/14/2018	6.4	286	157	406	<0.5	0.13	52.8	NA	1.9	0.24	NA	NA	NA	0.17 j	0.041 j	NA
CCR-17S	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/16/2018	6.3	233	137	331	<0.5	0.11	46.2	NA	5.1	0.21	NA	NA	NA	<0.5	0.052 j	NA
CCR-17S	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/13/2018	6.2	236 M1	94.1	253	<0.5	0.06 j	33.1	NA	1.7 S1	0.3	NA	NA	NA	<0.5	0.045 j	NA
CCR-17S	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/05/2019	6.2	175	67.8	184	<0.5	0.11	41	NA	1.9	0.27	NA	NA	NA	<0.5	<0.1	NA
CCR-18D	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/15/2018	6.4	1270	35.8	209	<0.5	0.051 j	50.3	NA	0.29 j	0.035 j	NA	NA	NA	<0.5	<0.1	NA
CCR-18D	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/17/2018	6.4	1220	37.1	198	<0.5	0.1	51.5	NA	0.75	0.043 j	NA	NA	NA	<0.5	<0.1	NA
CCR-18D	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/20/2018	6.4	1130	36.6	191	<0.5	<0.1	47.3	NA	0.34 j	0.041 j	NA	NA	NA	<0.5	<0.1	NA
CCR-18D	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/07/2019	6.4	1170 M6	38.7	197	<0.5	0.1	51.3	NA	<0.5 P8	0.054 j	NA	NA	NA	<0.5	<0.1	NA
CCR-18S	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/15/2018	5.8	2.9 j,R0	9.4	116	<0.5 R0	0.097 j,R0	69.9 R0	NA	0.2 j,R0	20.4 R0	NA	NA	NA	<0.5 R0	<0.1 R0	NA
CCR-18S	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/17/2018	5.8	2.2 j	3.1	114	<0.5	0.11	76	NA	<0.5	19.2	NA	NA	NA	<0.5	<0.1	NA
CCR-18S	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/20/2018	5.5	5 j	10	120	<0.5	0.11	58.2	NA	4.2 S1	18	NA	NA	NA	<0.5	0.02 j	NA
CCR-18S	North of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/07/2019	5.8	3.1 j	8.1	105	<0.5	0.1	59.2	NA	<0.5	21.4	NA	NA	NA	<0.5	<0.1	NA

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		PARAMETERS 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
CCR-19D	North of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/15/2018	6.2	780	13	165	<0.5	0.062 j	46.5	NA	0.37 j	0.03 j	NA	NA	NA	<0.5	<0.1	NA
CCR-19D	North of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/17/2018	6.0	748	13.4	170	<0.5	0.098 j	47.1	NA	0.35 j	0.032 j	NA	NA	NA	<0.5	<0.1	NA
CCR-19D	North of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/20/2018	6.1	650	12.8	179	<0.5	0.056 j	47.5	NA	0.31 j	0.041 j	NA	NA	NA	<0.5	<0.1	NA
CCR-19D	North of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/06/2019	6.2	674 M6	13.2	192	<0.5	0.12	50.4	NA	1.4	0.076 j	NA	NA	NA	<0.5	<0.1	NA
CCR-19S	North of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/15/2018	6.9	235	28.8	327	<0.5	0.33	156	NA	<0.5	1.7	NA	NA	NA	0.33 j	<0.1	NA
CCR-19S	North of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/17/2018	6.8	247	21.6	313	<0.5	0.51	150	NA	0.16 j	1.4	NA	NA	NA	0.45 j	0.041 j	NA
CCR-19S	North of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/20/2018	6.6	198	33.1	327	<0.5	0.24	164	NA	0.25 j	2.4	NA	NA	NA	<0.5	<0.1	NA
CCR-19S	North of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/06/2019	6.7	188	32 M1	330	0.11 j	0.26	145	NA	1.5	1.3	NA	NA	NA	0.2 j	<0.1	NA
CCR-20D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/14/2018	6.4	229	40.2	325	<0.5	0.14	111	NA	1.1	0.21	NA	NA	NA	<0.5	<0.1	NA
CCR-20D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/15/2018	6.3	262	38.8	344	<0.5	0.066 j	115	NA	0.63	0.13	NA	NA	NA	<0.5	<0.1	NA
CCR-20D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/13/2018	6.6	240	33.3 M1	319	<0.5	0.11	101	NA	0.59 B,S1	0.13	NA	NA	NA	<0.5	<0.1	NA
CCR-20D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/04/2019	6.6	<125	33.9	339	<0.5	0.22	98.8	NA	1	0.18	NA	NA	NA	<0.5	<0.1	NA
CCR-20S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/14/2018	6.2	268	67.1	332	<0.5	0.27	186	NA	0.66	3	NA	NA	NA	0.25 j	0.055 j	NA
CCR-20S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/15/2018	6.1	268	62.4	329	<0.5	0.1	175	NA	5.2	3	NA	NA	NA	<0.5	0.047 j	NA
CCR-20S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/13/2018	6.4	255	68.9	338	<0.5	0.14	161	NA	34.8	2.3	NA	NA	NA	<0.5	0.041 j	NA
CCR-20S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/04/2019	6.1	<125	74.3 M1	349	<0.5	0.18	164	NA	3.9	2.4	NA	NA	NA	0.12 j	<0.1	NA
CCR-21D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/14/2018	6.2	236	66.5	325	<0.5	0.11	205	NA	<0.5	0.12	NA	NA	NA	<0.5	<0.1	NA
CCR-21D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/15/2018	6.1	252	68.3	363	<0.5	0.047 j	201	NA	0.22 j	0.13	NA	NA	NA	<0.5	<0.1	NA
CCR-21D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/13/2018	6.3	220	63.3	300	<0.5	0.071 j	177	NA	0.24 j,B	0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-21D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/04/2019	6.3	242	63.6	333	<0.5	0.08 j	179	NA	<0.5	0.11	NA	NA	NA	<0.5	<0.1	NA
CCR-21S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/14/2018	6.0	231	64.4	335	<0.5	0.38	153	NA	2.1	44.8	NA	NA	NA	0.52	0.033 j	NA
CCR-21S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/15/2018	5.8	260	66.6	350	<0.5	0.069 j,S1	185	NA	0.23 j	0.77	NA	NA	NA	<0.5	<0.1	NA
CCR-21S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/13/2018	6.0	251	69.8	333	<0.5	0.11	165	NA	8	1.2	NA	NA	NA	<0.5	<0.1	NA
CCR-21S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/04/2019	6.0	290	97.9	374	0.17 j	0.14	177	NA	1 S1	1.1	NA	NA	NA	<0.5	<0.1	NA
CCR-22D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/15/2018	6.4	540	39	341	<0.5	0.12	165	NA	0.16 j	1.6	NA	NA	NA	<0.5	<0.1	NA
CCR-22D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/17/2018	6.5	563	36.6	356	<0.5	0.17	162	NA	<0.5	0.96	NA	NA	NA	<0.5	<0.1	NA
CCR-22D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/21/2018	6.2	391	49.2	350	<0.5	0.12	152	NA	0.92 S1	1.8	NA	NA	NA	<0.5	<0.1	NA
CCR-22D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/06/2019	6.2	781	51.8	346	<0.5	0.11	160	NA	<0.5	2.1	NA	NA	NA	<0.5	<0.1	NA
CCR-22S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/15/2018	6.5	342	45.1	307	<0.5	0.11	143	NA	0.2 j	5.4	NA	NA	NA	<0.5	<0.1	NA
CCR-22S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/17/2018	6.1	312	45.6	315	<0.5	0.13	146	NA	<0.5	5.1	NA	NA	NA	<0.5	<0.1	NA
CCR-22S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/21/2018	5.6	234	62.4	233	<0.5	0.2	166	NA	0.58 S1	37.9	NA	NA	NA	<0.5	<0.1	NA
CCR-22S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/06/2019	5.5	464	44.7	219	<0.5	0.11	147	NA	<0.5	39.8	NA	NA	NA	<0.5	<0.1	NA
CCR-23D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/15/2018	6.6	3.2 j	<1	98	<0.5	0.13	13.1	NA	0.92	0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-23D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/17/2018	6.0	4.6 j	<1	82	<0.5	0.094 j	12.8	NA	0.48 j	0.034 j	NA	NA	NA	<0.5	<0.1	NA
CCR-23D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/21/2018	6.4	2.3 j	0.52 j	91	<0.5	<0.1	12.2	NA	0.56 S1	0.039 j	NA	NA	NA	<0.5	<0.1	NA
CCR-23D	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/06/2019	6.4	4.3 j	0.63 j	84	<0.5	0.067 j	13.3	NA	0.46 j	<0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-23S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/15/2018	5.9	9.7	5.3	92	<0.5	0.17	11.6	NA	0.45 j	0.2	NA	NA	NA	<0.5	<0.1	NA
CCR-23S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	05/17/2018	6.3	7.5	0.75 j	79	<0.5	0.17	12.6	NA	0.64	0.11	NA	NA	NA	<0.5	<0.1	NA
CCR-23S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	11/21/2018	6.2	6.1 j	2.6 M1	98	<0.5	0.18	9.6	NA	0.59 S1	0.15	NA	NA	NA	<0.5	<0.1	NA
CCR-23S	East of Ash Basin 3	Ash Basin, Cell 3	Downgradient	02/06/2019	6.4	6.4 j	<1	89	<0.5	0.12	14.2	NA	0.71	0.19	NA	NA	NA	<0.5	<0.1	NA
CCR-24D	East of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/14/2018	6.4	1.6 j	2.1	95	<0.5	0.086 j	23.4	NA	1.4	0.028 j	NA	NA	NA	<0.5	<0.1	NA
CCR-24D	East of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/15/2018	6.5	3.6 j	1.8	91	<0.5	0.19	26.6	NA	1.2	0.066 j	NA	NA	NA	<0.5	<0.1	NA
CCR-24D	East of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/19/2018	6.1	2.5 j	2.8	105	<0.5	0.099 j	23.6	NA	1 B,S1	0.035 j	NA	NA	NA	<0.5	<0.1	NA
CCR-24D	East of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/04/2019	6.5	3.7 j	2.1	105	<0.5	0.14	25.1	NA	1	<0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-24S	East of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/14/2018	5.5	18.3	53.4	221	<0.5	0.11	137	NA	0.25 j	11.3	NA	NA	NA	0.26 j	<0.1	NA
CCR-24S	East of Ash Basin 2	Ash Basin, Cell 2	Downgradient	05/15/2018	5.2	23.5	59.8	224	<0.5	0.073 j	183	NA	0.23 j	11.3	NA	NA	NA	0.5 j	<0.1	NA
CCR-24S	East of Ash Basin 2	Ash Basin, Cell 2	Downgradient	11/19/2018	5.6	20.3 j	57.7 M1	177	<0.5	0.52	155	NA	0.39 j,B,S1	12.6	NA	NA	NA	<0.5	<0.1	NA
CCR-24S	East of Ash Basin 2	Ash Basin, Cell 2	Downgradient	02/04/2019	5.9	18.4 j	58.5	200	<0.5	2.2	180	NA	0.5 j	16.7	NA	NA	NA	0.4 j	<0.1	NA
CCR-25D	---	---	---	11/19/2018	6.8	2.7 j	2.7	239	<0.5	0.14	29	NA	2.2	1.4	NA	NA	NA	<0.5	<0.1	NA
CCR-25D	---	---	---	02/06/2019	6.8	4.3 j	2.2	171	<0.5	0.17	28.4	NA	2.3	0.91	NA	NA	NA	<0.5	<0.1	NA
CCR-25S	---	---	---	11/19/2018	6.5	1.8 j	4.2	168	<0.5	0.18	20.1	NA	5.8	0.19	NA	NA	NA	<0.5	<0.1	NA
CCR-25S	---	---	---	02/06/2019	6.6	<25	6.9	176	<0.5	0.23	21.4	NA	6.2	<0.1	NA	NA	NA	<0.5	<0.1	NA
CCR-26BR	---	---	---	11/14/2018	6.3	24.8 j,B	178	429	<0.5	0.16	11	NA	0.54 S1	4.3	NA	NA	NA	0.54	<0.1	NA
CCR-26BR	---	---	---	02/05/2019	6.3	26	141	379	<0.5	0.21	9.1	NA	0.44 j	2.1	NA	NA	NA	0.62	<0.1	NA
CCR-27D	---	---	---	11/20/2018	6.5	5 j	39.5	276	<0.5	0.3	25.3	NA	0.88 S1	1.8	NA	NA	NA	0.77	0.036 j	NA
CCR-27D	---	---	---	02/06/2019	6.5	5.4 j	39.5	283	<0.5	0.27	24.1	NA	0.5 j	1.3	NA	NA	NA	0.75	<0.1	NA
CCR-28D	---	---	---	11/20/2018	6.3	312	27.3	228	<0.5	0.056 j	71.1	NA	0.29 j,S1	0.078 j	NA	NA	NA	<0.5	<0.1	NA
CCR-28D	---	---	---	02/07/2019	6.1	360	29.1	253	<0.5	0.077 j	75.2	NA	<0.5 P8	0.075 j	NA	NA	NA	0.082 j	<0.1	NA
GWA-01D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/16/2018	7.9	<50	4.5	124	<0.5	0.4	<5	5	5.6	<0.1	<50	<5	<0.5	<0.5	<0.1	10.8
GWA-01D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/18/2018	7.3	<50	2.6	124	<0.5	0.3	3.8 j	3.4	4	<0.1	<50	<5	0.37 j	<0.5	<0.1	10.9
GWA-01D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	08/14/2018	7.3	<50	3.3	129	<0.5	0.32	4 j	4.2	4.5	<0.1	79.4	<5	0.6	<0.5	<0.1	10.7
GWA-01D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/20/2018	7.1	<50	2.8	124	<0.5	0.28	3.4 j	3 M6,R1	3.4	0.023 j	<50	<5	5.2	<0.5	<0.1	10 BC
GWA-01S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/16/2018	6.2	<50	5.8	116	<0.5	0.11	35.8	4	4.9	<0.1	173	<5	4.1	<0.5	<0.1	3.7
GWA-01S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/18/2018	6.1	<50	1.3	108	<0.5	0.12	22.2	11.8	12.4	0.036 j	101	2.8 j	3.3	<0.5	<0.1	6.1

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			PARAMETERS 40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
GWA-01S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	08/14/2018	6.2	<50	5.1	120	<0.5	0.14	34.9	3.3	3.6	0.11	542	15.3	4.1	<0.5	<0.1	5.2
GWA-01S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/20/2018	6.5	<50	1.5	104	<0.5	0.13	23.6	12.6	12.8	0.11	124	3 j	4.4	<0.5	<0.1	7.6 BC
GWA-01S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/07/2019	6.3	<50	1.1 S1	107	<0.5	0.073 j	19.6	14.6	13.6	<0.1	<50	<5	3	<0.5	<0.1	8.3
GWA-02BRA	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/15/2018	6.4	<50	<1	93	<0.5	<0.1	29.5	1.2	1.8	<0.1	60.9	16	1.1	<0.5	<0.1	2.4
GWA-02BRA	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/17/2018	6.3	<50	0.74 j	100	0.2 j	0.093 j	30.4	1.5	1.5	0.029 j	29.8 j	9.1	1.7	<0.5	<0.1	2.3
GWA-02BRA	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	5.4	<50	0.73 j	86	<0.5	0.051 j	27.5	1.4	1.5	<0.1	<50	<5	0.42 j	<0.5	<0.1	2.2
GWA-02BRA	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	6.4	<50	0.67 j	84	<0.5	<0.1	26	0.12	1.9	0.014 j	28.2 j	<5	0.72	<0.5	<0.1	2
GWA-02BRU	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/15/2018	6.1	<50	<1	82	<0.5	<0.1	55.9	1.6	2.5	<0.1	<50	<5	0.74	<0.5	<0.1	1.7
GWA-02BRU	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/17/2018	6.2	<50	0.7 j	89	<0.5	0.11	53.3	2	2	<0.1	<50	<5	0.52	<0.5	<0.1	1.7
GWA-02BRU	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	5.7	<50	0.5 j	77	<0.5	0.057 j	48	<0.025	2	<0.1	<50	<5	0.54	<0.5	<0.1	1.6
GWA-02BRU	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	6.3	<50	0.57 j	72	<0.5	<0.1	51.1	2.1 M6	2	0.016 j	32.6 j	<5	0.58	<0.5	<0.1	1.6
GWA-02S	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/15/2018	5.2	<50	<1	31	<0.5	<0.1	82.4	2	2.6	5.1	156	25.1	2.5	<0.5	<0.1	<0.3
GWA-02S	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/17/2018	5.0	<50	<1	33	<0.5	0.047 j	85.6	2.6 M6	2.7	4.8	<50	24.4	2.8	<0.5	0.03 j	<0.3
GWA-02S	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	4.8	<50	<1	32	<0.5	<0.1	85.3	2.5	2.7	4.9	84.5	19.9	3.1	<0.5	<0.1	<0.3
GWA-02S	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	4.4	<50	<1	<25	<0.5	0.083 j	87.7	0.12	2.8	4.3	175	18.3	2.4	<0.5	0.026 j	0.21 j
GWA-02S CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	4.4	13 j	<1	32	<0.5	0.1	77.6	NA	2.7	4.8	NA	NA	NA	<0.5	0.026 j	NA
GWA-02S CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/05/2019	5.1	<25	<1	34	<0.5	0.076 j	86.6	NA	2.8	5.1	NA	NA	NA	<0.5	<0.1	NA
GWA-03BR	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	02/16/2018	8.1	<50	8.6	170	<0.5	0.1	<5	<0.025	0.64	<0.1	<50	46	0.75	<0.5	<0.1	<0.3
GWA-03BR	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	05/21/2018	7.9	<50	8.7	196 D6	<0.5	0.12	<5	2.8	2.7	<0.1	<50	39.9	0.5	<0.5	<0.1	<0.3
GWA-03BR	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	08/14/2018	7.8	<50	9.2	169	<0.5	0.072 j	<5	<0.025	0.16 j	<0.1	<50	42.3	<0.5	<0.5	<0.1	0.39 B
GWA-03BR	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	11/20/2018	8.1	<50	9.5	169	<0.5	0.099 j	<5	0.037	0.16 j,B	<0.1	<50	44	<0.5	<0.5	<0.1	0.35 BC
GWA-03BRU	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	02/16/2018	7.9	<50	10.1	163	<0.5	1.3	12.6	<0.025	0.95	0.1	287	78.8	0.6	<0.5	<0.1	1.1
GWA-03BRU	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	05/21/2018	7.9	<50	11.3	157	0.15 j	0.45	9.8	0.17	0.61	0.026 j	53.1	18.1	0.96	<0.5	<0.1	0.28 j
GWA-03BRU	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	08/14/2018	7.6	<50	13.3	185	<0.5	0.42	11.8	0.029	0.48 j	<0.1	65.2	21	0.24 j	<0.5	<0.1	0.27 j,B
GWA-03BRU	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	11/20/2018	8.3	<50	12.7	173	<0.5	0.63	11.7	0.053	0.5 j,B	0.029 j	143	104	0.55	<0.5	<0.1	0.44 BC
GWA-03S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	02/16/2018	6.3	<50	7.3	133	<0.5	<0.1	54.7	0.3	1	<0.1	190	24	5.3	<0.5	<0.1	1
GWA-03S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	05/21/2018	6.1	36 j	7.7	136	<0.5	0.38	50	0.25 M1	0.53	0.044 j	369	45.9	1.1	<0.5	<0.1	0.87
GWA-03S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	08/14/2018	6.1	42.3 j	8.1	137	<0.5	0.081 j	53.1	0.29	0.56	0.082 j	470	55.8	0.24 j	<0.5	<0.1	1.7
GWA-03S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	11/20/2018	6.3	45.6 j	9.4	143	<0.5	0.13	51.3	0.34	0.64 B	0.044 j	54.3	10.2	<0.5	<0.5	<0.1	1.4 BC
GWA-04D	Northwest of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	02/16/2018	6.3	228	29	<25	<0.5	0.56	34.4	0.12	7.2	0.7	1500	39.7	9.2	<0.5	<0.1	5.3
GWA-04D	Northwest of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	05/21/2018	5.9	226	31.5	225	<0.5	0.28	33	<0.025	2.1	0.43	776	30.2	3.9	<0.5	<0.1	5.1
GWA-04D	Northwest of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	08/14/2018	6.2	224	31.5	221	<0.5	<0.1	31.1	<0.025	0.46 j	0.16	178	24.3	1.9	<0.5	<0.1	2.9
GWA-04D	Northwest of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	11/21/2018	6.1	215	33.9	220	<0.5	0.059 j	30.9	<0.025	0.32 j	0.12	51.3	20.5	1.8	<0.5	<0.1	2
GWA-04S	Northwest of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	02/16/2018	6.1	257	36.8	209	<0.5	0.16	94.6	<0.025	<0.5	0.78	726	77.1	1.7	<0.5	<0.1	3.6
GWA-04S	Northwest of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	05/21/2018	6.0	252	39.2	218	<0.5	0.11	99.2	0.042	0.91	0.54	279	48.7	1.9	<0.5	<0.1	2.3
GWA-04S	Northwest of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	08/14/2018	5.9	243	40.8	221	<0.5	0.097 j	93.8	<0.025	0.2 j	1.1	141	118	1.6	<0.5	<0.1	1.8
GWA-04S	Northwest of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	11/21/2018	5.8	239	43.9	234	<0.5	0.16	103	0.085	18.4	1	156	74.2	10.2	<0.5	<0.1	2
GWA-05BRU	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/20/2018	6.6	398	107	344	1.1	0.34	133	0.037	1.2	0.47	672	176	2.7	<0.5	<0.1	3.6
GWA-05BRU	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/21/2018	6.4	425	111	338	0.5 j	0.27	112	0.079	0.88	0.31	297	139	1.9	<0.5	<0.1	2.9
GWA-05BRU	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/16/2018	6.4	365	118	341	0.2 j	0.073 j	109	0.3	0.94	0.21	291	108	1.7	<0.5	<0.1	2.6
GWA-05BRU	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/21/2018	6.6	357	116	354	0.2 j	0.14	106	0.1	1.6	0.33	488	112	1.9	<0.5	<0.1	3.8
GWA-05S	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/20/2018	5.9	<50	1.6	68	<0.5	<0.1	48	1.8	3	0.2	1010	14.1	1.5	<0.5	<0.1	3
GWA-05S	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/21/2018	5.7	<50	0.66 j	59	0.12 j	0.11	48.4	1.5	2.2	0.12	1040	17.5	1	0.32 j	<0.1	2.3
GWA-05S	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/16/2018	5.5	<50	0.57 j	66	<0.5	<0.1	47.7	1.6	2.4	0.031 j	79.2	3.2 j	1.5	0.41 j	<0.1	2.1
GWA-05S	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/21/2018	5.9	<50	0.54 j	73	<0.5	<0.1	49.8	1.3 M6,R1	1.5	0.049 j	97.6	<5	2.2	<0.5	<0.1	2.2
GWA-06BR	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/16/2018	7.7	<50	505	968	<0.5	1.6	11.9	<0.025	0.5	<0.1	516	103	0.51	<0.5	<0.1	<0.3
GWA-06BR	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/18/2018	7.6	<50	518 M6	944	0.22 j	1.5	12.5	<0.025	0.35 j	0.025 j	505	95.2	0.36 j	<0.5	<0.1	0.22 j
GWA-06BR	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/15/2018	7.4	<50	523	954	0.53	0.86	24.2	<0.025	0.3 j	0.051 j	862	84.2	1.5	<0.5	<0.1	0.42
GWA-06BR	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/19/2018	7.0	<50	536	960	0.42 j	0.93	9	<0.025	0.35 j	0.087 j	381	91.9	1.7	<0.5	<0.1	0.3 j,B,BC
GWA-06BRL	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/16/2018	7.4	<50	507	952	<0.5	0.21	22.8	<0.025	8.8	1.2	287	18.2	12.1	<0.5	<0.1	1.1
GWA-06BRL	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/21/2018	7.5	<50	481 M6	896	1.5	0.8	24.3	<0.025	3	1	380	32.7	4.3	<0.5	<0.1	0.56
GWA-06BRL	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/15/2018	7.3	<50	501	890	1	0.6	12.1	0.043 M1	8.7	1.8	309	86.2	39.2	<0.5	<0.1	0.76
GWA-06BRL	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/19/2018	7.7	<50	531	916	0.17 j	0.56	15.9	<0.025	0.35 j	0.38	436	17	1.2	<0.5	<0.1	0.56 B,BC
GWA-06BRU	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/16/2018	6.6	<50	398	718	<0.5	0.11	48	0.79 M1	1.2	0.79	75.5	16.8	0.86	<0.5	<0.1	1.7
GWA-06BRU	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/18/2018	6.5	<50	424	740	<0.5	0.087 j	47.4	0.9	1.7	0.72	58.5	8.4	0.8	0.32 j	<0.1	1.5
GWA-06BRU	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/15/2018	6.4	<50	460	818	<0.5	<0.1	38.8	1.2	1.3	0.95	47.2 j	8.7	0.63	0.17 j	<0.1	2.1
GWA-06BRU	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/19/2018	6.2	<50	461 M6	830	<0.5	0.084 j	32.8	1.3	1.3	0.41	<50	7.3	0.71	<0.5	<0.1	1.9 B,BC
GWA-06S	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/19/2018	6.0	<50	330	609	<0.5	0.11	38.4	2.6 M6,R1	5.9	0.94	1750	60.6	4.7	0.41 j	<0.1	6.7 BC
GWA-07D	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/19/2018	7.0	<50	61.3	201	<0.5	0.25	57.9	0.051	0.73	0.55	310	14.1	2.1	<0.5	<0.1	4.2
GWA-07D	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/17/2018	6.7	<50	63.7	203	<0.5	0.17	64	0.052	0.32 j	0.56	<50	8.3	1.4	<0.5	<0.1	2.9
GWA-07D	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/15/2018	6.7	<50	67.7	209	<0.5	0.11	68	0.052	0.41 j	0.86	631	16.3	2.3	0.17 j	<0.1	3.4
GWA-07D	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/14/2018	6.6	<50	64.1	194	<0.5	0.13	67.4	0.091	1.9	0.83	41.8 j	8.4	2	<0.5	<0.1	2.7
GWA-07D CCR	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/14/2018	6.6	7 j,B	63.6	200	<0.5	0.14	59.3	NA	0.25 j,S1	0.75	NA	NA	NA	<0.5	<0.1	NA
GWA-07D CCR	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/05/2019	6.7	3.4 j	65.9	206	<0.5	0.17	64	NA	0.46 j	0.92	NA	NA	NA	0.14 j	<0.1	NA

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		PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)										
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
GWA-07S	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/19/2018	6.3	<50	55	137	<0.5	<0.1	57.1	0.42 P4	0.91	0.3	632	11.5	<0.5	<0.5	<0.1	4.4
GWA-07S	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/17/2018	6.1	<50	57.4	164	<0.5	0.11	59.4	0.48 M1	0.78	0.37	690	13.9	0.34 j	<0.5	<0.1	4.6
GWA-07S	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/15/2018	6.3	<50	59.5	162	<0.5	<0.1	56.4	2.3 M6	3.3	0.26	358	11.8	2.7	<0.5	<0.1	3.7
GWA-07S	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/14/2018	6.2	<50	54.8	137	<0.5	0.081 j	55.1	1.3	1.4	0.31	133	10.6	1.1	<0.5	<0.1	3.8
GWA-07S CCR	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/14/2018	6.2	4.4 j,B	53.6	161	<0.5	0.058 j	46.9	NA	1.3	0.14	NA	NA	NA	<0.5	<0.1	NA
GWA-07S CCR	West of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/05/2019	6.3	3.7 j	54	161	<0.5	0.1	52.7	NA	0.62	0.21	NA	NA	NA	<0.5	<0.1	NA
GWA-08D	Between Ash Basin 1 & 2	Ash Basin, Cell 1 and 2	Downgradient	02/15/2018	6.5	<50	146	371	<0.5	0.54	41	<0.025	<0.5	4.7	938	151	2.4	<0.5	<0.1	2.3
GWA-08D	Between Ash Basin 1 & 2	Ash Basin, Cell 1 and 2	Downgradient	05/18/2018	6.4	<50	152	360	0.4 j	0.55	39.5	<0.025	0.34 j	4.8	1020	160	2	<0.5	<0.1	2.2
GWA-08D	Between Ash Basin 1 & 2	Ash Basin, Cell 1 and 2	Downgradient	08/17/2018	6.4	<50	156	367	0.15 j	0.19	39.2	<0.025	1.1 B	2.2	885	130	2.9	<0.5	<0.1	1.7
GWA-08D	Between Ash Basin 1 & 2	Ash Basin, Cell 1 and 2	Downgradient	11/19/2018	6.3	<50	153	362	<0.5	0.15	32.3	<0.025	0.6	2.4	334	80.4	2.3	<0.5	<0.1	2.1 B,BC
GWA-08D CCR	Between Ash Basin 1 & 2	Ash Basin, Cell 1 and 2	Downgradient	11/19/2018	6.3	10 j	147	352	<0.5	0.2	33.4	NA	0.4 j,B,S1	3.9	NA	NA	NA	<0.5	<0.1	NA
GWA-08D CCR	Between Ash Basin 1 & 2	Ash Basin, Cell 1 and 2	Downgradient	02/06/2019	6.4	6.6 j	148	346	<0.5	0.17	34.6	NA	<0.5	1.7	NA	NA	NA	<0.5	<0.1	NA
GWA-09BRA	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	11.5	95.9	131 M1,R1	982	5.2	0.16	61.2	<0.025	0.6	<0.1	51.8	<5	0.52	<0.5	<0.1	10.4
GWA-09BRA	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	11.3	130	168	596	2.4	0.13	62.9	1.9	1.8	0.084 j	<50	<5	0.96	0.5	<0.1	5.8
GWA-09BRA	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/17/2018	7.5	150	200	516	0.22 j	0.13	10.4	0.051	0.39 j,B	1.4	235	43.5	0.85	0.25 j	<0.1	9.4
GWA-09BRA	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	8.4	179	202	522	0.24 j	0.13	12.4	<0.025	0.46 j,B	0.24	<50	11.8	2.1	<0.5	<0.1	10.4
GWA-09D	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	6.3	283	144	361	<0.5	0.11	38.1	<0.025 M1	<0.5	0.12	<50	42.9	0.54	<0.5	<0.1	9.7
GWA-09D	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	6.3	299	148	381	<0.5	0.083 j	39.6	<0.025	0.18 j	0.19	41.4 j	88.1	1.5	<0.5	<0.1	7.6
GWA-09D	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	6.2	283	160	387	<0.5	<0.1	40.9	<0.025	0.46 j	0.19	52.1	77.5	0.8	0.14 j	<0.1	9.7
GWA-09D	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	6.3	285	162	374	<0.5	0.076 j	41.5	<0.025	0.97 B	0.41	79.7	76.3	0.82	<0.5	<0.1	8.8
GWA-09D CCR	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	6.3	321	161	383	<0.5	0.071 j	36.6	NA	0.63 S1	0.22	NA	NA	NA	<0.5	<0.1	NA
GWA-09S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	4.8	336	175	379	<0.5	0.35	39.7	0.88	1.1	46	79.2	2700	10.4	<0.5	<0.1	<0.3
GWA-09S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	4.8	363	179	384	<0.5	0.27	43	1.3	1.4	51	84.4	3330	11.5	0.44 j	0.063 j	0.12 j
GWA-09S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	5.0	382	213	441	<0.5	0.2	39.4	<0.025 M1	0.23 j	82	236	2830	9.5	0.26 j	0.06 j	0.13 j
GWA-09S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	5.1	379	216	428	<0.5	0.21	36.5	<0.025	0.43 j,B	81.3	132	2530	9.5	<0.5	0.051 j	0.17 j,B
GWA-09S CCR	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	5.1	362	216	449	<0.5	0.21	35.4	NA	0.45 j,S1	87.6	NA	NA	NA	<0.5	0.053 j	NA
GWA-09SA	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/12/2019	5.3	117	27.5	85	0.49 j	<0.1	77	0.073 S1	<0.5	3.4	<50	40.3	0.49 j	1.2	0.072 j	0.19 j,S1
GWA-09SA CCR	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/12/2019	5.3	108	27.6	85	0.37 j	<0.1	72.3	NA	<0.5	3.5	NA	NA	NA	1.3	0.074 j	NA
GWA-10D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/19/2018	7.1	<50	5.6	180	<0.5	<0.1	9.2	0.28	<0.5	<0.1	<50	<5	<0.5	<0.5	<0.1	16.4
GWA-10D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/22/2018	8.3	<50	6.6	185	<0.5	0.05 j	13.7	0.34	0.51	0.033 j	<50	3 j	0.18 j	<0.5	<0.1	11
GWA-10D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	6.9	<50	6.9	212	<0.5	0.063 j	7.1	0.26	0.76	0.05 j	<50	3.5 j	0.43 j	<0.5	<0.1	15.7
GWA-10D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/19/2018	6.9	<50	7.2	215	<0.5	0.098 j	3.2 j	0.33	0.56	0.038 j	<50	3.1 j	0.48 j	<0.5	<0.1	15.2 BC
GWA-10D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/12/2019	7.0	<50	7.3 zs	209	<0.5	0.086 j	8.4	0.38	0.42 j	0.059 j	<50	2.6 j	0.35 j	<0.5	<0.1	15.2
GWA-10S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/19/2018	6.8	<50	15.9	247	<0.5	<0.1	24.6	0.48	0.67	<0.1	85.9	<5	2	<0.5	<0.1	23.4
GWA-10S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/22/2018	6.8	<50	19.6	220	<0.5	0.084 j	26.1	1.2	1	<0.1	66.4	<5	1.9	<0.5	<0.1	18
GWA-10S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	6.8	<50	21.8	267	<0.5	0.087 j	28.2	0.49	0.63	<0.1	77.8	<5	1.9	<0.5	<0.1	26.2
GWA-10S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/19/2018	6.7	<50	23.6	296	<0.5	0.13	26.8	0.5	0.76	0.033 j	47 j	<5	2.1	<0.5	<0.1	25.6 BC
GWA-10S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/12/2019	6.8	<50	23.8	296	<0.5	0.12	31.2	0.58	0.53	<0.1	27.4 j	<5	1.9	<0.5	<0.1	21.7
GWA-11D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/19/2018	6.4	<50	13.1	136	<0.5	<0.1	73	4.6	5.7	<0.1	139	7.7	0.55	<0.5	<0.1	7
GWA-11D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	6.4	<50	15.2	152	<0.5	0.057 j	77.3	1.4	4	<0.1	29.7 j	4.7 j	0.9	<0.5	<0.1	6.2
GWA-11D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/16/2018	6.3	<50	13.3	147	<0.5	<0.1	72.5	4.9	6.3	0.13	331	11.7	0.47 j	<0.5	<0.1	7.1
GWA-11D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	6.4	<50	12.9	146	<0.5	0.068 j	69.8	4.6	5.7	0.15	137	7.8	0.7	<0.5	<0.1	6.4
GWA-11S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/19/2018	5.0	<50	<1	<25	<0.5	<0.1	38.2	0.27 M1	0.56	2.2	269	26.1	1.5	<0.5	<0.1	<0.3
GWA-11S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	5.0	<50	<1	26 H1	<0.5	<0.1	34.8	0.3	0.51	2.5	203	23.9	10.4	<0.5	<0.1	<0.3
GWA-11S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/16/2018	4.8	<50	<1	<25	<0.5	<0.1	34.8	0.32	0.68	2.3	261	23.3	1.8	<0.5	<0.1	0.19 j
GWA-11S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	4.4	<50	0.6 j	29	<0.5	0.048 j	34.7	0.34	1.6	2.5	131	21.4	2.2	<0.5	<0.1	0.25 j,B
GWA-12BRU	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	6.7	<50	17.7	139	<0.5	0.11	8.2	2.5	2.2	<0.1	<50	<5	1.6	<0.5	<0.1	7
GWA-12BRU	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	6.6	<50	15.5	123	<0.5	0.18	8.3	1.9 P4	1.5	0.02 j	<50	5.5	0.92	0.34 j	<0.1	7.8
GWA-12BRU	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	6.5	<50	21.9	132	<0.5	0.059 j	12.4	2.1	2.1	0.043 j	74.4	9.5	1.5	0.35 j	<0.1	7
GWA-12BRU	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/19/2018	6.3	<50	21.2	134	<0.5	0.078 j	6.7	2.6	2.6	0.043 j	<50	3.4 j	1.1	<0.5	<0.1	7 BC
GWA-12S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	5.9	<50	187	386	<0.5	0.13	19.5	0.36	<0.5	<0.1	55.9	<5	2.6	<0.5	<0.1	2.3
GWA-12S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	5.7	<50	230	458	<0.5	0.13	22.7	0.28	0.53	0.1	80.9	4.9 j	2.2	0.29 j	<0.1	2.4
GWA-12S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	5.8	<50	202	414	<0.5	0.089 j	20.5	0.32	0.43 j	0.047 j	181	6.3	1.9	0.15 j	<0.1	2.5
GWA-12S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/19/2018	5.9	<50	128	392	<0.5	0.13	16.5	0.47	2.8	0.092 j	37.5 j	<5	3	<0.5	<0.1	2.3 B,BC
GWA-13D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/19/2018	7.5	<50	<1	300000	<0.5	0.54	21.1	<0.025	0.53	0.3	3000	300	<0.5	<0.5	<0.1	<0.3
GWA-13D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/18/2018	7.3	<50	0.84 j	242	0.18 j	0.44	20.8	<0.025	0.9	0.51	3420	291	0.94	<0.5	<0.1	0.3
GWA-13D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	7.0	<50	<1	257	<0.5	0.31	21.2	<0.025	0.73	0.79	3150	379	15.5	<0.5	<0.1	0.063 j
GWA-13D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	7.5	<50	<1	210	<0.5	0.34	23	<0.025	0.66 B	0.16	3410	371	4.4	<0.5	<0.1	0.18 j
GWA-13SR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/19/2018	5.9	<50	1.7	68	<0.5	1.6	47.8	<0.025	29.3	5.3	2440	243	32.1	<0.5	<0.1	0.98
GWA-13SR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/18/2018	5.6	<50	1.7	81	0.13 j	0.49	42.5	<0.025	0.55	2.3	882	119	2.8	<0.5	<0.1	0.67
GWA-13SR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	5.7	<50	1	67	<0.5	0.2	40.8	0.14	4.2	1.8	782	149	8	<0.5	<0.1	0.45
GWA-13SR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	5.8	<50	1.2	65	<0.5	0.13	38.9	0.32	1.5	1.5	352	87.8	3.2	<0.5	<0.1	0.59
GWA-14D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	12.0	<50	5.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GWA-14D CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	12.0	8.9	5.4	350	0.69	0.37	217	NA	3.4	0.046 j	NA	NA	NA	0.32 j	<0.1	NA

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					PARAM	40CFR257 APPENDIX III CONSTITUE			INORGANIC PARAMETERS (TOTAL CONCENTRATION)													
BUCK				Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019				15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*		
BRANDON RUSSO				Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69		
PERRY WALDREP				Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418		
				Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12		

					PARAM	40CFR257 APPENDIX III CONSTITUE			INORGANIC PARAMETERS (TOTAL CONCENTRATION)													
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium		
GWA-14D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**11.8**	36 j	5.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
GWA-14D CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**11.8**	9.4	5.4	362	0.62	0.7	139	NA	0.62	0.067 j	NA	NA	NA	0.43 j	<0.1	NA		
GWA-14D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/16/2018	**11.5**	<50	7.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
GWA-14D CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/14/2018	**11.9**	8.2 j,B	5.7	266	0.98	0.64	102	NA	0.82 B,S1	0.039 j	NA	NA	NA	<0.5	<0.1	NA		
GWA-14D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/19/2018	**11.7**	<50	5.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
GWA-14D	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/07/2019	**11.1**	<50	5.4 S1	171	0.57	0.7	97.3	0.083 S1	0.85	0.081 j	<50	<5	0.85	0.27 j	<0.1	**2.1**		
GWA-14D CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/07/2019	**11.1**	5.6 j	5.1	187	0.57	0.79	85.3	NA	<0.5	0.057 j	NA	NA	NA	0.26 j	<0.1	NA		
GWA-14S CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	**5.2**	1.8 j	3.3	137	<0.5	0.081 j	144	NA	1.3	**7**	NA	NA	NA	<0.5	<0.1	NA		
GWA-14S	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/20/2018	**5.3**	<50	1.7	108	<0.5	<0.1	114	1 M6	1.7	**7**	<50	**69.2**	8.2	<0.5	<0.1	<0.3		
GWA-14S	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**5.1**	<50	0.72 j	100	<0.5	<0.1	89.6	1.2 TP	2.1	**3.4**	74.4	39.4	5.7	<0.5	<0.1	0.3 B		
GWA-14S CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**5.1**	2.9 j	0.98 j	108	<0.5	0.071 j	97.3	NA	9.1	**4.9**	NA	NA	NA	<0.5	<0.1	NA		
GWA-14S	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/16/2018	**5.3**	<50	2.5	134	<0.5	<0.1	146	1	1.2	**6.5**	26.4 j	**88.8**	8.8	0.16 j	<0.1	**0.34**		
GWA-14S	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/14/2018	**5.3**	<50	6.7	127	<0.5	0.17	134	1.1	1.4 BC	**8.5**	33.9 j	**105**	8.4	<0.5	<0.1	**0.48**		
GWA-14S CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/14/2018	**5.3**	8.5 j,B	8.1	125	<0.5	0.28	129	NA	1.3 B,S1	**9.5**	NA	NA	NA	<0.5	<0.1	NA		
GWA-14S CCR	South of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/07/2019	**5.4**	<25	2.6 M1	93	<0.5	0.073 j	82.6	NA	1.4	**2.5**	NA	NA	NA	<0.5	<0.1	NA		
GWA-15BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/16/2018	8.1	<50	9.7	135	<0.5	0.6	13.8	<0.025	<0.5	<0.1	238	**51.3**	1	<0.5	<0.1	**1.5**		
GWA-15BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/22/2018	**10.2**	<50	4.5	149	0.2 j	0.34	31.4	0.11	0.42 j	<0.1	<50	5.9	0.18 j	<0.5	<0.1	**2**		
GWA-15BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	**10.1**	<50	4	184	0.14 j	0.28	38.8	<0.025	0.39 j	<0.1	<50	4.6 j	0.19 j	<0.5	<0.1	**2.4**		
GWA-15BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/14/2018	**9.8**	<50	3.5	139	0.37 j	0.16	20.6	0.045	0.34 j,B	0.088 j	<50	5.8	<0.5	<0.5	<0.1	**3**		
GWA-15BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/12/2019	**9.7**	<50	3.5 S1	134	0.22 j	0.15	16.1	0.063 S1	<0.5	<0.1	<50	3.7 j	<0.5	<0.5	<0.1	**3.2**		
GWA-15D CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	6.5	<5	0.9 j	84	<0.5	0.11	22.3	NA	2.3	**33.2**	NA	NA	NA	<0.5	<0.1	NA		
GWA-15D	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/15/2018	**6.4**	<50	<1	88	<0.5	<0.1	25.4	1.8	2.1	**36.4**	**346**	**253**	2.1	<0.5	<0.1	**1.5**		
GWA-15D	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**6.0**	<50	1.6	90	<0.5	0.065 j	20.4	2.1 TP	2.6	**25.1**	170	**102**	1.9	<0.5	<0.1	**1.7**		
GWA-15D CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**6.0**	3.9 j	1.6	90	<0.5	0.11	21.6	NA	2.8	**29.4**	NA	NA	NA	<0.5	<0.1	NA		
GWA-15D	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	**6.2**	<50	1.7 M1,R1	90	<0.5	0.08 j	22.1	2	2.3	**19.9**	282	**112**	1.7	<0.5	<0.1	**1.9**		
GWA-15D	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/14/2018	**6.4**	<50	1.3	79	0.14 j	0.1	20.5	1.8 M6	2.7	**19.6**	77.6	**73.5**	1.8	<0.5	<0.1	**1.9**		
GWA-15D CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/14/2018	**6.4**	6.1 j,B	1.3	89 D6	<0.5	0.055 j	17.7	NA	2.6 B,S1	**18.1**	NA	NA	NA	<0.5	<0.1	NA		
GWA-15D CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/06/2019	**6.3**	3.9 j	1.7	89	<0.5	0.1	19.6	NA	2.5	**13.6**	NA	NA	NA	<0.5	<0.1	NA		
GWA-15S CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	**5.0**	11.5	7.4	72	<0.5	0.077 j	33.1	NA	0.41 j	0.7	NA	NA	NA	<0.5	<0.1	NA		
GWA-15S	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/15/2018	**5.1**	<50	6	72	<0.5	<0.1	39.5	0.22	<0.5	0.77	124	47.8	1	<0.5	<0.1	<0.3		
GWA-15S	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**4.5**	<50	4.1	69	<0.5	0.079 j	26.1	0.45 TP	0.63	0.56	38.5 j	31.7	0.75	<0.5	<0.1	0.12 j,B		
GWA-15S CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**4.5**	9	3.9	69	<0.5	0.075 j	29.4	NA	0.68	0.57	NA	NA	NA	<0.5	<0.1	NA		
GWA-15S	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	**5.0**	<50	7.3	57 D6	<0.5	0.12	27.7	0.14	0.32 j	0.48	98.6	29	0.53	<0.5	0.027 j	0.093 j		
GWA-15S	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/14/2018	**5.3**	30.5 j	16.3	74	<0.5	0.19	38.3	0.045	1.2	0.77	**485**	**86.9**	0.81	<0.5	0.04 j	**0.88**		
GWA-15S CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/14/2018	**5.3**	26.5	17.1	71	<0.5	0.43	44.5	NA	6	**1.5**	NA	NA	NA	<0.5	0.034 j	NA		
GWA-15S CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/06/2019	**5.4**	16.8 j	13.1	71	<0.5	0.17	27.4	NA	0.59	0.55	NA	NA	NA	0.12 j	<0.1	NA		
GWA-16BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	6.7	<50	<1	132	<0.5	<0.1	22.3	0.56	0.84	<0.1	83.9	30	2	<0.5	<0.1	**10.9**		
GWA-16BR CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	6.7	3.8 j	<1	102	<0.5	0.1	21.2	NA	1.1	0.062 j	NA	NA	NA	<0.5	<0.1	NA		
GWA-16BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	6.6	<50	<1	129	<0.5	0.075 j	20	0.36 TP	0.69	0.061 j	163	37.5	2.9	<0.5	<0.1	**10.4**		
GWA-16BR CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	6.6	2.6 j	<1	124	<0.5	0.12	20.4	NA	1.2	0.097 j	NA	NA	NA	<0.5	<0.1	NA		
GWA-16BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/16/2018	6.5	<50	<1	119	<0.5	<0.1	21.7	0.88	1.2	0.13	184	43.3	4.1	<0.5	<0.1	**11.8**		
GWA-16BR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	**6.1**	<50	<1	114	<0.5	0.066 j	22.8	0.37	1.3	0.16	**310**	46.5	3.4	<0.5	<0.1	**10.2**		
GWA-16BR CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	**6.1**	2.4 j,B	<1	121	<0.5	0.071 j	20.6	NA	1.9 S1	0.19	NA	NA	NA	<0.5	<0.1	NA		
GWA-16BR CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/05/2019	6.7	<25	<1	128	<0.5	0.15	24.5	NA	1.3	0.12	NA	NA	NA	<0.5	<0.1	NA		
GWA-16D	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	7.2	<50	7	131	<0.5	0.16	22.7	2.2	2.7	<0.1	<50	<5	0.82	<0.5	<0.1	**14.1**		
GWA-16D CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	7.2	4.7 j	6.6	129	<0.5	0.16	21.8	NA	2.9	0.029 j	NA	NA	NA	<0.5	<0.1	NA		
GWA-16D	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/17/2018	8.0	<50	4.2	129	<0.5	0.12	32.8	2.2	2.3	0.038 j	<50	<5	0.59	<0.5	<0.1	**12.5**		
GWA-16D CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/17/2018	8.0	5.9	4.2	133	<0.5	0.18	28.8	NA	2.1	0.03 j	NA	NA	NA	<0.5	<0.1	NA		
GWA-16D	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/14/2018	6.8	<50	3.7	122	<0.5	0.12	24.2	1.9	2.2	0.033 j	98.3	4 j	0.39 j	<0.5	<0.1	**11.1**		
GWA-16D	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	7.3	<50	3.4 M1	120	<0.5	0.11	33	0.66	2	0.038 j	27.3 j	<5	0.45 j	<0.5	<0.1	**10.3**		
GWA-16D CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	7.3	3.2 j,B	3.7	133	<0.5	0.13	29.9	NA	2.1 S1	0.038 j	NA	NA	NA	<0.5	<0.1	NA		
GWA-16D CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/05/2019	7.2	3.2 j	2.3	128	<0.5	0.14	41.4	NA	1.9	<0.1	NA	NA	NA	<0.5	<0.1	NA		
GWA-16S	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	**6.0**	<50	<1	92	<0.5	<0.1	35	0.61	0.94	0.1	138	49.6	0.93	<0.5	<0.1	**1.5**		
GWA-16S CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/14/2018	**6.0**	<5	0.89 j	97	<0.5	0.069 j	33.8	NA	0.92	0.12	NA	NA	NA	<0.5	<0.1	NA		
GWA-16S	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**6.1**	<50	11.4	115	<0.5	<0.1	41.4	1.8 TP	2.1	0.039 j	77.4	35.8	2.2	1.1	<0.1	**1.7**		
GWA-16S CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	05/16/2018	**6.1**	2 j	11.6	113	<0.5	0.066 j	43.4	NA	2.2	0.048 j	NA	NA	NA	1.2	<0.1	NA		
GWA-16S	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	08/16/2018	**5.9**	<50	26.5	132	<0.5	<0.1	57.2	2.2 M6	3.1	0.17	**666**	**53.4**	2	1.6	<0.1	**2.7**		
GWA-16S	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	**6.2**	<50	12.8	96	<0.5	<0.1	47.8	0.59	2.1	0.12	**339**	29	2	0.46 j	<0.1	**2.5**		
GWA-16S CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	11/13/2018	**6.2**	3 j,B	13.2	110	<0.5	0.054 j	43.2	NA	2.2 S1	0.11	NA	NA	NA	0.47 j	<0.1	NA		
GWA-16S CCR	East of Ash Basin, Cell 2	Ash Basin, Cell 2	Upgradient	02/05/2019	**6.1**	2.7 j	6.1	103	<0.5	0.11	42.3	NA	2.1	0.27	NA	NA	NA	0.26 j	<0.1	NA		
GWA-17S	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	02/16/2018	**6.2**	<50	5.4	129	<0.5	0.3	61	0.083	<0.5	0.49	250	**192**	4.5	<0.5	<0.1	**3**		
GWA-17S	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	05/21/2018	**6.2**	37 j	6.5	132	<0.5	0.46	56.1	0.16	0.75	0.45	**409**	**142**	2.6	<0.5	<0.1	**3.3**		
GWA-17S	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	08/14/2018	**6.2**	32.8 j	4.5	133	<0.5	0.12	57.3	0.2	0.72	0.23	136	**163**	1.9	<0.5	<0.1	**3.9**		
GWA-17S	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Sidegradient	11/21/2018	**6.3**	36.5 j	6.7	141	<0.5	0.08 j,BC	49.3	0.29	0.49 j	0.12	41.2 j	**56.9**	2	<0.5	<0.1	**3.9**		

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		PARAMETERS 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
GWA-18DA	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/20/2018	7.6	<50	**323**	**696**	<0.5	0.8	91	<0.025	2.2	0.22	126	**53.4**	3	<0.5	<0.1	**3**
GWA-18DA	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/21/2018	7.6	55.3	**437**	**852**	0.17 j	1	81.1	<0.025	2.1	0.25	130	**61.8**	2.1	<0.5	<0.1	**1.1**
GWA-18DA	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/16/2018	7.5	58.1	**463**	**892**	0.19 j	0.77	79	<0.025	1.3	0.35	292	**83.4**	4.7	<0.5	<0.1	**1.3**
GWA-18DA	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/19/2018	7.5	40.5 j	**326**	**688**	<0.5	0.27	113	0.2	0.44 j,B	0.12	<50	15.9	0.9	<0.5	<0.1	**4.4**
GWA-18S	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/20/2018	**6.3**	<50	213	439	0.6	0.61	76.1	<0.025	2.2	**3.3**	**899**	**292**	11.5	<0.5	<0.1	**0.79**
GWA-18S	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/21/2018	**6.2**	<50	211	437	0.29 j	0.33	68.4	<0.025 M1,R1	0.71	**1.9**	**375**	**203**	4.7	<0.5	<0.1	**0.41**
GWA-18S	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/16/2018	**6.2**	<50	217	442	0.9	0.35	84.5	<0.025	2.4	**1.8**	**1130**	**225**	8.7	<0.5	<0.1	**1.9**
GWA-18S	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/19/2018	**6.1**	52.6	103	288	0.98	1.1	96	0.16	**19.7**	**4.6**	**6320**	**224**	37.3	<0.5	<0.1	**10.2**
GWA-18S CCR	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/19/2018	**6.1**	20.8 j	198	394	0.87	0.55	68.2	NA	**18.9**	**3.2**	NA	NA	NA	<0.5	<0.1	NA
GWA-18S CCR	North of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/06/2019	**6.3**	27.8	137	308	0.13 j	0.42	69.2	NA	1	**1.6**	NA	NA	NA	0.1 j	<0.1	NA
GWA-19D	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	7.9	<50	30.1	198	<0.5	0.14	50.2	<0.025 M1	<0.5	<0.1	199	**638**	0.72	<0.5	<0.1	<0.3
GWA-19D	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	8.3	<50	36.8	165	0.29 j	0.2	45.9	<0.025	0.44 j	0.09 j	**532**	**528**	0.76	<0.5	<0.1	0.078 j
GWA-19D	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	7.5	<50	39.8	165	0.18 j	0.12	50.3	<0.025	0.21 j	0.14	**1150**	**645**	0.28 j	<0.5	<0.1	0.097 j
GWA-19D	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/20/2018	7.1	<50	40.8	177	<0.5	0.31	69.7	<0.025	0.28 j	**3**	**2690**	**882**	2.1	<0.5	<0.1	**1.8**
GWA-19S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	**5.6**	<50	21.4	97	<0.5	1.4	55.3	1.9	7.8	**3.7**	**1490**	**198**	7	0.85	<0.1	**3.3**
GWA-19S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/17/2018	**5.6**	<50	22	90	<0.5	0.092 j	54.8	2.7	3.3	**4**	**377**	**232**	5.6	0.25 j	<0.1	**1.2**
GWA-19S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	**5.6**	<50	23.8	94	<0.5	<0.1	56.5	2.5	3.2	**3**	**394**	**143**	3.1	0.28 j	<0.1	**1.4**
GWA-19S	North of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/20/2018	**5.8**	<50	24.2	93	<0.5	0.042 j	55.7	3.1	3.1	**2**	67.6	**87.3**	3.6	<0.5	<0.1	**1.1**
GWA-20D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	02/19/2018	7.1	<50	10.3	194	<0.5	<0.1	60.4	0.28	0.56	**3.1**	57.5	**714**	17.4	<0.5	<0.1	**4**
GWA-20D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	05/22/2018	7.0	<50	11.3	212	<0.5	0.061 j	52.4	0.27	0.49 j	**3.6**	52.8	**562**	22.1	<0.5	<0.1	**4.5**
GWA-20D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	08/15/2018	6.9	<50	11.9	218	<0.5	<0.1	60.4	0.47	1.3	**3.9**	**430**	**740**	25.8	<0.5	<0.1	**5.5**
GWA-20D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	11/19/2018	6.8	<50	11.3	224	<0.5	0.054 j	59.2	0.44	0.84 B	**3.8**	55.2	**510**	25.9	<0.5	<0.1	**5.3**
GWA-20S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	02/19/2018	**5.7**	<50	9.9	75 D6	<0.5	<0.1	38	2.6	3.1	0.14	60.2	9.1	12.7	<0.5	<0.1	**0.7**
GWA-20S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	05/22/2018	**5.4**	<50	9.5	81	<0.5	1.6	37.7	<0.025	1.4	**30.5**	**2360**	**454**	43.7	<0.5	<0.1	**2.1**
GWA-20S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	08/17/2018	**5.4**	31.6 j	8.9	84	<0.5	0.17	37.6	0.16 M1	1.2 B	**9.3**	**1040**	**179**	24.2	<0.5	<0.1	**1.2**
GWA-20S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	11/19/2018	**5.7**	34 j	9.1	84	<0.5	0.15	38.3	0.063 M1	**10.1**	**6**	**732**	**114**	26.6	<0.5	<0.1	**1.9**
GWA-20S CCR	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	11/19/2018	**5.7**	25.3	9.2	81	<0.5	0.16	31.7	NA	9.9	**5.5**	NA	NA	NA	<0.5	<0.1	NA
GWA-20S CCR	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	02/07/2019	**5.6**	17.1 j	8.9	75	<0.5	0.18	29.5	NA	2	**3.3**	NA	NA	NA	<0.5	<0.1	NA
GWA-22D	Northwest of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	**6.3**	<50	25.4	186	<0.5	<0.1	25.1	1.1	1.3	0.19	<50	7.2	1.3	<0.5	<0.1	**18.4**
GWA-22D	Northwest of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/21/2018	**6.0**	39.8 j	26.7	183	<0.5	0.11	22.6	1.4	1.5	0.13	<50	<5	0.59	<0.5	<0.1	**17.9**
GWA-22D	Northwest of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	**6.1**	<50	26.7	186	<0.5	<0.1	25	1.3	1.4	0.11	<50	<5	0.3 j	<0.5	<0.1	**17.6**
GWA-22D	Northwest of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	**6.4**	<50	26.8 M1	186	0.15 j	0.1	23.5	1.1	1.5	0.16	<50	2.6 j	<0.5	<0.5	<0.1	**17.4**
MW-01D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	02/16/2018	6.8	427	22.2	275	<0.5	0.23	16.4	0.028	<0.5	<0.1	<50	17.3	<0.5	<0.5	<0.1	**10.4**
MW-01D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	05/22/2018	7.0	399	24.8	225	<0.5	0.23	15.6	0.048	0.28 j	0.039 j	<50	16.6	0.46 j	0.32 j	<0.1	**10.7**
MW-01D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	08/17/2018	6.9	**1420**	105	325	<0.5	0.06 j	59.8	0.041	0.38 j,B	0.24	<50	<5	0.79	<0.5	<0.1	**3.4**
MW-01D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	11/19/2018	6.7	348	24.9	280	<0.5	0.2	14.3	0.057	0.22 j	0.039 j	<50	15	<0.5	<0.5	<0.1	**11.1 BC**
MW-01D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	02/12/2019	6.9	423	26.2	286	<0.5	0.31	16.6	0.054 S1	0.4 j	0.1	54.8	19.4	0.66	0.27 j	<0.1	**9.9**
MW-01S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	02/16/2018	6.9	650	26.8	278	<0.5	<0.1	34.6	0.36	0.78	0.13	128	31.5	0.72	<0.5	<0.1	**17.6**
MW-01S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	05/22/2018	6.9	627	24	253	<0.5	0.11	30.6	0.48	0.57	0.23	53.7	**68.2**	1.1	<0.5	<0.1	**19.3**
MW-01S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	08/17/2018	6.6	693	26.1	271	<0.5	0.14	37.6	0.68	0.74 B	0.16	94.4	37.8	0.93	<0.5	<0.1	**25.8**
MW-01S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Sidegradient	11/19/2018	7.0	639	26.6	262	<0.5	0.15	29.7	0.5	2	0.32	28 j	**58.6**	1.9	<0.5	<0.1	**20.9 BC**
MW-03D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/15/2018	**6.3**	630	69.4	230	<0.5	<0.1	85.9	<0.025	0.53	<0.1	<50	44.8	0.59	<0.5	<0.1	**3.3**
MW-03D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/22/2018	**6.1**	564	72 M1	212	<0.5	0.054 j	76.9	<0.025	<0.5	0.074 j	34.8 j,1g	42.2	0.4 j	<0.5	<0.1	**3.6**
MW-03D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/16/2018	**6.2**	621	75.1	221	<0.5	<0.1	84	0.026	0.58	0.096 j	44.9 j	**52.2**	0.7	<0.5	<0.1	**3**
MW-03D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/13/2018	**6.1**	631	71.5	217	<0.5	<0.1	85.6	<0.025	0.27 j,B	0.069 j	<50	42.8	0.56	<0.5	<0.1	**3**
MW-03S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/15/2018	**5.8**	662	31	111	<0.5	<0.1	17.2	0.12	0.58	**23.4**	**1120**	**1620**	1.8	<0.5	<0.1	<0.3
MW-03S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/22/2018	**9.7**	**720**	35.1	108	<0.5	0.11	15.8	<0.025	0.3 j	**21.4**	**2090**	**1380**	1.2	<0.5	0.062 j	0.11 j
MW-03S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/16/2018	**5.6**	**872**	38.3	109	<0.5	<0.1	16.6	<0.025 M1	1.3	**18.1**	**1170**	**1270**	1.6	<0.5	0.075 j	0.12 j
MW-03S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/13/2018	**5.8**	**859**	40.3	106	<0.5	0.057 j	17.7	<0.025	0.16 j,B	**18.1**	**1010**	**1220**	1.2	<0.5	0.062 j	0.092 j
MW-04D	Northeast of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	02/20/2018	**6.2**	442 M1	18.5	140	<0.5	<0.1	11.5	0.026	<0.5	<0.1	<50	<5	0.86	<0.5	<0.1	**2.2**
MW-04D	Northeast of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	05/22/2018	**5.9**	618	20.7	98	<0.5	0.064 j	15.6	0.043	<0.5	<0.1	<50	<5	0.56	<0.5	<0.1	**2.1**
MW-04D	Northeast of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	08/20/2018	**6.1**	627	21.2	139	<0.5	0.078 j	20.2	0.094	0.83	0.046 j	**518**	8	1.2	<0.5	<0.1	**2.5**
MW-04D	Northeast of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	11/21/2018	**6.2**	617	22.4	147	<0.5	0.077 j,BC	15.5	0.046	0.25 j	0.017 j	<50	<5	1	<0.5	<0.1	**2.2**
MW-04S	Northeast of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	02/20/2018	**6.1**	469	42.5	195	<0.5	<0.1	66.7	<0.025	<0.5	0.25	**775**	**135**	2.1	<0.5	<0.1	**1**
MW-04S	Northeast of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	05/22/2018	**6.1**	408	47.8	195	<0.5	0.05 j	59.3	<0.025	<0.5	0.16	**400**	**125**	0.31 j	<0.5	<0.1	**0.65**
MW-04S	Northeast of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	08/20/2018	**6.2**	497	47.2	213	<0.5	0.076 j	68.4	<0.025	9.3	0.3	**1320**	**147**	4.6	<0.5	<0.1	**1.4**
MW-04S	Northeast of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	11/21/2018	**6.4**	466	50	232	<0.5	0.11 BC	65.2	<0.025	4.6	0.48	**529**	**145**	3.2	<0.5	<0.1	**1.8**
MW-05D	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	02/16/2018	**5.9**	350	70.1	288	<0.5	<0.1	33.8	<0.025	<0.5	<0.1	<50	<5	0.6	<0.5	<0.1	**1.5**
MW-05D	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	05/17/2018	**5.9**	358	73.8	308	<0.5	0.055 j	34.3	0.16	1.5	0.064 j	90.2	3.3 j	1.4	<0.5	<0.1	**1.4**
MW-05D	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	08/15/2018	**5.9**	349	74.1	296	<0.5	<0.1	35.3	<0.025	0.66	0.07 j	77.1	5.6	0.71	<0.5	<0.1	**1.4**
MW-05D	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	11/13/2018	**6.1**	345	73.6	309	<0.5	0.059 j	36.9	0.041	0.8 B	0.079 j	<50	2.8 j	0.52	<0.5	<0.1	**1.3**
MW-05S	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	02/16/2018	**6.0**	233	67.2	258	<0.5	0.17	88.9	1	3.2	<0.1	180	8.3	1.8	<0.5	<0.1	**1.3**
MW-05S	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	05/17/2018	**6.1**	235	69.2	249	<0.5	0.083 j	85.7	1.7	1.7	0.037 j	49.9 j	4.1 j	1	<0.5	<0.1	**1.2**
MW-05S	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	08/15/2018	**6.0**	221	66.6	237	<0.5	<0.1	83.1	1.2	1.4	0.033 j	47 j	<5	0.68	<0.5	<0.1	**1.1**

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		PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)										
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
MW-05S	East of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	11/13/2018	6.3	228	63.5	266	<0.5	0.067 j	91	1.1	1.4	0.05 j	<50	2.8 j	0.77	<0.5	<0.1	1.2
MW-06BR	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	02/19/2018	8.0	<50	5.7	100	<0.5	1.1	19.1	<0.025	<0.5	<0.1	194	204	<0.5	<0.5	<0.1	<0.3
MW-06BR	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	05/18/2018	7.5	<50	3.8	114	0.55	1	23.9	<0.025	0.54	0.029 j	130	147	0.98	<0.5	<0.1	0.35
MW-06BR	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	08/14/2018	7.7	<50	4.7	122	0.48 j	0.83	26	<0.025	0.58	0.075 j	390	162	1.8	<0.5	<0.1	0.48 B
MW-06BR	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	11/20/2018	7.9	<50	5.8	128	0.29 j	1	21.7	0.028	0.26 j	0.027 j	200	208	0.67	<0.5	<0.1	0.31
MW-06D	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	02/19/2018	6.8	<50	1.8	103	<0.5	<0.1	84.5	0.38	0.53	<0.1	<50	<5	<0.5	<0.5	<0.1	8.3
MW-06D	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	03/20/2018	6.8	<50	2.4	120	<1	<1	88	NA	<5	<1	30	<5	<5	<1	<0.2	8.44
MW-06D	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	05/18/2018	6.6	<50	2.1	111	<0.5	<0.1	95.3	0.33	0.51	<0.1	<50	<5	0.16 j	<0.5	<0.1	7.8
MW-06D	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	07/30/2018	6.7	<50	2.4	140	<1	<1	90	NA	<5	<1	29	<5	<5	<1	<0.2	8.07
MW-06D	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	08/14/2018	6.8	<50	1.7	121	<0.5	0.058 j	90.5	0.59	0.74	<0.1	33.5 j	<5	<0.5	<0.5	<0.1	8.7
MW-06D	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	11/20/2018	7.0	<50	2.6	119	<0.5	0.052 j	100	0.57	0.65	0.013 j	170	8.1	<0.5	<0.5	<0.1	7
MW-06S	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	02/19/2018	5.2	<50	<1	<25	<0.5	<0.1	42.1	1	1.2	2.9	<50	23.5	7.4	<0.5	<0.1	0.31
MW-06S	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	03/20/2018	5.3	<50	0.28	33	<1	<1	46	NA	<5	3.38	53	46	8	<1	<0.2	0.773
MW-06S	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	05/18/2018	4.8	<50	<1	37	<0.5	<0.1	49.6	0.42	0.96	5.3	147	103	8.7	<0.5	<0.1	0.38
MW-06S	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	07/30/2018	5.3	<50	0.24	83	<1	<1	44	NA	<5	2.52	31	26	6	<1	<0.2	0.414
MW-06S	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	08/14/2018	5.4	<50	<1	43	<0.5	0.097 j	46.5	1.8 M6	5.2	4.2	172	68.1	11.8	<0.5	<0.1	<0.3
MW-06S	Southeast of Ash Basin, Cell 1	Ash Basin, Cell 1	Background	11/20/2018	5.4	<50	<1	45	<0.5	0.067 j	47.7	0.34	0.9	7.1	452	178	8.5	<0.5	<0.1	1.3
MW-07D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/16/2018	6.9	<50	2.3	114	<0.5	<0.1	14	1.8	2.3	<0.1	<50	<5	0.51	<0.5	<0.1	4.5
MW-07D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	03/20/2018	6.9	<50	10	110	<1	<1	15	NA	<5	<1	54	<5	<5	<1	<0.2	4.17
MW-07D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/18/2018	6.8	<50	1.5	118	<0.5	0.081 j	14	1.9	1.9	<0.1	<50	<5	0.35 j	<0.5	<0.1	6.1
MW-07D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	07/30/2018	6.8	<50	1.6	130	<1	<1	15	NA	<5	<1	54	<5	<5	<1	<0.2	5.86
MW-07D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	08/14/2018	7.0	<50	2	126	<0.5	0.11	14.9	1.7	2	<0.1	<50	<5	0.61	<0.5	<0.1	6.2
MW-07D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/20/2018	6.9	<50	6.4	127	<0.5	0.1	21	1.6	1.8	0.038 j	69.8	6.7	0.55	<0.5	<0.1	5.2 BC
MW-07S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/16/2018	5.5	<50	1.2	61	<0.5	<0.1	16	1.5	2.6	1.9	784	63.4	4.6	<0.5	<0.1	0.65
MW-07S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	03/20/2018	5.6	<50	1.1	62	<1	<1	16	NA	<5	5.97	622	126	<5	<1	<0.2	1.58
MW-07S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/18/2018	6.0	<50	<1	87	<0.5	<0.1	18.4	7 M6	6.9	0.76	<50	35.6	4.2	<0.5	<0.1	0.4
MW-07S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	07/30/2018	5.9	<50	0.32	100	<1	<1	20	NA	13	2.55	292	43	<5	<1	<0.2	1.33
MW-07S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	08/14/2018	5.3	<50	1.4	64	<0.5	0.076 j	22.4	0.96	1.8	7.1	473	177	7.9	<0.5	<0.1	1.4
MW-07S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/20/2018	5.6	<50	1.4	59	<0.5	0.08 j	16.1	3.4	4.2	3.4	629	72	3.7	<0.5	<0.1	1.5 BC
MW-08BRA	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/15/2018	7.7	<50	198	538	<0.5	1.3	36.6	<0.025	<0.5	0.48	188	109	1.1	<0.5	<0.1	1.4
MW-08BRA	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/18/2018	7.7	77.9	256	620	<0.5	2.9	43.9	<0.025	0.16 j	0.26	178	77.2	0.8	<0.5	<0.1	1.9
MW-08BRA	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	08/14/2018	7.6	30.2 j	115	336	0.084 j	1.4	28.5	<0.025	0.33 j	0.28	65.4	57.5	0.63	<0.5	<0.1	4.5
MW-08BRA	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/19/2018	7.4	<50	45.1	214	0.25 j	0.63	22	0.06	0.48 j	0.43	39.2 j	37.1	1.4	<0.5	<0.1	5.6 BC
MW-08BRA	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/07/2019	7.5	<50	15.1	213	0.36 j	0.39	21.6	0.64 M1	0.59	0.17	27.6 j	11	1.4	<0.5	<0.1	4.8
MW-08D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/15/2018	6.4	<50	1.3	119	<0.5	<0.1	17	0.49	0.66	<0.1	<50	<5	1.1	<0.5	<0.1	5.6
MW-08D CCR	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/15/2018	6.4	2.4 j	1.4	111	<0.5	0.1	16.3	NA	0.93	0.035 j	NA	NA	NA	<0.5	<0.1	NA
MW-08D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	03/20/2018	6.4	<50	1.8	100	<1	<1	18	NA	<5	<1	61	<5	<5	<1	<0.2	5.75
MW-08D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/16/2018	6.4	<50	1.5	121	<0.5	<0.1	17.2	0.52 TP	0.62	0.031 j	<50	<5	1.1	<0.5	<0.1	5.6
MW-08D CCR	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/16/2018	6.4	<5	1.4	111	<0.5	0.061 j	17.2	NA	0.67	0.032 j	NA	NA	NA	<0.5	0.033 j	NA
MW-08D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	07/30/2018	6.3	<50	1.7	84	<1	<1	20	NA	<5	<1	130	<5	<5	<1	<0.2	5.78
MW-08D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	08/14/2018	6.4	<50	1.5	122	<0.5	<0.1	17.8	0.51	0.77	0.027 j	<50	<5	1.3	<0.5	<0.1	5.3
MW-08D	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/19/2018	6.4	<50	1.5	124	<0.5	0.051 j	19.2	0.56	1.9	0.073 j	57.1	<5	1.3	<0.5	<0.1	5.5
MW-08D CCR	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/19/2018	6.4	1.7 j,S1	1.6	115	<0.5	<0.1	15.9	NA	0.65 B,S1	0.074 j	NA	NA	NA	<0.5	<0.1	NA
MW-08D CCR	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/07/2019	6.4	<25	1.6	123	<0.5	0.093 j	17.8	NA	0.64	<0.1	NA	NA	NA	<0.5	<0.1	NA
MW-08S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/15/2018	6.0	<50	4.5	137	<0.5	<0.1	19	0.69	1.2	<0.1	<50	<5	0.7	<0.5	<0.1	4.6
MW-08S CCR	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/15/2018	6.0	5 j	4.8	129	<0.5	0.063 j	19.1	NA	1.5	0.035 j	NA	NA	NA	<0.5	<0.1	NA
MW-08S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	03/20/2018	6.0	<50	4.4	140	<1	<1	52	NA	<5	3.36	6300	90	9	<1	<0.2	22.9
MW-08S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/16/2018	6.3	<50	1.7	132	<0.5	<0.1	16.2	0.72 TP	0.73	<0.1	26.8 j	<5	<0.5	<0.5	<0.1	6
MW-08S CCR	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	05/16/2018	6.3	<5	1.5	130	<0.5	<0.1	15.9	NA	0.98	0.027 j	NA	NA	NA	<0.5	<0.1	NA
MW-08S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	07/30/2018	6.2	<50	2.7	100	<1	<1	24	NA	<5	<1	421	44	<5	<1	<0.2	6.97
MW-08S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	08/14/2018	6.1	<50	4.8	105	<0.5	<0.1	19.9	0.51	0.64	0.03 j	99.8	7.9	0.55	<0.5	<0.1	4.6
MW-08S	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/19/2018	6.5	<50	1.4	118	<0.5	0.055 j	17	1	1.2	0.056 j	57.6	<5	0.74	<0.5	<0.1	7.4
MW-08S CCR	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	11/19/2018	6.5	2.6 j,S1	1.7 M1,R1	124	<0.5	<0.1	13.9	NA	1 B,S1	0.043 j	NA	NA	NA	<0.5	<0.1	NA
MW-08S CCR	South of Ash Basin, Cell 1	Ash Basin, Cell 1	Upgradient	02/07/2019	6.5	<25	1.2	121	<0.5	0.092 j	14.2	NA	1	<0.1	NA	NA	NA	0.1 j	<0.1	NA
MW-09D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	6.4	<50	26.8	183	<0.5	<0.1	24.1	1.1	1.4	<0.1	<50	7	<0.5	<0.5	<0.1	18.9
MW-09D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	03/20/2018	6.2	<50	30	190	<1	<1	27	NA	<5	<1	233	5	<5	<1	<0.2	16.8
MW-09D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/21/2018	6.1	<50	28.2	162	<0.5	0.09 j	23.5	1.1	1.4	0.021 j	<50	<5	0.45 j	<0.5	<0.1	16.5
MW-09D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	07/30/2018	6.2	<50	27	120	<1	<1	27	NA	<5	<1	92	<5	<5	<1	<0.2	16.3
MW-09D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	6.1	<50	27.6	184	<0.5	<0.1	27.7	1	1.3	0.068 j	196	4 j	0.19 j	<0.5	<0.1	16.5
MW-09D	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	6.3	<50	26.4	181	<0.5	0.068 j	26.1	1.1	1.4	0.063 j	61.6	<5	<0.5	<0.5	<0.1	16.4
MW-09S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	02/15/2018	6.3	<50	32.5	179	<0.5	<0.1	34.5	0.29	0.74	<0.1	86.1	12.8	0.66	<0.5	<0.1	7.7
MW-09S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	03/20/2018	6.1	<50	34	170	<1	<1	35	NA	<5	<1	80	11	<5	<1	<0.2	7.74
MW-09S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	05/21/2018	6.2	<50	31.5	152	<0.5	0.08 j	29.4	0.19	0.33 j	0.023 j	<50	8.6	0.53	<0.5	<0.1	8.5
MW-09S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	07/30/2018	6.2	<50	33	170	<1	<1	37	NA	<5	<1	281	10	<5	<1	<0.2	11.3

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		PARAMETERS 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAMETERS 40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium
MW-09S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	08/15/2018	**6.0**	<50	35.3	194	<0.5	<0.1	41.9	0.26	0.52	0.092 j	206	15.5	0.63	<0.5	<0.1	**11.2**
MW-09S	West of Ash Basin, Cell 1	Ash Basin, Cell 1	Downgradient	11/14/2018	**6.0**	<50	36.1	196	<0.5	0.097 j	41.5	0.096	0.69 B	0.2	141	38.8	0.96	<0.5	<0.1	**9.6**
MW-10D	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/16/2018	**5.8**	<50	**347**	**618**	<0.5	<0.1	27.6	1	1.3	<0.1	<50	23.6	1.1	0.58	<0.1	**1.4**
MW-10D	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	03/20/2018	**5.8**	<50	**380**	**580**	<1	<1	28	NA	<5	<1	64	13	<5	<1	<0.2	**1.61**
MW-10D	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/21/2018	**5.9**	<50	**328**	**598**	<0.5	0.1	23.8	1.4	1.4	0.044 j	<50	13.8	1.5	0.7	<0.1	**1.3**
MW-10D	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	07/30/2018	**5.8**	<50	**350**	**550**	<1	<1	29	NA	<5	<1	130	28	<5	<1	<0.2	**1.97**
MW-10D	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/16/2018	**5.8**	<50	**344**	**595**	<0.5	0.27	27.2	1.2	2.3	0.1	217	19.5	1.6	0.82	<0.1	**1.6**
MW-10D	Northwest of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/20/2018	**5.9**	44.5 j	**342**	**574**	<0.5	0.044 j	20.6	0.99 P4,R0	1.3	0.1	30.7 j	28.5	1	0.47 j	<0.1	**1.5**
MW-11BR	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/19/2018	6.8	**717**	24.4	176	<0.5	0.68	16	0.038	0.86	0.19	**502**	**447**	4	<0.5	<0.1	<0.3
MW-11BR	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/22/2018	6.6	670	30.6	203	0.13 j	0.63	16.3	<0.025	0.21 j,B	0.16	**453**	**403**	3.3	<0.5	<0.1	0.074 j
MW-11BR	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/17/2018	7.0	687	32.9	212	<0.5	2	20.7	0.059	0.84 B	0.068 j	**1380**	**538**	1.6	<0.5	<0.1	<0.3
MW-11BR	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/20/2018	6.8	598	30.5	200	<0.5	0.46	16.4	<0.025	0.29 j,B	0.09 j	**597**	**484**	1.7	<0.5	<0.1	**0.46 BC**
MW-11BRL	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/19/2018	7.7	165	24	205	<0.5	1.2	10.5	0.063	0.93	0.12	195	**99.1**	4.3	<0.5	<0.1	**0.67**
MW-11BRL	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/22/2018	7.6	170	23.7	217	<0.5	0.44	8.2	<0.025 P4	0.34 j,B	0.033 j	51.8	**204**	0.6 B	<0.5	<0.1	**0.35**
MW-11BRL	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/17/2018	7.7	163	23.4	226	0.15 j	0.72	12.6	0.1	1.7 B	0.038 j	109	**190**	1.6	<0.5	<0.1	**0.49**
MW-11BRL	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/20/2018	8.0	165	21.6	212	0.25 j	0.65	13.9	0.077	1.3	0.034 j	60.1	**173**	1.6	<0.5	<0.1	**0.75 BC**
MW-11BRL	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/07/2019	7.8	165	28.5	238	0.88	0.7	13.9	0.042 S1	0.66	0.064 j	34.4 j	**71.1**	2.2	<0.5	<0.1	**0.89**
MW-11D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/19/2018	**6.0**	**967**	25.4	130	<0.5	0.12	31.2	0.38	1	0.15	**775**	44.2	2.3	<0.5	<0.1	**2**
MW-11D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	03/20/2018	**5.8**	**916**	30	160	<1	2.96	156	NA	**44**	**7.42**	**33300**	**624**	24	<1	<0.2	**83.3**
MW-11D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	04/12/2018	**5.8**	**929**	30	110	<1	<1	36	NA	<5	<1	**956**	48	<5	<1	<0.2	**3.96**
MW-11D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/22/2018	**5.8**	**901**	28.8	147	<0.5	0.056 j	28.8	0.36	0.44 j,B	0.043 j	<50	23.2	1.9 B	<0.5	<0.1	**1**
MW-11D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	07/30/2018	**5.8**	**1050**	29	100	<1	<1	37	NA	<5	<1	**753**	46	<5	<1	<0.2	**3.17**
MW-11D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/17/2018	**5.8**	**1020**	29.2	151	<0.5	0.053 j	33.3	0.37	1.5 B	0.045 j	59.9	33.9	2.2	<0.5	<0.1	**1**
MW-11D	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/20/2018	**6.0**	**987**	31.4	151	<0.5	<0.1	36.3	0.53	0.76	0.05 j	107	33.7	1.9	<0.5	<0.1	**0.93**
MW-11S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	02/19/2018	**6.1**	431	33.4	195	<0.5	<0.1	12.1	0.36	**11.4**	**2**	51.3	**231**	7.6	<0.5	<0.1	**1**
MW-11S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	03/20/2018	**6.0**	428	38	190	<1	<1	13	NA	<5	**1.64**	61	**272**	<5	<1	<0.2	**1.12**
MW-11S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	05/23/2018	**6.0**	81.9	37.4	208	<0.5	<0.1	2.6 j	0.07	2.6	**1.3**	<50	46.7	1.4	<0.5	<0.1	**0.82**
MW-11S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	07/30/2018	**6.0**	462	37	180	<1	<1	14	NA	<5	**2.2**	53	**363**	<5	<1	<0.2	**1.09**
MW-11S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	08/17/2018	**6.0**	461	37.5	219	<0.5	<0.1	14.3	0.056	0.21 j,B	**1.7**	25.9 j	**251**	0.99	<0.5	<0.1	**0.87**
MW-11S	Northeast of Ash Basin, Cell 2	Ash Basin, Cell 2	Downgradient	11/20/2018	**6.2**	466	37.4	217	<0.5	<0.1	14.9	0.063	0.26 j	**1.6**	77.7	**243**	1	<0.5	<0.1	**1.1**
MW-12D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	02/16/2018	**6.2**	<50	<1	76	<0.5	<0.1	11.2	0.6	0.81	<0.1	<50	<5	<0.5	<0.5	<0.1	**5.3**
MW-12D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	03/20/2018	**6.2**	<50	0.31	57	<1	<1	12	NA	<5	<1	33	<5	<5	<1	<0.2	**5.1**
MW-12D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	05/22/2018	**6.3**	<50	<1	58	<0.5	0.048 j	10.6	0.61	0.6	<0.1	<50	<5	<0.5	<0.5	<0.1	**4.6**
MW-12D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	07/30/2018	**6.1**	<50	0.35	52	<1	<1	13	NA	<5	<1	28	<5	<5	<1	<0.2	**5.22**
MW-12D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	08/15/2018	**5.8**	<50	<1	86	<0.5	<0.1	12	0.7	1.5	<0.1	<50	<5	0.34 j	<0.5	<0.1	**5.1**
MW-12D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	11/21/2018	**6.4**	<50	<1	87	<0.5	0.045 j,BC	11.4	0.82	0.75	<0.1	<50	<5	<0.5	<0.5	<0.1	**5.1**
MW-12S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	02/16/2018	**6.0**	<50	<1	89	<0.5	<0.1	15.5	0.89	1.2	<0.1	**541**	11.5	<0.5	<0.5	<0.1	**3.8**
MW-12S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	03/20/2018	**6.0**	<50	1.2	89	<1	<1	16	NA	<5	<1	**843**	10	<5	<1	<0.2	**5.17**
MW-12S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	05/22/2018	**6.1**	<50	<1	70	<0.5	0.083 j	14.5	0.77	1	0.036 j	183	3.6 j	0.15 j	<0.5	<0.1	**3**
MW-12S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	07/30/2018	**6.0**	<50	0.5	54	<1	<1	17	NA	<5	<1	**510**	8	<5	<1	<0.2	**4.27**
MW-12S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	08/20/2018	**6.1**	<50	<1	91	<0.5	0.14	17	1.4	2.6	0.077 j	**555**	7.2	0.96	<0.5	<0.1	**4.5**
MW-12S	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Upgradient	11/21/2018	**6.2**	<50	<1 M1	97	<0.5	0.12 BC	17.8	0.9	1.5	0.095 j	**565**	8	0.49 j	<0.5	<0.1	**5.1**
MW-13D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	02/16/2018	**6.3**	<50	1.4	127	<0.5	<0.1	42	3	3.3	<0.1	<50	<5	0.64	<0.5	<0.1	**5.9**
MW-13D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	03/20/2018	**6.3**	<50	2.1	110	<1	<1	42	NA	<5	<1	94	<5	<5	<1	<0.2	**5.93**
MW-13D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	05/18/2018	**6.2**	<50	1.9	133	<0.5	<0.1	42.4	7	3.9	<0.1	<50	<5	0.67	<0.5	<0.1	**5.5**
MW-13D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	07/30/2018	**6.3**	<50	2.4	120	<1	<1	49	NA	<5	<1	78	<5	<5	<1	<0.2	**6.75**
MW-13D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	08/16/2018	**6.4**	<50	2.1	132	<0.5	<0.1	42.8	4.2	4.5	<0.1	<50	<5	0.77	0.16 j	<0.1	**6.2**
MW-13D	South of Ash Basin, Cell 3	Ash Basin, Cell 3	Downgradient	11/21/2018	**6.4**	<50	1.9	134	<0.5	0.21 BC	37	3.8 M6	3.7	0.028 j	41.6 j	<5	0.76	<0.5	<0.1	**5.7**

COLOR NOTES
Bold highlighted concentration indicates exceedance of the 15A NCAC 02L .0202 Standard or the IMAC. (Effective date for 15A NCAC 02L .0202 Standard and IMAC is April 1, 2013)
Turbidity of Sample ≥ 10 NTUs
Provisional Background Threshold Values reflect the values represented in the NCDEQ letter dated 10/11/2017.
Analytical data review has not been completed for this dataset.

ABBREVIATION NOTES	
BGS - below ground surface	NA - Not available or Not Applicable
BOD - Biologic Oxygen Dem	ND - Not detected
CB - Compliance Boundary	NE - Not established
COD - Chemical Oxygen De	NM - Not measured
Deg C - Degrees Celsius	NTUs - Nephelometric Turbidity Units
DMAs - dimethylarsinic acid	pCi/L - picocuries per liter
DUP - Duplicate	PSRG - Primary Soil Remediation Goals
Eh - Redox Potential	RL - Reporting Limit
ft - Feet	SeCN - selnocynante

NA - Not available or Not Applicable	
ND - Not detected	
NE - Not established	
NM - Not measured	
NTUs - Nephelometric Turbidity Units	
pCi/L - picocuries per liter	
PSRG - Primary Soil Remediation Goals	
RL - Reporting Limit	
SeCN - selnocynante	
SeMe (IV) - Selenomethionine	

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		PARAM	40CFR257 APPENDIX III CONSTITUE			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
BUCK	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
04/22/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	700	10	10	1*	300	50	100	20	0.2*	0.3*
BRANDON RUSSO	Preliminary Background Threshold Values (Shallow Unit)	4.5-6.4	50	3.3	212.02	1	1	50.6	2.248	5.04	8.345	646.9	197.9	7.2	1	0.2	7.69
PERRY WALDREP	Preliminary Background Threshold Values (Deep Unit)	5.9-8.4	50	6.7	130	1	1	19	0.5	5	0.297	499.9	7	5	1	0.2	8.418
	Preliminary Background Threshold Values (Bedrock Unit)	5.8-7.8	50	2.4	145.049	1	3.3	90.8	1.29	3.603	0.289	146.6	7	5	1	0.2	14.12

					PARAM	40CFR257 APPENDIX III CONSTITUE			INORGANIC PARAMETERS (TOTAL CONCENTRATION)											
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Selenium	Thallium	Vanadium

GPM - gallons per minute	SeMe (IV) - Selenomethionine		SPLP - Synthetic Precipitation Leaching Procedure
IMAC - Interim Maximum A	SPLP - Synthetic Precipitation Leaching Procedure		S.U. - Standard Units
MDC - Minimum Detectable	S.U. - Standard Units		TCLP - Toxicity Characteristic Leaching Procedure
MeSe - Methylseleninic acid	TCLP - Toxicity Characteristic Leaching Procedure		ug/L - micrograms per liter
mg/kg - milligrams per kilo	ug/L - micrograms per liter		ug/mL - microgram per milliliter
mg/L - milligrams per liter	ug/mL - microgram per milliliter		umhos/cm - micromhos per centimenter
mg-N/L - Milligram nitrogen	umhos/cm - micromhos per centimenter		Well Locations referenced to NAD83 and elevations referenced to NAVD88
MMAs - monomethylarsonic	Well Locations referenced to NAD83 and elevations referenced to NAVD88		mV - millivolts

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ATTACHMENT C

2018 NPDES Groundwater Data

Buck Steam Station
1555 Dukeville Road
Salisbury, NC 28145
704 382 4761
704 382 6240 fax

April 27, 2018

North Carolina Department of Environmental Quality
Division of Water Resources
Information Processing Unit
1617 Mail Service Center
Raleigh, NC 27699-1617

RE: Duke Energy Carolinas, LLC. – Buck Steam Station
March 2018 Groundwater Monitoring Sampling and Analysis Results

Duke Energy Carolinas, LLC. (DEC) sampled fourteen groundwater monitoring wells at the Buck Steam Station (NPDES Permit #NC0004774) on March 20, 2018. Attached are two copies of the results on DEQ approved electronic version of Form GW-59CCR. Please note that MW-11D was sampled at a turbidity above sensor range (greater than 999 NTU). Since this sample was collected prior to stabilizing all field parameters, the analytical data generated for this well is not representative of the groundwater quality at this location. While the results have still been included on the following GW-59CCR Form, MW-11D has been resampled and corrected analytical data will also be submitted to NCDEQ.

As required by the GW-59CCR form, parameters exceeding the generic standards published at 15A NCAC 02L.0202(g-h) have been bolded. However, per 15A NCAC 02L.0202(b), where naturally occurring substances exceed the generic standards, the appropriate 2L standard shall be the naturally occurring concentration as determined by the Director. All values reported on the attached reports are dependent on the accuracy of approved analytical methods used to measure parameters.

Should you have questions regarding this report, please contact Bristol Grohol at (980) 373-2693.

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Sincerely,

Henry A Botkins, Jr.
Buck Steam Station
General Manager II Regulated Stations

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Duke Cc (via email): Mr. Ed Sullivan – EC13K
Mrs. Bristol Grohol – EC13K
Mr. Dale Wooten – Buck Steam Station

Attachments

March 2018 GW-59 CCR Form

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Feb 18 2020

GROUNDWATER QUALITY MONITORING COMPLIANCE REPORT FORM

Mail original and 1 copy to:

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY - INFORMATION PROCESSING UNIT
1617 MAIL SERVICE CENTER, RALEIGH, NC 27699-1617 Phone: (919) 733-3221

FACILITY INFORMATION

Please Print Clearly or Type

Facility Name: Buck Steam Station
Permit Name (if different): Duke Energy Carolinas, LLC
Facility Address: 1555 Dukeville Road (Street)
Salisbury (City) NC (State) 28145 (Zip) County: Rowan

Permit Type: NPDES
PERMIT Number: NC0004774
Expiration Date: 08/31/2016

TYPE OF PERMITTED OPERATION BEING MONITORED: Ash Impoundment Groundwater

Contact Person: Bristol Gronlof Telephone: (980) 373-2693
Well Location/Site Name: Buck Ash Basin No. of wells to be sampled: 14 (from Permit)

Monitoring Well Construction Information

		Well ID Number (From Permit)														
	Units	MW-65	MW-6D	MW-7S	MW-8S	MW-8D	MW-9S	MW-9D	MW-10D	MW-11S	MW-11D	MW-12S	MW-12D	MW-13D	MW-	MW-
Well Depth (ft below land surface)	ft	28.67	109.14	18.12	103.80	21.31	60.98	13.75	29.23	50.11	18.04	37.46	49.93	33.19		
Measuring Point (toc) (ft above land surface)	ft	2.61	2.66	2.95	2.90	2.69	2.46	3.12	3.11	3.16	3.06	3.15	2.79	2.64	1.58	
Well Diameter	in	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Screen Top (ft below land surface)	ft	18.67	104.14	3.12	98.80	6.31	55.98	3.75	24.23	35.11	3.04	32.46	3.44	44.93	28.19	
Screen Bottom (ft below land surface)	ft	28.67	109.14	18.12	103.80	21.31	60.98	13.75	29.23	50.11	18.04	37.46	18.44	49.93	33.19	
Relative Measuring Point Elevation	ft	721.25	721.10	710.82	710.72	713.19	712.94	638.78	638.51	682.27	637.46	636.94	681.28	681.19	696.76	

Sampling Information and Field Analysis

CHECK IF DRY WELL AT TIME OF SAMPLING		☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY
	15A-2L	Units	MW-6S	MW-6D	MW-7S	MW-7D	MW-8S	MW-8D	MW-9S	MW-9D	MW-10D	MW-11S	MW-11D	MW-12S	MW-12D	MW-13D	MW-	MW-
Sample Date			03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018	03/20/2018		
Volume of Water pumped/bailed		gal	1.05	1.60	0.95	1.05	1.75	1.30	1.55	1.05	2.10	0.80	2.50	1.05	1.35	1.05		
Temperature (00010)		deg. C	15.39	15.16	13.39	14.53	13.88	13.94	12.51	14.17	15.18	14.31	15.41	13.10	14.54	14.90		
Odor (00085)			None	None	None	None	None	None	None	None	None	None	None	None	None	None		
Appearance			Normal	Normal	Normal	Normal	Turbid	Normal	Normal	Normal	Normal	Normal	Very Turbid	Normal	Normal	Normal		
Dissolved Oxygen (00300)		mg/L	2.51	1.79	3.14	3.54	3.43	4.77	1.53	1.85	2.95	0.51	1.03	5.76	6.93	4.30		
Oxidation Reduction Potential (00090)		mV	305	307	342	278	323	280	302	346	306	286	376	318	365	277		
Specific Cond - field (00094)		umhos/cm	53	155	62	164	163	136	244	244	787	363	215	73	55	144		
Water Level (ft below measuring pt.) (82546)		ft	20.82	21.24	6.97	8.11	4.59	4.19	5.63	6.53	38.10	10.45	9.97	6.90	5.95	13.94		
pH - field (00400)	6.5 - 8.5	SU	5.26	6.78	5.60	6.91	6.84	6.35	6.13	6.20	5.76	5.96	5.84	6.01	6.20	6.27		

Laboratory Information

Laboratory Name		Duke Energy Analytical Laboratory[1]														
Sample Analysis Date		March 21 - 29, 2018														
	15A-2L	Units	MW-6S	MW-6D	MW-7S	MW-7D	MW-8S	MW-8D	MW-9S	MW-9D	MW-10D	MW-11S	MW-11D	MW-12S	MW-12D	MW-13D	MW-	MW-
TDS - Total Diss. Solids (70300)	500	mg/l	33	120	62	110	140	100	170	190	580	190	160	89	57	110		
Cl - Chloride (00940)	250	mg/l	5.1	3.3	9.4	3.6	4.4	3.5	9.0	9.1	5.7	50	23	4.2	2.4	5.8		
As - Arsenic (01002)	10	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	2.96	150	<1	<1	<1		
SO4 - Sulfate (00945)	250	mg/l	0.28	2.4	1.1	10	4.4	1.8	34	30	380	38	30	1.2	0.31	2.1		
Nitrate (NO3) as N (00620)	10	mg/l	0.59	0.46	0.08	0.37	1	2.2	0.3	0.35	1.7	0.04	0.06	0.71	0.98	2.1		
Cd - Cadmium (01027)	2	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
Cr - Chromium (01034)	10	ug/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	44	<5	<5	<5		
Cu - Copper (01042)	1	mg/l	<0.005	<0.005	<0.005	0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.052	<0.005	<0.005	<0.005		
Fe - Iron (01045)	300	ug/l	622	53	30	622	6300	61	80	233	64	61	33300	843	33	94		
Hg - Mercury (71900)	1	ug/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	5	13	272	624	10	<5	<0.05		
Mn - Manganese (01055)	50	ug/l	46	<5	126	90	<5	11	<5	29	5	272	624	10	<5	<0.05		
Ni - Nickel (01067)	100	ug/l	8	<5	<5	9	<5	<5	<5	<5	<5	<5	24	<5	<5	<5		
Pb - Lead (01051)	15	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	8.43	<1	<1	<1		
Zn - Zinc (01092)	1	mg/l	0.009	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	<0.005	<0.005	0.041	<0.005	<0.005	<0.005	<0.005		
Ba - Barium (01007)	700	ug/l	46	88	16	15	52	18	35	27	28	13	156	16	12	42		
B - Boron (01022)	700	ug/l	<50	<50	<50	<50	<50	<50	<50	<50	<50	428	916	<50	<50	<50		
Tl - Thallium (01059)	0.2	ug/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
Sb - Antimony (01097)	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
Se - Selenium (01147)	20	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
Alkalinity - (00410)	—	mg/l	12.5	74.4	13.2	69.3	82.6	54.3	75.5	80.1	404	65.4	40.4	27.1	29.5	52.1		
Al - Aluminum (01105)	—	ug/l	41	19	509	44	3870	50	111	339	59	19	33100	977	32	102		
Be - Beryllium (01012)	4	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.01	<1	<1	<1		
HCO3 - Bicarbonate (00440)	—	mg/l	12.5	74.4	13.2	69.3	82.6	54.3	75.5	80.1	404	65.4	40.4	27.1	29.5	52.1		
Ca - Calcium (00916)	—	mg/l	2.40	12.9	2.64	12.7	14.6	11.1	25.6	25.8	96.0	22.9	16.7	4.17	5.45	11.6		
CO3 - Carbonate (00445)	—	mg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
Co - Cobalt (01037)	1	ug/l	3.38	<1	5.97	<1	3.36	<1	<1	<1	<1	1.64	7.42	<1	<1	<1		
Mg - Magnesium (00927)	—	mg/l	2.78	7.40	3.78	7.54	10.2	5.33	9.34	8.37	42.6	15.1	11.9	1.81	1.84	5.07		
Mo - Molybdenum (01062)	—	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.72	<1	<1	<1		
K - Potassium (00937)	—	mg/l	0.531	2.74	0.24	1.48	1.18	1.36	0.128	0.536	3.25	0.666	4.1	0.597	1.09	1.62		
Na - Sodium (82035)	—	mg/l	2.37	6.13	3.38	7.82	8.41	7.38	10.0	10.8	12.1	21.6	15.8	7.75	5.48	7.96		
TSS - Total Susp. Solids (70031)	—	mg/l	<5	<5	<5	120	<5	<5	<5	<5	<5	<5	940	<5	<5	<5		
V - Vanadium (01087)	0.3	ug/l	0.773	8.44	1.58	4.17	22.9	5.75	7.74	16.8	1.61	1.12	83.3	5.17	5.10	5.93		
Sr - Strontium (01082)		ug/l	0.019	0.098	0.015	0.076	0.133	0.110	0.258	0.272	0.507	0.228	0.203	0.049	0.058	0.098		

Notes:
NE = Not Established
Turbidity & field analyzed for information use only.
*Turbidity for MW-11D exceeded instrument range of 999 NTU.

BOLD values equal or exceed the corresponding 2L standard Qualifiers: None

I certify that to the best of my knowledge and belief, the information submitted in this report is true, accurate, and complete, and that the laboratory analytical data was produced using approved methods of analysis by a DWQ certified laboratory. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Henry A Botkins, Jr / GM II Regulated Stations / Buck
Permittee (or Authorized Agent) Name and Title - Please print or type

Signature of Permittee (or Authorized Agent)

2/11/2020
Date

GW-59CCR 09/2015

[1]The IMACs were issued in 2010, 2011, and 2012; however NCDEQ has not established a 2L for these constituents as described in 15A NCAC 02L.0202 (c). For this reason, IMACs noted on the report are for reference only.

[2]Alkalinity, Bicarbonate, and Carbonate were subcontracted by Duke Energy Analytical Laboratory to Pace Analytical Services, LLC in Huntersville, NC.

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Buck Steam Station
1555 Dukeville Road
Salisbury, NC 28145
704 382 4761
704 382 6240 fax

August 14, 2018

North Carolina Department of Environmental Quality
Division of Water Resources
Information Processing Unit
1617 Mail Service Center
Raleigh, NC 27699-1617

RE: Duke Energy Carolinas, LLC. – Buck Steam Station
July 2018 Groundwater Monitoring Sampling and Analysis Results

Duke Energy Carolinas, LLC. (DEC) sampled fourteen groundwater monitoring wells at the Buck Steam Station (NPDES Permit #NC0004774) on July 30, 2018. Attached are two copies of the results on DEQ approved electronic version of Form GW-59CCR. As required by the GW-59CCR form, parameters exceeding the generic standards published at 15A NCAC 02L.0202(g-h) have been bolded. However, per 15A NCAC 02L.0202(b), where naturally occurring substances exceed the generic standards, the appropriate 2L standard shall be the naturally occurring concentration as determined by the Director. All values reported on the attached reports are dependent on the accuracy of approved analytical methods used to measure parameters.

Should you have questions regarding this report, please contact Bristol Grohol at (980) 373-2693.

I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Sincerely,

Henry A Botkins, Jr.
Buck Steam Station
General Manager II Regulated Stations
Duke Cc (via email): Mr. Ed Sullivan – EC13K
Mrs. Bristol Grohol – EC13K
Mr. Dale Wooten – Buck Steam Station

Attachments
July 2018 GW-59 CCR Form

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GROUNDWATER QUALITY MONITORING COMPLIANCE REPORT FORM

Mail original and 1 copy to:
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY - INFORMATION PROCESSING UNIT
1617 MAIL SERVICE CENTER, RALEIGH, NC 27699-1617 Phone: (919) 733-3221

FACILITY INFORMATION (Please Print Clearly or Type)

Facility Name: Buck Steam Station
Permit Name (if different): Duke Energy Carolinas, LLC
Facility Address: 1555 Dukeville Road (Street)
Salisbury (City) | NC (State) | 28145 (Zip) | County: Rowan
Contact Person: Bristol Grohol | Telephone#: (980) 373-2693
Well Location/Site Name: Buck Ash Basin | No. of wells to be sampled: 14 (from Permit)

Permit Type: NPDES | Expiration Date: 08/31/2016
PERMIT Number: NC0004774
TYPE OF PERMITTED OPERATION BEING MONITORED: Ash Impoundment Groundwater

Monitoring Well Construction Information

		Units	MW-6S	MW-6D	MW-7S	MW-7D	MW-8S	MW-8D	MW-9S	MW-9D	MW-10D	MW-11S	MW-11D	MW-12S	MW-12D	MW-13D	MW-	MW-	MW-	MW-
			Well ID Number (From Permit)																	
Well Depth (ft below land surface)		ft	28.67	109.14	18.12	103.80	21.31	60.98	13.75	29.23	50.11	18.04	37.46	18.44	49.93	33.19				
Measuring Point (toc) (ft above land surface)		ft	2.61	2.66	2.95	2.90	2.69	2.46	3.12	3.21	3.16	3.06	3.15	2.79	2.64	1.58				
Well Diameter		in	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Screen Top (ft below land surface)		ft	18.67	104.14	3.12	98.80	6.31	55.98	3.75	24.23	35.11	3.04	32.46	3.44	44.93	28.19				
Screen Bottom (ft below land surface)		ft	28.67	109.14	18.12	103.80	21.31	60.98	13.75	29.23	50.11	18.04	37.46	18.44	49.93	33.19				
Relative Measuring Point Elevation		ft	721.25	721.10	710.62	710.72	713.19	712.94	638.78	638.51	682.27	637.46	636.94	681.28	681.19	696.76				

Sampling Information and Field Analysis

CHECK IF DRY WELL AT TIME OF SAMPLING			☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY	☐ DRY
	15A-2L	Units	MW-6S	MW-6D	MW-7S	MW-7D	MW-8S	MW-8D	MW-9S	MW-9D	MW-10D	MW-11S	MW-11D	MW-12S	MW-12D	MW-13D	MW-	MW-	MW-	MW-
Sample Date			07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018	07/30/2018				
Volume of Water pumped/bailed		gal	2.10	1.80	1.60	1.30	2.00	1.30	1.90	2.10	1.10	0.65	22.50	6.30	0.40	1.60				
Temperature (00010)		deg. C	17	18	17	18	18	17	21	19	18	20	18	17	18	16				
Odor (00085)			None	None	None	None	None	None	None	None	None	None	None	None	None	None				
Appearance			Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear w/ Fines	Clear	Clear	Clear	Clear	Clear				
Turbidity (82078)		NTU	0.8	0.7	6.1	0.7	7.3	3.9	7.6	2.3	4.1	0.4	8.5	9.8	0.6	1.8				
Dissolved Oxygen (00300)		mg/L	2.43	3.50	2.68	1.58	2.90	4.70	1.63	1.79	2.75	1.34	0.42	5.07	6.22	4.54				
Oxidation Reduction Potential (00090)		mV	351	307	322	304	318	316	320	314	359	389	436	350	354	314				
Specific Cond - field (00094)		umhos/cm	52	154	94	161	170	133	248	239	783	365	213	70	69	154				
Water Level (ft below measuring pt.) (82546)		ft	23.44	22.89	9.98	9.07	8.24	7.44	6.84	7.35	38.15	12.05	11.75	7.35	7.31	15.30				
pH - field (00400)	6.5 - 8.5	SU	5.25	6.70	5.90	6.78	6.15	6.33	6.15	6.22	5.82	5.97	5.81	5.95	6.14	6.31				

Laboratory Information

Laboratory Name: Duke Energy Analytical Laboratory[2]
Sample Analysis Date: July 31 through August 2, 2018
Certification #: NC DENR # 248
Samples for metals were collected unfiltered: ☑ Yes ☐ No
and field acidified: ☑ Yes ☐ No

	IMAC[1]	15A-2L	Units	MW-6S	MW-6D	MW-7S	MW-7D	MW-8S	MW-8D	MW-9S	MW-9D	MW-10D	MW-11S	MW-11D	MW-12S	MW-12D	MW-13D	MW-	MW-	MW-	MW-
TDS - Total Diss. Solids (70300)	---	500	mg/l	83	140	100	130	100	84	170	120	550	180	100	54	52	120				
Cl - Chloride (00940)	---	250	mg/l	4.7	3.5	6.1	2.3	3.7	3.6	9.7	9.1	5.5	51	22	3.7	2.3	5.9				
As - Arsenic (01002)	---	10	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
SO4 - Sulfate (00945)	---	250	mg/l	0.24	2.4	0.32	1.6	2.7	1.7	33	27	350	37	29	0.50	0.35	2.4				
Nitrate (NO3) as N (00620)	---	10	mg/l	0.51	0.54	0.16	0.6	1.3	2.2	0.34	0.29	1.9	<0.023	0.04	0.82	0.99	2.2				
Cd - Cadmium (01027)	---	2	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
Cr - Chromium (01034)	---	10	ug/l	<5	<5	13	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5				
Cu - Copper (01042)	---	1	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Fe - Iron (01045)	---	300	ug/l	31	29	292	54	421	130	281	92	130	53	753	510	28	78				
Hg - Mercury (71900)	---	1	ug/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				
Mn - Manganese (01055)	---	50	ug/l	26	<5	43	<5	44	<5	10	<5	28	363	46	8	<5	<5				
Ni - Nickel (01067)	---	100	ug/l	6	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5				
Pb - Lead (01051)	---	15	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
Zn - Zinc (01092)	---	1	mg/l	0.012	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
Ba - Barium (01007)	---	700	ug/l	44	90	20	15	24	20	37	27	29	14	37	17	13	49				
B - Boron (01022)	---	700	ug/l	<50	<50	<50	<50	<50	<50	<50	<50	<50	462	1050	<50	<50	<50				
Tl - Thallium (01059)	0.2	NE	ug/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				
Sb - Antimony (01097)	1	NE	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
Se - Selenium (01147)	---	20	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
Alkalinity - (00410)	---	NE	mg/l	13.9	74.3	39.8	79.4	82.0	54.3	76.0	85.0	43.4	64.9	40.9	28.1	28.3	60.4				
Al - Aluminum (01105)	---	NE	ug/l	18	17	221	42	295	110	518	147	125	12	760	967	34	90				
Be - Beryllium (01012)	4	NE	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
HCO3 - Bicarbonate (00440)	---	NE	mg/l	13.9	74.3	39.8	79.4	82.0	54.3	76.0	85.0	43.4	64.9	40.9	28.1	28.3	60.4				
Ca - Calcium (00916)	---	NE	mg/l	2.38	13.0	4.95	14.4	14.7	11.3	23.7	24.9	87.1	23.2 (M4)	14.1	4.20	5.24	13.9				
CO3 - Carbonate (00445)	---	NE	mg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5				
Co - Cobalt (01037)	1	NE	ug/l	2.52	<1	2.55	<1	<1	<1	<1	<1	<1	2.20	<1	<1	<1	<1				
Mg - Magnesium (00927)	---	NE	mg/l	2.90	7.64	7.39	7.80	9.09	5.66	9.04	8.68	40.9	15.10	7.54	1.86	1.85	6.16				
Mo - Molybdenum (01062)	---	NE	ug/l	<1	<1	<1	1.35	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1				
K - Potassium (00937)	---	NE	mg/l	0.566	2.94	0.251	1.78	1.10	1.45	0.224	0.563	3.30	0.766	1.62	0.661	1.11	1.80				
Na - Sodium (82035)	---	NE	mg/l	2.31	6.16	3.35	8.34	8.63	7.62	11.1	10.6	11.6	23.5	14.9	7.36	5.57	8.73				
TSS - Total Susp. Solids (70031)	---	NE	mg/l	<5	<5	<5	<5	8	<5	<5	<5	<5	<5	13	<5	<5	<5				
V - Vanadium (01087)	0.3	NE	ug/l	0.414	8.07	1.33	5.86	6.97	5.78	11.3	16.3	1.97	1.09	3.17	4.27	5.22	6.75				
Sr - Strontium (01082)	---	NE	mg/l	0.019	0.101	0.024	0.095	0.131	0.117	0.248	0.271	0.472	0.234	0.169	0.053	0.060	0.119				

Notes:
NE = Not Established
Turbidity is field analyzed for information use only.

BOLD values equal or exceed the corresponding 2L standard

Qualifiers: M4: The spike recovery value was unusable since the analyte concentration in the sample was disproportionate to the spike level. The associated Laboratory Control Spike recovery was acceptable.

I certify that, to the best of my knowledge and belief, the information submitted in this report is true, accurate, and complete, and that the laboratory analytical data was produced using approved methods of analysis by a DWQ-certified laboratory. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Henry A Botkins, Jr / GM II Regulated Stations / Buck
Permittee (or Authorized Agent) Name and Title - Please print or type

Henry N. Botkins Jr
Signature of Permittee (or Authorized Agent)

8/14/2018
Date

GW-59CCR 09/2015

[1]The IMACs were issued in 2010, 2011, and 2012; however NCDEQ has not established a 2L for these constituents as described in 15A NCAC 02L.0202 (c). For this reason, IMACs noted on the report are for reference only.

[2]Alkalinity, Bicarbonate, and Carbonate were subcontracted by Duke Energy Analytical Laboratory to Pace Analytical Services, LLC in Huntersville, NC.

Hart Exhibit 51
Docket No. E-7, Sub 1214

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ENVIRONMENTAL AUDIT IN SUPPORT OF THE COURT APPOINTED MONITOR

Cliffside Steam Station
Rogers Energy Complex
Mooresboro, North Carolina
USA

May 2019

Final Report Issued to:

Duke Energy and the Court Appointed Monitor

Prepared By:

Advanced GeoServices Corp.
and
The Elm Consulting Group International LLC

Hart Exhibit 52
Docket No. E-7, Sub 1214

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ENVIRONMENTAL AUDIT IN SUPPORT OF THE COURT APPOINTED MONITOR

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Attachment B 2018 Groundwater Data Summary

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1.0 INTRODUCTION

Advanced GeoServices Corp. (AGC) and The Elm Consulting Group International LLC (Elm) (collectively, the Audit Team) are conducting environmental compliance audits (the Audits) of certain coal combustion residuals (CCR) management locations owned or operated by Duke Energy Business Services LLC, Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc. (collectively, Duke Energy). The Audits are being conducted under the direction of Mr. Benjamin Wilson, the Court Appointed Monitor (CAM), pursuant to an Order issued by the U.S. District Court, Eastern District of North Carolina, in case numbers 5:15-CR-62-H, 5:15-CR-67-H, and 5:15-CR-68-H.

The scope of the Audits is set forth in the plea agreements entered into by Duke Energy and the United States in the above cases, the Court's judgments in these cases, and a written Audit scoping document agreed to by Duke Energy and the United States.

1.1 BACKGROUND INFORMATION

The subject of this report is the Audit completed at Duke Energy's Dan River Steam Station located in Eden, North Carolina (Dan River Facility). The on-site Audit was conducted on April 17-18, 2019, for a total of two days on-site. The Audit Team members were:

- Mr. Christopher Reitman, P.E. AGC — Project Director, Audit Team Leader, Sr. Subject Matter Expert (on-site)
- Mr. Joseph Cotier, CPEA, Elm — Sr. Environmental Auditor (on-site)
- Mr. Bernie Beegle, P.G., AGC — Senior Subject Matter Expert (on-site)

Key representatives of the Dan River Facility were:

- Mr. Michael Lanning, Station General Manager
- Mr. Jeff Gateley, CCP System Owner

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- Mr. Issa Zarzar, General Manager, Carolinas East Region, CCP Operations and Maintenance
- Mr. Henry Taylor, CCP Engineering & Closure Engineering
- Mr. Eric Kinstler, CCP Projects
- Ms. Joyce Dishmon, EHS CCP Permitting and Compliance
- Ms. Melonie Martin, EHS CCP Waste & Groundwater
- Ms. Tammy Jett, EHS CCP Waste & Groundwater (by phone)
- Mr. Randy Hart, Regulatory Affairs
- Mr. Shane Johnson, Environmental Rover, EHS CCP Compliance
- Mr. Jason Jomp, EHS CCP Environmental Field Support
- Ms. Dana Newcomb, Station Environmental Field Support
- Mr. Steve Struble, Director, EHS CCP Compliance
- Mr. Keith Higgins, EHS CCP Compliance
- Mr. Gary Matchunis, WesTech

1.2 FACILITY OVERVIEW

The Dan River Facility is located at 900 S. Edgewood Road in Eden, Rockingham County, North Carolina, approximately 35 miles north of Greensboro, North Carolina, along the north bank of the Dan River.

According to an overview provided by Duke Energy personnel, coal-fired Units 1 and 2 came online in 1949 and 1950, respectively. A third coal-fired unit was added by 1955 creating a net generating capacity of 276 megawatts (MW). These three coal-fired units were all retired in 2012. Units 4, 5, and 6 were all fuel oil-fired combustion turbines installed in 1968 and retired in 2013. A 680 MW natural gas combined-cycle unit began operation at the facility in 2012. The combined-cycle unit was in a maintenance outage during the Audit.

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1.2.1 Ash Management Activities

The Operations Manual for the Dan River Facility indicates that ash generated by coal combustion was placed in the following on-site areas:

- Primary Ash Basin – The Primary Ash Basin had an approximate surface area of 27 acres and was put into service in 1956. It was expanded several times. Duke Energy is closing the Primary Ash Basin and the Secondary Ash Basin by excavating the ash. Initially, the CCR was sent off-site for landfilling. Subsequently, an on-site landfill was sited and constructed at the Dan River Facility, and at the time of the Audit, CCR excavated from the Primary and Secondary Ash Basins was being placed in the on-site CCP Landfill. Duke Energy began excavation of the ash in the Primary Ash Basin on November 30, 2016. The CAMA deadline for removal of CCR from the Primary Basin (as well as the Secondary) is August 1, 2019. At the time of the Audit, Duke Energy personnel stated they are scheduled to have the ash removed by May 31, 2019.

- Secondary Ash Basin – The Secondary Ash Basin shared an intermediate dike with the Primary Ash Basin and had a surface area of approximately 12 acres. A portion of the Secondary Ash Basin was put into service in approximately 1968 and was expanded several times after it was initially constructed. The Secondary Ash Basin received decanted flow from the Primary Ash Basin through a decant structure in the north-northeast corner of the Primary Ash Basin. Both ash basins were operated as an integral part of the facility's wastewater treatment system during the operations of the coal-fired units. Inflows to both ash basins originated with the ash removal system, the station yard sump, stormwater following rain events, and other areas.

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Duke Energy began excavation of the ash in the Secondary Ash Basin on August 1, 2018. The CAMA deadline for the ash removal in the Secondary Ash Basin is August 1, 2019. At the time of the Audit, Duke Energy personnel stated they are scheduled to have the ash removed by May 31, 2019.

- Ash Fill Areas – Dry Ash Fill areas, also referred to in some correspondence as "dry ash stacks," or "Ash Stacks 1 and 2," are located to the north of the Primary and Secondary Ash Basins. These areas consist of CCR removed from both ash basins. Ash Fill 1 was removed, and the CCP Landfill was placed in the footprint of the Ash Fill 1 area. Landfilling or beneficial use of the remaining Ash Stack 2 material is anticipated following removal of ash from the Primary and Secondary Basins.

- CCP Landfill – As noted above, the CCP Landfill is located within the former Ash Stack 1 area and Dredge Area and became operational on May 31, 2017. The CCP Landfill consists of Cell 1 (5.1 acres), Cell 2 (7.4 acres), and Cell 3 (10.8 acres), with a total size of 23.3 acres. Most of the CCR from the Primary Ash Basin has been excavated and placed into the CCP Landfill. Bulk excavation of the material from the Secondary Ash Basin was expected to be completed by May 31, 2019.

1.2.2 Environmental Permits and Programs

The Dan River Facility operates under a number of environmental permits and programs, including:

- **National Pollutant Discharge Elimination System (NPDES) Wastewater Discharge Permit** – North Carolina Department of Environmental Quality (NCDEQ) renewed NPDES wastewater discharge permit No. NC0003468 on

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October 27, 2016, with an effective date of December 1, 2016 and an expiration date of November 30, 2021. As it relates to ash and ash management activities, the permit covers the following outfalls:

- Outfall 002 - Ash Basin discharge (low volume wastes, boiler cleaning wastewaters, ash disposal, stormwater, boiler blowdown, and metal washing wastewater). Discharge from the Ash Basin via Outfall 002 is currently occurring from ongoing dewatering of the ash basins. Outfall 002 discharges to the Dan River.
- Outfall 002A - yard sump overflow (stormwater, miscellaneous sumps, coal yard runoff). Outfall 002A discharges to the Dan River.
- Seep Outfalls 102, 103, and 104 - Seep Outfall 102 and Seep Outfall 103 discharge to Railroad Branch, which then discharges to the Dan River. Seep Outfall 104 includes industrial stormwater and discharges to the Dan River. Area of Wetness S-1 was also reviewed by NCDEQ but was considered by NCDEQ to be represented by Seep Outfall 102.
- The NPDES permit also requires groundwater monitoring three times per year for nine compliance wells, one of which is a background well, pursuant to 15A NCAC 2L.0200.

NCDEQ modified NPDES Permit No. NC0003468 with an effective date of February 1, 2019 and an expiration date of November 30, 2021. Modifications to the NPDES Permit included:

- Submittal of notification to NCDEQ upon commencement of dewatering in the ash basin. Duke Energy submitted the dewatering notification to NCDEQ on June 18, 2018.

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- Use of continuous monitoring for pH and total suspended solids (TSS) at Outfall 002, including automatic flow shut offs if pH and TSS exceed stated parameters.
- Removal of the groundwater monitoring requirements from earlier permits.
- Inclusion of specific compliance boundaries for both the Ash Basin and the CCP Landfill.

- **NPDES Stormwater Permitting** – NCDEQ issued an Individual Permit for Stormwater, No. NCS000572, on September 30, 2015, with an effective date of October 1, 2015 and an expiration date of September 30, 2020. The permit covers seven stormwater outfalls which discharge to either the Dan River or the Service Water Settling Pond (which is considered waters of the State). Outfall SW010 was approved for discharge by NCDEQ on June 28, 2018. With the approval letter, NCDEQ required inspections and monitoring at SW010 to commence in July 2018. SW010 drains the Ash Fill Area, the construction staging area, and a substation and discharges into an unnamed tributary with final discharge into the Dan River.

- **Stormwater Construction Permitting** – The following three stormwater general permits have been issued by NCDEQ for construction activities pursuant to NCDEQ general permit #NCG010000:

  - ROCKI-2018-002 was issued September 20, 2017 for Cuts 2/3/4 Borrow Area;
  - ROCKI-2017-016 was issued March 20, 2019 for Dam Decommissioning (Addendum 2); and
  - ROCKI-2016-003 was re-issued June 5, 2018 for Landfill Construction (Addendum 8).

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The associated erosion and sedimentation control plans have been developed and implemented by Duke Energy.

- **Industrial User Pretreatment (IUP) Permitting** – The City of Eden Industrial Pretreatment Permit No. 1013 was re-issued January 28, 2019 with an effective date of March 1, 2019 and an expiration date of February 29, 2020. The renewed IUP permit allows for an increase of daily flow to 600,000 gallons and reduces the limits for molybdenum and arsenic to monthly averages of 0.5 mg/L and 0.2 mg/L, respectively. The permit allows discharge to the City of Eden Mebane Bridge Wastewater Treatment Plant via Pipe #001 of Ash Basin water, which includes water from the Primary Ash Basin Extraction wells, Secondary Ash Basin Dewatering, contact stormwater from the northeast side of the Dan River Facility property (including areas around the Ash Fill Areas and powerhouse), and the leachate from the CCP Landfill.

- **Spill Prevention, Control and Countermeasures (SPCC) Permitting** – The SPCC activities related to coal ash or basin management were addressed in a Trans Ash, Inc. SPCC Plan that covered oil storage related to activities in the ash basin and landfill. The SPCC Plan was dated February 2019. Trans Ash, Inc. operates as a contractor to Duke Energy.

- **Title V Permitting** – NCDEQ issued Title V Permit No. 03455T31 on March 28, 2016, with an effective date of March 28, 2016 and an expiration date of February 28, 2021. Ash handling and railcar loading were identified as an insignificant source (identified as I-ASH in Attachment 2 of the permit) and fugitive dust control was included in Section 3.MM of the permit. The Annual Compliance Certification for 2018 was submitted to NCDEQ on February 25, 2019.

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- **Hazardous Chemical Inventory Permitting** – The Tier II report for 2018 was submitted February 5, 2018. On April 11, 2019, Duke Energy submitted a letter to the Local Emergency Planning Committee notifying them of the addition of lime above reporting thresholds at the Dan River Facility. The lime is being used as a drying agent for conditioning excavated ash before transporting it to the CCP Landfill.

- **Waste Unit Compliance Boundaries** – NCDEQ issued a letter dated August 25, 2017 to Duke Energy regarding compliance boundaries for North Carolina coal ash facilities. Further, the modification of NPDES Permit No. NC0003468, effective on February 1, 2019, included a Figure showing an updated compliance boundary for the Primary Ash Basin, the Secondary Ash Basin, and the CCP Landfill.

  CCP Landfill – On October 6, 2016, NCDEQ provided Duke Energy a permit to construct/permit to operate the CCP Landfill (Permit No. 7906-INDUS-2016) with an issue date of October 26, 2016 and an expiration date of October 26, 2021. NCDEQ issued a permit to operate Cell 1 of the CCP Landfill on May 30, 2017 and a permit to operate Cell 2 of the CCP Landfill on October 2, 2017. The CCP Landfill is located within the former Ash Fill 1 area and became operational on May 31, 2017. Duke Energy is currently excavating the Primary Ash Basin and Secondary Ash Basin and placing the CCR into the CCP Landfill. NCDEQ issued a permit to operate Cell 3 dated April 18, 2018.

- **CAMA** – Both ash basins are designated as "high priority" impoundments under the Coal Ash Management Act of 2014 (CAMA). Per CAMA, CCR surface impoundments at the Dan River Facility must have all ash removed by August 1, 2019.

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Other CAMA requirements include identification of drinking water supply wells within a half mile of the facility, submission of Groundwater Assessment Plans, installation and multiple rounds of sampling from assessment wells, submission of Groundwater Assessment Reports summarizing groundwater investigations, submission of an Annual Groundwater Protection and Restoration Report, submission of Discharge Assessment Plans to characterize areas of wetness, submission of a Groundwater Corrective Action Plan, and ash basin closure/removal.

On December 20, 2017, under CAMA, NCDEQ issued to Duke Energy the Revised Interim Monitoring Plans for groundwater monitoring for 14 Duke Energy facilities located in North Carolina, including the Dan River Facility. The revised facility Interim Monitoring Plans require groundwater monitoring on a quarterly basis commencing the fourth quarter of calendar year 2017 pursuant to 15A NCAC 02L.0110, until Corrective Action Plans are accepted for the individual facilities or as directed otherwise by the NCDEQ. The quarterly sampling events will be conducted in conjunction with planned compliance monitoring sampling events for three quarters during the calendar year, supplemented with an additional sampling event conducted at each facility in order to provide four rounds of monitoring data to evaluate seasonal fluctuations during a year-long timeframe. The Dan River Facility CAMA groundwater monitoring network consists of 48 wells.

On December 21, 2018, NCDEQ issued Duke Energy optimized Interim Monitoring Plans for all the 14 Duke Energy facilities with groundwater sampling to begin in the first quarter of 2019. The first quarter sampling results were not available at the time of the Audit.

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Under CAMA, Duke Energy submitted to the NCDEQ the required Submittal of 2018 Groundwater Protection and Restoration Annual Report on January 25, 2019, and the required Submittal of 2018 Surface Water Protection and Restoration Annual Report on January 21, 2019, both regarding the Dan River Facility.

- **CCR Rule** – The Coal Combustion Residuals Rule (CCR Rule, 40 CFR part 257, Subpart D) identifies standards for the disposal of CCR in landfills and surface impoundments. Duke Energy has also developed numerous submittals for each CCR unit in accordance with the CCR Rule.

  The Primary Ash Basin, the Secondary Ash Basin, and the CCP Landfill are subject to the CCR Rule since the Dan River Facility continues to be used for power generation. The Primary Ash Basin and the Secondary Ash Basin CCR well network consists of 20 CCR monitoring wells (including 2 background wells). The CCP Landfill CCR well network consists of 20 monitoring wells (including 4 background wells). Tables 1A, 1B, and 1C summarize the CCR Rule compliance reports posted by Duke Energy for the Dan River facility.

  On January 10, 2018, Duke Energy posted the CCR Annual Groundwater Monitoring and Corrective Action Reports for the Primary Ash Basin, the Secondary Ash Basin, and the CCP Landfill on the company's public website.

  On April 3, 2018, Duke Energy provided notice on Duke Energy's public website that the Primary Ash Basin and the Secondary Ash Basin are in the CCR assessment monitoring program due to statistically significant increases over background levels for certain constituents listed in Appendix III to 40 CFR Part 257. Statistically significant increases were also recorded in the detection monitoring program for the CCP Landfill, but Duke Energy submitted an Alternate Source Demonstration Report that concluded from the findings that the statistically

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significant increases in the June 2018 Appendix III detection monitoring constituents in groundwater are from sources other than the Dan River CCP Landfill. Therefore, the Dan River CCP Landfill remains in the detection monitoring program. As noted earlier in this report, the CCP Landfill was constructed where Ash Stack 1 was previously located. It appears that Ash Stack 1 may have influenced groundwater conditions.

On November 7, 2018, Duke Energy posted on its public website the required location restrictions for impoundments. The Primary Ash Basin and the Secondary Ash Basin did not meet the surface impoundment standard for placement above the uppermost aquifer (40 C.F.R. § 257.60(a)). Duke Energy anticipated completing removal of all ash from within the Primary Ash Basin and the Secondary Ash Basins by May 31, 2019.

On December 14, 2018, Duke Energy provided notice on its public website that the following CCR Rule Appendix IV constituents were detected at levels above the applicable Groundwater Protection Standard.

Primary Ash Basin and Secondary Ash Basin

- Arsenic
- Lithium

On February 19, 2019, Duke Energy provided notice on Duke Energy's public website that an assessment of corrective measures was initiated for the Primary Ash Basin and Secondary Ash Basin in accordance with 40 CFR § 257.96(a). Duke Energy posted to their operational record a CCR Assessment of Corrective

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Measures Report dated April 10, 2019 for the Primary Ash Basin and the Secondary Ash Basin.

On March 1, 2019, Duke Energy posted on its public website the 2018 CCR Annual Groundwater Monitoring and Corrective Action Reports for the Primary Ash Basin and Secondary Ash Basin.

1.2.3 Dam and Other Structural Permits and Approvals

Two active dams associated with coal ash management operations exist on-site. The dams were grandfathered under North Carolina's Session Law 2009-390 (Senate Bill 1004, effective January 1, 2010). Under this grandfathering, the original design of the dams is not subject to the current design standards for new construction, although modifications after the effective date may be subject to these standards.

The Primary Ash Basin Dam (ROCKI – 237) is classified as a high hazard dam under North Carolina regulations. The earthen dam had a maximum height of 40 feet, and a maximum crest elevation of 540 mean sea level (msl). Ash was used as part of the subsequent modifications to the dikes. Precipitation falling into both the Primary Basin and Secondary Basin was being managed in the on-site treatment system. At the time of the 2018 CCR annual inspection, on May 22, 2018, the Primary Ash Basin impoundment held approximately 913,692 cubic yards of CCR and was primarily dry. At the time of the 2019 Audit, the northern basin berm of the Primary Ash Basin, which is adjacent to Dan River, had been lowered to an elevation of 525 msl as part of CCR excavation activities.

The Secondary Ash Basin Dam (ROCKI– 238) is classified as a high hazard dam under North Carolina regulations. The earthen dam has a maximum height of 30 feet and a crest elevation of 530 msl. Ash was used as part of the subsequent modifications to the dikes. At the time of the

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2018 CCR annual inspection, on May 22, 2018, the Secondary Ash Basin impoundment held approximately 388,650 tons of CCR (no change since 2017) and 28.8 acre-feet of water. CCR excavation activities were ongoing in the basin at the time of the 2018 CCR annual inspection and only a few areas with ponded water were noted. This is consistent with observations during the 2019 Audit Inspection. Lime and quicklime were being added to the CCR being excavated to help adjust the moisture content and allow it to be landfilled in an expeditious fashion and meet the moisture and compaction requirements of the CCP Landfill permit.

Over the last year, several stormwater conveyance pipes on the west side of the Primary Ash Basin were grouted. This included grouting of 15" and 30" reinforced concrete pipes and a 36" corrugated metal pipe since the 2018 Audit.

CCR removal activities form the ash basins were proceeding under a phased sequencing approach. Sequence A consisted of removal of the Primary Ash Basin embankment material to elevation 525 msl. This allowed removal of CCR material within the elevated portion of the embankment. The certificate of authorization for this scope of work was provided to Duke Energy by NCDEQ on February 21, 2018.

Dam decommissioning Sequence B addresses plugging/grouting a Secondary Ash Basin outlet pipe and removing the intermediate dike between the Primary and Secondary Ash Basin CCR material. NCDEQ authorized this work scope on July 19, 2018.

Dam decommissioning sequence C addresses removal of the remaining CCR materials within the Primary and Secondary Ash Basins. Sequence C is still under review by NCDEQ.

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1.2.4 Audit Observations and Update of Dan River Facility Activities

According to Duke Energy personnel, at the time of the 2019 Audit, a total of 3,316,000 tons of CCR had been excavated from the Dan River Facility. Duke Energy also estimated approximately 250,000 tons of CCR remained in the Primary Ash Basin and Secondary Ash Basin. As previously noted, Duke Energy expected this CCR material to be bulk excavated by May 31, 2019. Excavated CCR was originally sent off-site by rail to the Maplewood Landfill in Jetersville, Amelia County, Virginia, which is operated by Waste Management of Virginia, Inc., pursuant to Permit No. 540 for Phase 5A, which was issued by the Virginia Department of Environmental Quality. The initial phase of removal, which utilized railroad transportation to remove CCR, is complete. The remaining CCR materials are being placed in the CCP Landfill. Cells 1, 2, and 3 were all operational at the time of the 2019 Audit, and CCR was being excavated on a 24-hour basis, seven days a week in order to meet the required schedule. As previously noted, CCR materials were being conditioned with lime and quicklime to help meet the landfill compaction and moisture requirements. Following bulk excavation, the required confirmatory sampling will be completed to confirm that CCR has been removed. Following confirmation sampling, the final grading of the basin areas and breaching of the remaining dam structure will take place in a sequenced manner.

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2.0 AUDIT SCOPE AND SUBJECT MATTER

The Audit was completed in accordance with the court documents and the Audit scoping document agreed to by Duke Energy and the United States. A description of the scope is provided as Attachment A. The Audit included ash management activities, including aspects of generation that affect the nature of the waste streams from the point of generation into surface impoundments or ash management basins, landfills, and/or storage piles. The Audit focused on the activities at the Dan River Facility since the date of the last Audit, which was April 18-19, 2018.

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3.0 AUDIT FINDINGS

The following Finding was identified by the Audit Team.

3.1 EXCEEDANCES OF THE STATE GROUNDWATER QUALITY STANDARDS

Requirement – The State groundwater rules establish maximum contaminant levels for groundwater at or beyond the compliance boundaries for the Primary Ash Basin, the Secondary Ash Basin, and the Ash Fill Areas. *See* 15A NCAC 02L.0202. 15A NCAC 02L.0103(d) provides that "[n]o person shall conduct or cause to be conducted, any activity which causes the concentration of any substance to exceed that specified" under the Class GA standards or the interim maximum acceptable concentrations (IMACs) established for groundwater quality pursuant to 15A NCAC 02L.0202. Further, under N.C.G.S.A. § 143-215.1(i), "[a]ny person … who is required to obtain an individual permit … for a disposal system under the authority of N.C.G.S.A. § 143-215.1 [water pollution control] … shall have a compliance boundary … beyond which groundwater quality standards may not be exceeded." *See also* 15A NCAC 02L.0102(3) (defining "compliance boundary" as "a boundary around a disposal system at and beyond which groundwater quality standards may not be exceeded").

In addition, under N.C.G.S.A. § 143-215.6A(a)(1), civil penalties may be assessed against any person who violates any standard established by the NCDEQ under the authority of N.C.G.S.A. § 143-214.1, which covers groundwater standards.

Finding – Constituents exceeding the standards for Class GA waters, established in l5A NCAC 2L.0202, were documented in monitoring wells located at or beyond the compliance boundaries for the Primary Ash Basin, the Secondary Ash Basin, and the Ash Fill Areas. Based on the review of the 2018 CAMA groundwater monitoring analyses, boron, beryllium, cobalt, iron, manganese, molybdenum, strontium, sulfate, total dissolved solids (TDS), and vanadium exceeded either the 2L groundwater standards, the IMAC groundwater standards, or the NCDEQ approved provisional

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background threshold values (PBTVs), if the PBTV was greater than the 02L or IMAC groundwater standards, one or more times at or beyond the compliance boundaries identified in the NPDES permit. The 2018 groundwater data is summarized in Attachment B to this report. Duke Energy has stated its opinion that, pursuant to a September 2015 Settlement Agreement with the NCDEQ, "Duke Energy is not subject to any further financial penalties for exceedances of groundwater standards" and "Duke Energy is not subject to any further enforcement action based on exceedances of groundwater standards as long as it remains in substantial compliance with CAMA groundwater requirements."

The CAM has advised the Audit Team that the Audit scope does not include an evaluation of compliance with the September 2015 Settlement Agreement and therefore the Audit Team does not take a position on Duke Energy's opinion.

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4.0 OPEN LINES OF INQUIRY

Open Lines of Inquiry are items identified by the Audit Team while on-site that, due to limited available information or the need for additional research, could not be determined as being in compliance or out of compliance. There were no Open Lines of Inquiry identified as part of this Audit.

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5.0 AUDIT APPROACH

5.1 ON-SITE ACTIVITIES

During its time on-site, the Audit Team conducted an opening conference with facility personnel to discuss the scope of work and the plan for accomplishing necessary tasks while at the facility. A site tour of the coal ash management and program support areas was subsequently completed. Following the tour, the Audit Team conducted a review of pertinent files, interviews with facility representatives, and verification of facility activities related to the ECPs, written programs, and permits. A debrief was conducted each Audit day to advise the facility representatives of Audit progress, open lines of inquiry, possible Audit findings, and needs for the next day. At the completion of the Audit, the Audit Team led a verbal discussion of draft Audit findings with facility representatives.

5.2 STANDARDS OF PRACTICE

The fieldwork portion of the Audit was conducted on April 17-18, 2019, with compliance reporting commencing May 14, 2015, the date of the Court's judgments. The Audit focused on the activities at the facility since the date of the last Audit, which was April 18-19, 2018 and was based on:

- Physical inspections of the facility;
- Examination of selected administrative and operating records made available by facility staff at the Audit Team's request;
- Interviews and discussions with key facility management and staff; and
- Verification procedures designed to assess the facility's application of, and adherence to, terms of the Probation, environment laws and regulations, and site policies and procedures. In addition, the Audit Team reviewed the facility's adherence to good management practices.

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The Audit followed established audit protocols and procedures. It should be understood that the Audit consisted of evaluating a sample of practices and was conducted over a short period of time.

Efforts were made to sample major facets of environmental performance during the period under review. This method is intended to uncover major system deficiencies and the Audit may not have identified all potential problems.

To support the overall independence of the Audit process, the Audit included an auditing professional certified by the Board of Environmental, Health and Safety Auditor Certifications (BEAC). BEAC is an accredited professional certification board that issues the Certified Professional Environmental Auditor (CPEA) designation to qualified auditors. Under BEAC, auditor independence is a key criterion for the implementation of an effective third-party audit program. The Audit was implemented in accordance with the standards related to auditor independence.

The process by which the Audit was conducted was consistent with the general state of the art of environment auditing and the best professional judgment of the Audit Team. To conduct the Audit, the team implemented a formal approach, drawing on process guidance from both BEAC and the Auditing Roundtable (AR) guidance documents. Guidance documents included:

- *Standards for the Professional Practice of Environmental, Health and Safety Auditing*. Prepared by the Board of Environmental, Health and Safety Auditor Certifications, 2008.

- ISO 19011:2002 – *Guidelines for Quality and/or Environmental Management Systems Auditing*. Prepared by the International Organization for Standardization, 2002.

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- *Standard for the Design and Implementation of an Environmental, Health and Safety Audit Program*. Prepared by The Auditing Roundtable, Inc., 1995.

- *Minimum Criteria for the Conduct of Environmental, Health and Safety Audits*. Prepared by The Auditing Roundtable, Inc.

5.3 REPRESENTATIVE SAMPLING

When confronted with a large population of data to review or equipment to inspect, the Audit Team employed representative sampling techniques to evaluate records over the Audit period requested, and as necessary, for physical inspection of some types of common equipment. The sample size for records reviews or equipment inspections required professional judgment.

The Audit Team's judgement considered the following:

- The outcome of the evaluation of the records sampled. If problems are found in the representative sample, more records may need to be examined to evaluate compliance status.
- Potential for or severity of non-compliance.
- The general appearance and observed practices of certain operating areas.
- Information obtained during an interview that indicates a potential problem.
- Other specific information or guidance from the CAM.
- Time available during the Audit.

The Audit Team also employed the following types of sampling techniques, depending upon the characteristics of a specific population:

- Random sampling – every item has an equal chance of being selected.

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- Interval sampling – select every nth item, (e.g., every third manifest in chronological order as contained in facility files).

- Block sampling – auditor uses his/her judgment to select a specific block of items, (e.g., petroleum storage tank inspections from April to October).

- Stratified sampling – population is divided into groups, which are then sampled through random or judgmental techniques.

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TABLE

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TABLE 1A
Primary Ash Basin- Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan for Primary and Secondary Ponds	Design Criteria	10/01/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	08/16/2018
Annual Meeting with Local Emergency Responders 2018	Design Criteria	07/17/2018
Notice of Intent to Close Dan River Primary Ash Basin	Closure and Post Closure Care	05/23/2018
Notice of Establishment of an Assessment Monitoring Program	Groundwater Monitoring and Corrective Action	04/03/2018
Emergency Action Plan Dan River Primary and Secondary Ash Basins	Design Criteria	03/21/2018
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Dan River Inundation Maps	Design Criteria	01/25/2018
2017 Annual CCR Fugitive Dust Control Report-Dan River	Operating Criteria	11/29/2017
Fugitive Dust Control Plan	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Dan River Primary Ash Basin	Groundwater Monitoring and	10/25/2017

TABLE 1A
(Continued)

Document Name	Category	Release Date
	Corrective Action	
Groundwater Monitoring System Certification-Dan River Primary Ash Basin	Groundwater Monitoring and Corrective Action	10/25/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	08/17/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	08/02/2017
Closure Plan - Primary and Secondary Ash Basins, Revision 1	Closure and Post Closure Care	03/16/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report 2016	Operating Criteria	08/11/2016
Annual Surface Impoundment Report (Initial)	Operating Criteria	02/16/2016
Annual Surface Impoundment Report (Initial) Revision 1	Operating Criteria	02/19/2016

*Tables generated from information on Duke Energy's CCR website on April 5, 2019

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TABLE 1B
Secondary Ash Basin- Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Emergency Action Plan Activation Level 3 Scarp Near Toe of Secondary Ash Basin, Sept. 19, 2018	Design Criteria	11/07/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan for Primary and Secondary Ponds	Design Criteria	10/18/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	08/16/2018
Annual Meeting with Local Emergency Responders 2018	Design Criteria	07/17/2018
Notice of Establishment of an Assessment Monitoring Program	Groundwater Monitoring and Corrective Action	04/03/2018
Emergency Action Plan Dan River Primary and Secondary Ash Basins	Design Criteria	03/21/2018
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Dan River Inundation Maps	Design Criteria	01/25/2018
2017 Annual CCR Fugitive Dust Control Report-Dan River	Operating Criteria	11/29/2017
Fugitive Dust Control Plan	Operating Criteria	11/29/2017

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TABLE 1B
(Continued)

Document Name	Category	Release Date
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Dan River Secondary Ash Basin	Groundwater Monitoring and Corrective Action	10/25/2017
Groundwater Monitoring System Certification-Dan River Secondary Ash Basin	Groundwater Monitoring and Corrective Action	10/25/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	08/17/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	08/02/2017
Closure Plan - Primary and Secondary Ash Basins, Revision 1	Closure and Post Closure Care	03/16/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report 2016	Operating Criteria	08/11/2016
Annual Surface Impoundment Report (Initial)	Operating Criteria	02/16/2016
Annual Surface Impoundment Report (Initial) Revision 1	Operating Criteria	02/19/2016

*Tables generated from information on Duke Energy's CCR website on April 5, 2019

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TABLE 1C
CCP Landfill- Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
CCR Annual Landfill Inspection Report 2018	Operating Criteria	11/19/2018
Design Criteria for Dan River CCP Landfill Cell 3 Liner, Leachate and Removal System	Design Criteria	05/01/2018
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
2017 Annual CCR Fugitive Dust Control Report-Dan River	Operating Criteria	11/29/2017
Fugitive Dust Control Plan	Operating Criteria	11/29/2017
CCR Annual Landfill Report 2017-Dan River CCP Landfill	Operating Criteria	11/29/2017
Design Criteria for CCP Landfill Liner and Leachate Collection and Removal System	Design Criteria	10/19/2017
Placement of Uppermost Aquifer	Location Restrictions	06/21/2017
Closure Plan for Dan River Landfill	Closure and Post Closure Care	06/21/2017
Certification of Construction	Design Criteria	06/21/2017
Location Restrictions for Fault Areas	Location Restrictions	06/21/2017
Groundwater Monitoring System Certification	Groundwater Monitoring and Corrective Action	06/21/2017
Run On Run Off Control System Plan Dan River Landfill	Operating Criteria	06/21/2017
Post Closure Plan	Closure and Post Closure Care	06/21/2017
Seismic Impact Zone Certification	Location Restrictions	06/21/2017
Unstable Areas	Location Restrictions	06/21/2017
Wetlands Certification	Location Restrictions	06/21/2017
Groundwater Sampling and Analysis Program Selection of Statistical	Groundwater	06/21/2017

TABLE 1C
(Continued)

Method Certification	Monitoring and Corrective Action	
Dan River CCP Landfill Certification of Leachate Collection and Removal System	Design Criteria	12/13/2016
Dan River CCP Landfill Certification of Liner Equivalency	Design Criteria	12/13/2016

*Tables generated from information on Duke Energy's CCR website on April 5, 2019

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ATTACHMENT A

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ATTACHMENT A
AUDIT SCOPE

A-1 GENERAL AUDIT SCOPE ITEMS

The general Audit scope items included:

- Review and evaluation of documentation for maintenance and repair of structures and equipment used for coal ash disposal,

- Review and evaluation of documentation of modifications, failures, leaks, damage, disrepair and other problems at the coal ash management units,

- Review and evaluation of documentation of efforts to correct failures, leaks, damage, disrepair and other problems where they determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding,

- Review and evaluation of documentation of communication of the items above within the organization,

- Review and evaluation of documentation associated with the specific environmental compliance items described below and laws, regulations, and policies associated these items and

- Review of compliance with administrative aspects and regulatory submissions related to coal ash management-specific regulations, including:

    - Coal Combustion Residuals 40 CFR Part 257 Subpart D

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- NC Coal Ash Management Act of 2014 NC General Statutes Chapter 130A, Article 9

More specific items which were addressed in the audits to comply with the General Audit Scope are described below.

A-2 SPECIFIC COMPLIANCE WITH THE ECP-NC

The following items related to specific ECP-NC compliance were reviewed as part of the audit:

1. Verify maintenance and sufficient funding of corporate compliance organizations (ABSAT, CCP organization, National Ash Management Advisory Board). Where a root cause of a compliance finding appears in an auditor's judgment to result from inadequate funding, the AGC/ELM Audit Team will identify this in the Audit finding.

2. Verify timely production of satisfactory Compliance Officer (CO) reports to the CAM relating to the development, implementation, and enforcement of the ECP-NC. No auditing work is associated with this work at this time.

3. Evaluate existence and efficacy of toll-free hotline/e-mail inbox for violation reporting, including the appropriateness of the follow-up investigation and disposition of each reported matter. This requirement will be evaluated for the first year of audits and then reassessed.

4. Evaluate completion and efficacy of periodic notices (via Internet, Intranet, email, notices in employee work areas, and publication in community outlets) to employees and the public of the availability of the toll-free hotline and electronic mail inbox.

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5. Evaluate training materials and curricula utilized in the mandated training program, particularly those tailored to employee's specific job descriptions, to determine whether it advances the goal of "ensuring that every domestic employee of Duke Energy Corporation and its wholly-owned or operated affiliates understands applicable compliance policies and is able to integrate the compliance objectives in the performance of his/her job." Ensure that the subjects specifically named in the plea agreements are covered by the training (namely, notice and reporting requirements in the event of a release or discharge and the safe and proper handling of pollutants, hazardous substances and/or wastes.)

6. Evaluate whether Defendants are using "Best Efforts" to comply with the obligations under the ECP-NC. Where the Audit Team makes compliance findings, the Audit Team will, upon request, provide their opinion on whether this best efforts standard applies, and if so, whether best efforts have been used.

7. Verify compliance at each facility with the specific procedures and protocols set forth in the ECP-NC.

A-3 SPECIFIC COMPLIANCE WITH OTHER PROVISIONS OF THE PLEA AGREEMENT

The following items related to specific items in the Plea Agreement were reviewed as part of the Audit:

1. Determine whether Defendants have opened, expanded, or reopened any coal ash or coal ash wastewater impoundment and, if so, verify that they are lined and do not allow unpermitted discharges of coal ash or coal ash wastewater to waters of the United States.

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2. Verify that Defendants have determined the volume of wastewater and coal ash in each wet-storage coal ash impoundment in North Carolina as described in the plea agreements and that written or electronic records of this information is maintained in a location available to facility staff and employees responsible for making environmental or emergency reports.

3. Review citations/notices of violation/notices of deficiency related to violations of federal, state, or local law to assure that they have been properly relayed to the Court and, as appropriate under the plea agreements, determine their materiality.

4. Evaluate Defendants' efforts to close coal ash impoundments at Dan River, Riverbend, Asheville, and Sutton for legal compliance.

5. Note any observations made during the Audit that cause concern regarding the assets and/or security available to the Defendants to meet the obligations imposed by the Judgment in this case.

A-4 GENERAL ENVIRONMENTAL COMPLIANCE SUBJECT AREAS

The following items related to General Environmental Compliance were reviewed as part of the Audit:

1. Assess all waste streams from Duke Energy facilities with coal ash impoundments. Review Duke Energy's processes, procedures, and practices, as well as compliance with those processes, procedures, and practices, for:

    a. identifying waste streams (especially, but not limited to, waste streams with discharge points into bodies of water),
    b. identifying and communicating any modifications or changes, or potential modifications or changes, to waste streams,

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c. ensuring proper handling/disposal of waste streams,
d. identifying, preventing, and mitigating any risks or hazards that could affect waste streams and/or the disposal of waste streams, and
e. ensuring proper permitting for waste streams.

For Item 1.d., the Audit Team evaluated such risk/hazard issues where there were compliance findings associated with waste streams.

2. Review and evaluate documentation of:

   a. Maintenance and repair of structures and equipment related to coal ash disposal,
   b. Modification of the coal ash impoundments and related pollution prevention equipment and structures,
   c. Failures, leaks, damage, disrepair, and other problems,
   d. Communication of the information described in a-c within the organization, and
   e. Efforts to correct failures, leaks, damage, disrepair, and other problems.

3. Assess the employees responsible for inspection, maintenance, and repair of coal ash basins and related structures and equipment. The assessment included an assessment of the workloads of such employees to assure that Duke Energy's facilities are adequately staffed. These assessments were made where the Audit Team determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

4. Review the results and recommendations of any other audits (internal or external/state mandated) and assess Duke Energy's implementation of those recommendations.

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5. Review and assess Duke Energy's processes, procedures, and practices for identifying, communicating, and addressing problems and potential problems at its coal ash basins (leaks, unpermitted discharges, etc.).

6. Review and assess Duke Energy's policies, procedures, practices, and equipment for handling emergency releases from its coal ash basins and evaluate the personnel with duties in such situations.

7. Verify that Duke Energy is complying with its NPDES wastewater and stormwater permits, as well as other relevant environmental permits. This should include verifying Duke Energy's timely submission of permit applications, permit renewal applications, and responses to requests for additional information from the relevant regulatory authority.

8. Review and assess any actions or measures Duke Energy has undertaken to assure accountability and prevent recurrences when problems and/or failures occur (i.e. disciplinary actions, re-training, revision to policies and procedures, etc.). This review will be completed where the Audit Team determines that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

9. Review and assess compliance with the following environmental regulations, as applicable to the management of coal ash:

a. Wastewater Discharges	40 CFR 122; 15A NCAC 2H.0100 *et seq*
b. Stormwater Discharges	40 CFR 122.26; 15A NCAC 2H.1000 *et seq;* NC General Permit (Construction) No. NCG010000
c. NC Groundwater Standards	15A NCAC 02L.0202(h)
d. Hazardous Waste Management	15A NCAC 13A.0100 to 13A.0107

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e. Oil Pollution Prevention 40 CFR Part 112
f. Air Pollution (Title V) 15A NCAC 2Q, and
g. Hazardous Chemicals (Tier II) 40 CFR Part 370.

Reviews also included an analysis of overall compliance and the status and security of the asset. Subsequent reviews of individual facilities will evaluate the movement towards compliance. The Audit did not include an evaluation of compliance with the September 2015 Settlement Agreement with NCDEQ.

A–5 LIST OF PERMITS AND PROGRAMS DEEMED TO BE EITHER DIRECTLY OR INDIRECTLY IN SUPPORT OF ASH MANAGEMENT

During the Audit, the Audit Team reviewed a variety of written programs developed and implemented by Duke Energy and facility staff. State-issued permits and supporting documentation relative to environmental programs and geotechnical aspects of ash basin management were also requested and reviewed.

Requested documents, pertinent to management of ash in basins, landfills, ponds, etc. were outlined in the pre-audit questionnaire for each facility and included, but were not limited to:

1. The Compliance Register developed for ETrac for the Site.

2. The Duke Energy Operations Manual for the facility.

3. A site plan, site map, or aerial photo which shows the entire facility and key features, of the facility including NPDES outfalls associated environmental monitoring locations, storage tanks, etc.

4. Most recent 2 years of maintenance, monitoring, and inspection records for each coal ash/CCR basin (just the physical inspections, not the groundwater records).

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5. A "Phase 1 and Phase 2" summary of ash basin conditions prepared by an outside consultant.

6. Duke Energy's permitting plans for addressing ash impoundments and landfills at this facility.

7. Applicable pages from the Duke Energy basin-by-basin coal ash/CCR project tracking document for this facility.

8. Original basin/landfill/coal ash management unit construction records.

9. Documentation of changes to these units.

10. Coal ash unit construction permit application and approval.

11. State-issued permits and application materials for permits associated with coal ash/CCR management (including, e.g., dam permits).

12. Any currently effective state order, consent order, or similar state direction that addresses coal ash/CCR management at the site.

13. Records required to be maintained in the site's operating record under the federal CCR regulation and/or any state CCR regulatory program.

14. Records of off-site ash shipments from May 2015 forward.

15. Stormwater permit application and approval for all outfalls.

16. Industrial wastewater (NPDES/POTW) permit application and approval for all outfalls/discharges.

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17. Industrial and stormwater sampling and monitoring records, and any corrective action plans (last 2 years).

18. Stormwater pollution prevention plan.

19. Landfill operating permit with maintenance and monitoring requirements.

20. Landfill leak detection and groundwater monitoring records from the last 2 years along with any workplans that describes the rationale for the monitoring system at the Site.

21. Landfill operating permit with maintenance and monitoring requirements.

22. Copies of any air permits and applications for coal ash units and ancillary operations.

23. Any testing and monitoring records completed to comply with the air permits.

24. Any notices of violations associated with the coal ash/CCR management activities received over the last 2 years.

25. Copy of SPCC Plan.

26. Community Right-to-Know

    a. Copies of lists of hazardous chemicals or MSDSs submitted;
    b. Copies of Tier I or II reports; and
    c. Copies of Form R (toxic release inventory) reports.

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27. Copies of communications with employees and the public regarding availability of toll-free hotline and electronic mail inbox for reporting suspected environmental violations.

28. Management Systems:

    a. List of responsible party for each environmental activity.
    b. All environmental-related training records.
    c. All environmental policies and procedures.
    d. Organization chart.
    e. Site diagram identifying storage areas, tanks, etc.

29. Employee training records related to environmental programs and ash management policies.

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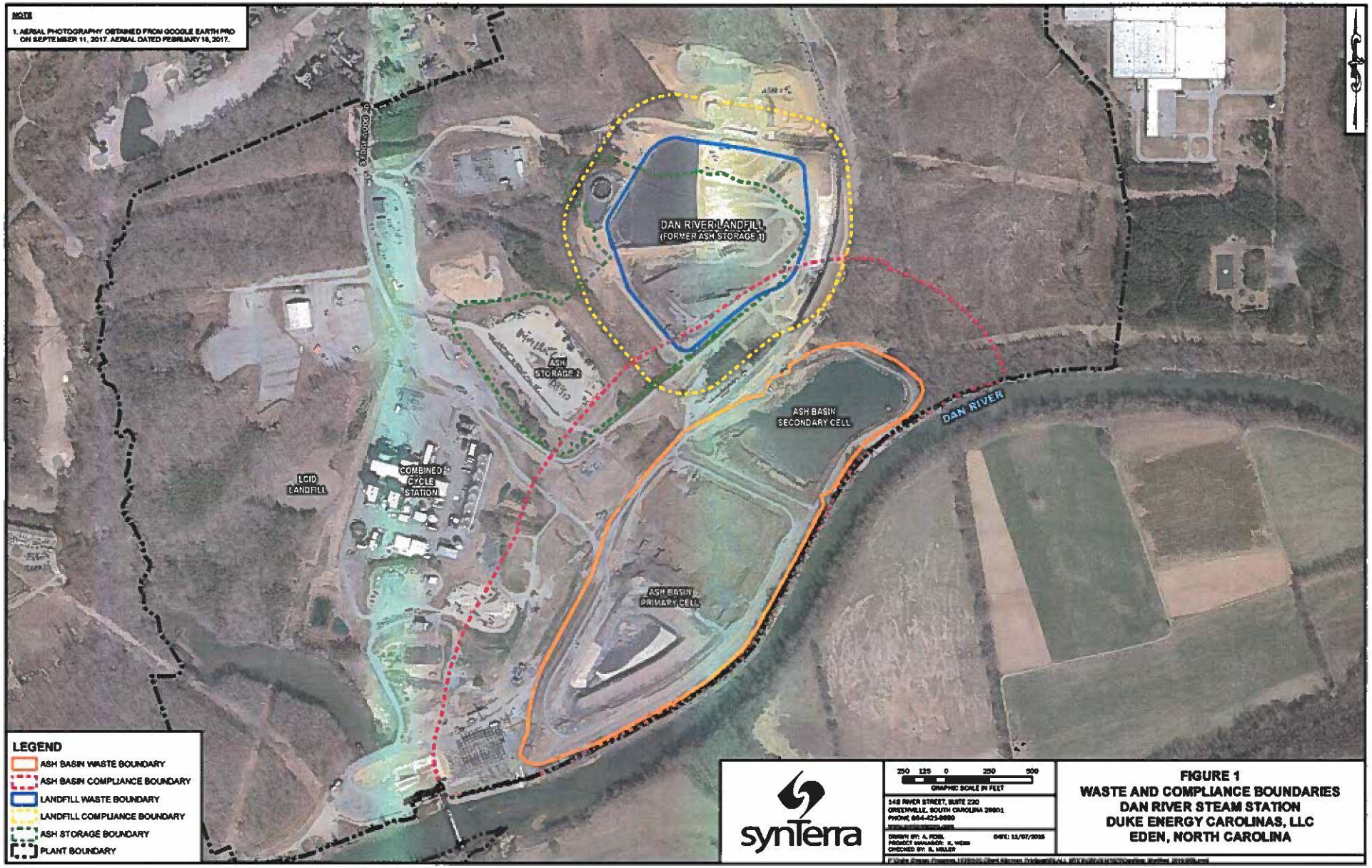
ATTACHMENT B

2018 Groundwater Data Summary

Attachment A



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		PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)									
	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	4*	10	1*	300	50	0.2*	0.3*	1000
	Provisional Background Threshold Values (Shallow Unit)	4.0-7.1	50	36.7	187	0.5	0.5	0.429	1.26	2.4	152	81.2	0.1	0.413	46.3
	Provisional Background Threshold Values (Deep Unit)	5.3-6.8	50	36.7	244	0.5	1.62	0.0772	3.42	0.85	2130	522	0.1	0.645	10
	Provisional Background Threshold Values (Bedrock Unit)	6.7-8.4	50.9	11.3	284	0.5	0.833	0.0625	8.31	1	1400	38.8	0.1	2.52	16

Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	PARAMETERS pH	40CFR257 APPENDIX III CONSTITUENTS Boron	Sulfate	Total Dissolved Solids	INORGANIC PARAMETERS (TOTAL CONCENTRATION) Antimony	Arsenic	Beryllium	Chromium	Cobalt	Iron	Manganese	Thallium	Vanadium	Zinc
AB-05D	Ash Basin - Primary Cell	Ash Basin	Source Area	01/03/2018	7.0	326	99.4	396	<0.5	1.7	<0.1	0.2 j	0.79	**753**	**1800**	<0.1	0.06 j	<10
AB-05D	Ash Basin - Primary Cell	Ash Basin	Source Area	04/04/2018	6.5	311	94.9	406	<0.5	0.19	0.14	0.46 j	**13.2**	**1130**	**1880**	<0.1	**0.35**	33.8
AB-05S	Ash Basin - Primary Cell	Ash Basin	Source Area	01/03/2018	7.5	605	154	406	**1.7**	**83.2**	<0.1	0.32 j	**2.1**	**1150**	**1280**	**0.37**	**3.5**	<10
AB-05S	Ash Basin - Primary Cell	Ash Basin	Source Area	04/04/2018	7.2	664	205	**515**	<0.5	2.3	<0.1	0.53	0.74	**1350**	**1360**	<0.1	0.14 j	<10
AB-30BR	Ash Basin - Secondary Cell	Ash Basin	Source Area	01/03/2018	7.5	319	135	463	0.31 j	1.1	0.039 j	3.7	0.21	299	**560**	<0.1	**0.36**	6.1 j
AB-30BR	Ash Basin - Secondary Cell	Ash Basin	Source Area	04/04/2018	7.2	310	121	459	0.25 j	1.1	0.029 j	1.6	0.15	**413**	**543**	<0.1	**0.31**	3.5 j
AB-30BR	Ash Basin - Secondary Cell	Ash Basin	Source Area	07/02/2018	7.2	281	129	483	0.12 j	0.85	<0.1	0.63	0.073 j	**302**	**533**	<0.1	0.083 j	3.3 j
AB-30BR (Pre-Closure)	Ash Basin - Secondary Cell	Ash Basin	Source Area	08/28/2018	7.1	294	140	450	<1	0.775 j	<1	0.965 j	<1	240	**540**	<0.2	0.259 j	<5
AB-30D	Ash Basin - Secondary Cell	Ash Basin	Source Area	01/03/2018	7.7	299	89.1	315	0.27 j	0.34	<0.1	**111**	**1.3**	**767**	**464**	<0.1	**0.71**	8.7 j
AB-30D	Ash Basin - Secondary Cell	Ash Basin	Source Area	04/04/2018	7.4	285	80.9	276	<0.5	0.32	0.028 j	3.7	0.38	**529**	**441**	<0.1	**0.79**	9 j
AB-30D	Ash Basin - Secondary Cell	Ash Basin	Source Area	07/02/2018	7.4	280	88.5	315	0.086 j	0.16	<0.1	0.37 j	0.2	184	**451**	<0.1	0.14 j	3.1 j
AB-30D (Pre-Closure)	Ash Basin - Secondary Cell	Ash Basin	Source Area	08/28/2018	7.2	305	88	300	<1	<1	<1	0.862 j	<1	143	**491**	<0.2	0.246 j	<5
AB-30S	Ash Basin - Secondary Cell	Ash Basin	Source Area	01/03/2018	**5.3**	309	39.1	112	<0.5	0.14	0.18	0.5	**13.6**	**629**	**715**	<0.1	**0.63**	5.2 j
AB-30S	Ash Basin - Secondary Cell	Ash Basin	Source Area	04/04/2018	**5.3**	316	50.9	113	<0.5	0.22	0.18	1.6	0.34	160	**1070**	<0.1	0.2 j	10.1
AB-30S	Ash Basin - Secondary Cell	Ash Basin	Source Area	07/03/2018	**5.2**	308	47.4	113	<0.5	0.072 j	0.28	3.5	**13.6**	**615**	**627**	0.042 j	**0.49**	9.8 j,B
AB-35BR	Ash Basin - Secondary Cell	Ash Basin	Source Area	01/03/2018	8.0	154	111	487	<0.5	3.1	<0.1	0.24 j	0.044 j	<50	**216**	<0.1	0.25 j	<10
AS-08BR	NW of Ash Basin - Primary Cell at Ash Storage 2	Ash Storage Area	Source Area	01/02/2018	7.3	<50	69.2	330	<0.5	0.11	<0.1	0.25 j	0.036 j	238	**1070**	<0.1	0.19 j	<10
AS-08D	NW of Ash Basin - Primary Cell at Ash Storage 2	Ash Storage Area	Source Area	01/02/2018	6.6	26.6 j	29.7	247	0.51	0.26	0.058 j	0.84	0.26	**1570**	**1110**	<0.1	**0.68**	3.5 j
BG-01DA	SW of Ash Basin - Primary Cell	Background	Background	01/02/2018	**6.3**	<50	106	334	<0.5	0.19	0.16	0.25 j	**8.1**	**2360**	**1190**	0.095 j	**0.53**	16.5
BG-05D	W of Ash Basin - Primary Cell	Background	Background	01/03/2018	7.0	<50	34.3	209	<0.5	0.095 j	<0.1	0.25 j	0.024 j	<50	**192**	<0.1	**0.44 B**	<10
BG-05D	W of Ash Basin - Primary Cell	Background	Background	04/03/2018	6.7	<50	32	210	<0.5	<0.1	<0.1	0.22 j	0.027 j	<50	**194**	<0.1	0.21 j	<10
BG-05D	W of Ash Basin - Primary Cell	Background	Background	07/02/2018	**6.4**	<50	33.5	212	<0.5	<0.1	<0.1	0.19 j	0.034 j	<50	**985**	<0.1	0.27 j,B	<10
BG-05D	W of Ash Basin - Primary Cell	Background	Background	10/02/2018	6.8	<50	33.5	198	<0.5	<0.1	<0.1	0.18 j	0.033 j,B	<50 BC	**437 BC**	<0.1	0.23 j,B	2.7 j
BG-05S	W of Ash Basin - Primary Cell	Background	Background	01/03/2018	**6.4**	<50	34.5	180	<0.5	<0.1	<0.1	0.88	0.066 j	178	26.7	<0.1	**0.36**	3.7 j
BG-05S	W of Ash Basin - Primary Cell	Background	Background	04/03/2018	**6.1**	<50	32	160	<0.5	<0.1	<0.1	0.69	0.049 j	79.9	4.2 j	<0.1	**0.32**	<10
BG-05S	W of Ash Basin - Primary Cell	Background	Background	07/02/2018	**6.1**	<50	34.1	173	<0.5	<0.1	<0.1	0.7	0.061 j	151	13.2	<0.1	**0.35 B**	<10
BG-05S	W of Ash Basin - Primary Cell	Background	Background	10/02/2018	**6.0**	<50	34.8	183	<0.5	0.063 j	0.013 j	0.93	0.038 j,B	81.9 B,BC	4 j,B,BC	<0.1	**0.32 B**	3 j
BG-10BR	N of Ash Basin	Background	Background	01/03/2018	7.8	<50	2.3	173	0.34 j	0.68	<0.1	0.92	0.13	76.8	32.2	<0.1	**1.1**	3.4 j
BG-10BR	N of Ash Basin	Background	Background	04/04/2018	7.6	<50	1.7	159	0.3 j	0.53	<0.1	1.1	0.064 j	85.1	22.8	<0.1	**0.81**	<10
BG-10BR	N of Ash Basin	Background	Background	07/02/2018	7.6	<50	1.5	170	0.14 j	0.47	<0.1	0.28 j	0.057 j	120	33.7	<0.1	**1.2**	3.5 j
BG-10BR	N of Ash Basin	Background	Background	10/02/2018	7.4	<50	1.4	171	<0.5	0.39	<0.1	0.38 j	0.032 j	35.7 j	25.9	<0.1	**0.99**	2.7 j
BG-10D	N of Ash Basin	Background	Background	01/03/2018	**5.7**	<50	1.4 M1	58	<0.5	0.2	0.049 j	0.81	0.082 j	181	10.1	<0.1	**0.56**	<10
BG-10D	N of Ash Basin	Background	Background	04/04/2018	**5.4**	<50	2.5	43 D6	<0.5	0.23	0.06 j	0.6	0.13	286	15.3	<0.1	**0.51**	<10
BG-10D	N of Ash Basin	Background	Background	07/05/2018	**5.2**	<50	2.9	82	<0.5	0.19	0.057 j	1	0.12	285	20.1	<0.1	**0.75**	<10
BG-10D	N of Ash Basin	Background	Background	10/19/2018	**5.3**	<50	13	55	<0.5	0.15	0.053 j	0.97 B	0.083 j	**368**	13.7	<0.1	**0.62**	3.6 j
BG-10S	N of Ash Basin	Background	Background	01/03/2018	**5.8**	<50	2	55	<1	<1	<1	<5	<1	166	10	<0.2	**0.622**	<5
BG-10S CAMA	N of Ash Basin	Background	Background	01/03/2018	**5.8**	<50	1.8	61	<0.5	0.17	0.063 j	0.47 j	0.067 j	96.4	8	<0.1	**0.72**	<10
BG-10S	N of Ash Basin	Background	Background	04/04/2018	**5.2**	<50	2.3	54	<0.5	0.2	0.067 j	0.45 j	0.081 j	245	17.9	<0.1	**0.6**	<10
BG-10S	N of Ash Basin	Background	Background	05/16/2018	**5.5**	<50	2.7	42	<1	<1	<1	<5	<1	242	17	<0.2	**0.778**	<5
BG-10S	N of Ash Basin	Background	Background	07/02/2018	**5.2**	<50	3	63	<0.5	0.16	0.074 j	0.52	0.28	**357**	33	<0.1	**0.52**	3.5 j
BG-10S	N of Ash Basin	Background	Background	09/04/2018	**5.6**	<50	3.2	45	<1	<1	<1	<5	<1	**382**	23	<0.2	**0.956**	<5
BG-10S	N of Ash Basin	Background	Background	10/02/2018	**5.4**	<50	2.7	57	<0.5	0.13	0.06 j	0.41 j	0.12	221	25.8	<0.1	**0.45**	5.3 j
BW-01D CCR	N of Ash Storage 2	Ash Landfill	Background	03/08/2018	7.6	30.7	4.1	169	<0.5	0.17	<0.1	0.18 j	<0.1	NA	NA	<0.1	NA	NA
BW-01D	N of Ash Storage 2	Ash Landfill	Background	05/16/2018	7.4	21.4 j	6.14	182	NA	<1	NA	0.547 j	NA	212	17.2	NA	NA	9.35
BW-01D CCR	N of Ash Storage 2	Ash Landfill	Background	06/07/2018	7.8	24.3	6.6	176	<0.5	0.77	0.052 j	0.24 j,B,S1	0.024 j	NA	NA	<0.1	NA	NA
BW-01S CCR	N of Ash Storage 2	Ash Landfill	Background	03/08/2018	**5.5**	5.6 B	1.5	56	<0.5	0.089 j	0.42	0.54	**2.5**	NA	NA	<0.1	NA	NA
BW-01S	N of Ash Storage 2	Ash Landfill	Background	05/16/2018	**6.1**	8.35 j	3.47	84	NA	<1	NA	0.633 j	NA	154	**148**	NA	NA	14.4
BW-01S CCR	N of Ash Storage 2	Ash Landfill	Background	06/07/2018	6.7	3.1 j	1.1 M1	60	<0.5	0.16	0.57	5.6	**3.8**	NA	NA	<0.1	NA	NA
BW-02D CCR	N of Ash Fill 1	Ash Landfill	Background	03/08/2018	7.5	29.9	1.7	184	<0.5	0.85	<0.1	0.41 j	0.053 j	NA	NA	<0.1	NA	NA
BW-02D	N of Ash Fill 1	Ash Landfill	Background	05/15/2018	7.4	18.9 j	2.33	171	NA	0.984 j	NA	0.479 j	NA	**384**	**643**	NA	NA	6.28
BW-02D CCR	N of Ash Fill 1	Ash Landfill	Background	06/08/2018	7.4	19.2	2	203	<0.5	0.87	0.05 j	0.44 j,S1	0.09 j	NA	NA	<0.1	NA	NA
BW-02S CCR	N of Ash Fill 1	Ash Landfill	Background	03/08/2018	**5.6**	17.9	3.2	44	<0.5	0.27	0.079 j	0.8	0.18	NA	NA	<0.1	NA	NA
BW-02S	N of Ash Fill 1	Ash Landfill	Background	05/15/2018	**5.4**	7.88 j	3.26	25	NA	<1	NA	0.284 j	NA	210	21.8	NA	NA	2.75 j
BW-02S CCR	N of Ash Fill 1	Ash Landfill	Background	06/08/2018	7.4	6.8	2.7 M1	60	<0.5	0.14	0.081 j	2.8	0.11	NA	NA	<0.1	NA	NA
CCR-03D	Ash Basin - Primary Cell	Ash Basin	Downgradient	03/07/2018	7.7	**720**	98.4	274	<0.5	0.1	<0.1	<0.5	0.032 j	NA	NA	<0.1	NA	NA
CCR-03D	Ash Basin - Primary Cell	Ash Basin	Downgradient	06/07/2018	7.8	671	96.1 M1	291	<0.5	0.12	<0.1	1.1 B,S1	0.033 j	NA	NA	<0.1	NA	NA
CCR-03D (Pre-Closure)	Ash Basin - Primary Cell	Ash Basin	Downgradient	08/28/2018	7.6	**714**	110	280	<1	<1	<1	<1	<1	52	**100**	<0.2	0.127 j	<5
CCR-03S	Ash Basin - Primary Cell	Ash Basin	Downgradient	03/07/2018	7.2	**760**	<1	280	<0.5	0.32	<0.1	0.44 j	0.3	NA	NA	<0.1	NA	NA

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		PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)									
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	Provisional Background Threshold Values (Shallow Unit)	4.0-7.1	50	36.7	187	0.5	0.5	0.429	1.26	2.4	152	81.2	0.1	0.413	46.3
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					PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)									
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Beryllium	Chromium	Cobalt	Iron	Manganese	Thallium	Vanadium	Zinc
GWA-08D	Ash Basin - Primary Cell	Ash Basin	Upgradient	07/02/2018	NM	<50	**333**	**758**	<0.5	0.7	0.075 j	0.42 j	0.038 j	94.1	**400**	<0.1	**0.38 B**	<10
GWA-08D	Ash Basin - Primary Cell	Ash Basin	Upgradient	10/01/2018	7.2	<50	**336**	**716**	<0.5	0.56	<0.1	0.093 j	0.13	121	**1670**	<0.1	0.26 j	3.7 j,B
GWA-08S	Ash Basin - Primary Cell	Ash Basin	Upgradient	01/02/2018	**5.8**	<50	191	390	<0.5	0.45	0.12	5.1	0.14	173	30.5	<0.1	**1.1 B**	16.4
GWA-08S	Ash Basin - Primary Cell	Ash Basin	Upgradient	04/05/2018	**5.8**	<50	177	389	<0.5	0.28	0.051 j	2.9	0.12	123	19.1	<0.1	**0.73**	3.8 j,B
GWA-08S	Ash Basin - Primary Cell	Ash Basin	Upgradient	07/02/2018	NM	<50	172	401	<0.5	0.24	0.1	0.68	0.05 j	93.2	16.7	<0.1	**0.72**	4 j
GWA-08S	Ash Basin - Primary Cell	Ash Basin	Upgradient	10/01/2018	**5.5**	<50	176	400	<0.5	0.32	0.074 j	0.87	0.089 j	177	16.8	<0.1	**1.1**	6.5 j,B
GWA-09D	NE of Ash storage 2	Background	Background	01/02/2018	**6.1**	<50	6	73	<0.5	0.47	<0.1	<0.5	0.89	**2130**	**539**	<0.1	<0.3 B	<10
GWA-09D CCR	NE of Ash storage 2	Background	Background	03/07/2018	**6.0**	6.7 B	5.4	68	<0.5	0.49	0.057 j	0.19 j	0.8	NA	NA	<0.1	NA	NA
GWA-09D	NE of Ash storage 2	Background	Background	04/05/2018	**6.0**	<50	5	73	<0.5	0.46	0.028 j	<0.5	0.76	**2190**	**573**	<0.1	<0.3	3.6 j,B
GWA-09D CCR	NE of Ash storage 2	Background	Background	06/07/2018	**5.6**	4 j	4.4	70	<0.5	0.5	<0.1	0.26 j,B,S1	0.76	NA	NA	<0.1	NA	NA
GWA-09D	NE of Ash storage 2	Background	Background	07/03/2018	**6.0**	<50	3.9	78	<0.5	0.49	<0.1	0.33 j	0.78	**2260**	**577**	<0.1	<0.3	<10
GWA-09D	NE of Ash storage 2	Background	Background	10/01/2018	**5.6**	<50	4.2	76	<0.5	0.52	0.026 j	0.14 j	0.78	**2090**	**567**	<0.1	0.09 j	4.3 j,B
GWA-09S	NE of Ash storage 2	Background	Background	01/02/2018	**5.4**	<50	<1	42	<0.5	<0.1	0.21	5.3	**1.8**	214	40.8	<0.1	**0.43 B**	<10
GWA-09S CCR	NE of Ash storage 2	Background	Background	03/07/2018	**5.4**	3.8 j,B	0.8 j	43	<0.5	0.077 j	0.21	0.9	0.79	NA	NA	<0.1	NA	NA
GWA-09S	NE of Ash storage 2	Background	Background	04/05/2018	**5.2**	<50	1.9	43	<0.5	<0.1	0.18	0.48 j	0.37	33.9 j	18	<0.1	<0.3	4.6 j,B
GWA-09S CCR	NE of Ash storage 2	Background	Background	06/07/2018	**4.9**	3.6 j	1.2	50	<0.5	0.064 j	0.18	0.39 j,B,S1	0.21	NA	NA	<0.1	NA	NA
GWA-09S	NE of Ash storage 2	Background	Background	07/03/2018	**5.4**	<50	0.84 j	51	<0.5	<0.1	0.14	0.46 j	0.4	<50	16.3	<0.1	<0.3	3.7 j
GWA-09S	NE of Ash storage 2	Background	Background	10/01/2018	**5.2**	<50	0.91 j	46	<0.5	<0.1	0.17	0.41 j	**1.2**	96.9	28.4	<0.1	0.19 j	7.3 j,B
GWA-10D	Between Ash Basin - Primary Cell and Ash storage 2	Ash Basin	Source Area	01/02/2018	**5.6**	377	93.7	221	<0.5	<0.1	0.3	5	0.26	**374**	28.4	<0.1	**0.61 B**	<10
GWA-10D	Between Ash Basin - Primary Cell and Ash storage 2	Ash Basin	Source Area	04/04/2018	**5.4**	352	76.6	206	<0.5	0.2	0.19	1.6	0.35	**350**	**59.2**	<0.1	0.2 j	13.7
GWA-10D	B/w Ash Basin - Primary Cell & Ash storage 2	Ash Basin	Source Area	07/02/2018	**5.2**	424	91.8	241	<0.5	0.05 j	0.23	0.98	0.1	152	20.4	<0.1	<0.3	6.5 j
GWA-10D	B/w Ash Basin - Primary Cell & Ash storage 2	Ash Basin	Source Area	10/02/2018	**5.3**	410	93	226	<0.5	0.045 j	0.22	2.2	0.14 B	43.6 j,B,BC	20.6 B,BC	<0.1	0.18 j,B	6.4 j
GWA-12D	NE of Ash storage 2	Upgradient	Upgradient	01/02/2018	7.6	<50	18.8	257	<0.5	1.7	<0.1	0.29 j	0.96	65.2	23	<0.1	**1.6**	<10
GWA-12D	NE of Ash storage 2	Upgradient	Upgradient	04/03/2018	7.5	<50	14.3	253	<0.5	1.9	<0.1	0.22 j	**1.6**	57	20.6	<0.1	**2.4**	<10
GWA-12D	NE of Ash storage 2	Upgradient	Upgradient	07/03/2018	7.4	<50	16.4	260	<0.5	2.2	<0.1	0.43 j	**1.2**	126	26.2	<0.1	**1.9**	3.5 j,B
GWA-12D	NE of Ash storage 2	Upgradient	Upgradient	10/01/2018	7.3	<50	15.9	260	<0.5	1.9	<0.1	0.14 j	**1.2**	<50	12.5	<0.1	**2.2**	3.7 j,B
GWA-12S	NE of Ash storage 2	Upgradient	Upgradient	04/03/2018	**5.2**	<50	24.8	80	<0.5	0.1	0.038 j	0.57	0.1	113	11.9	<0.1	**0.33**	3.1 j
GWA-12S	NE of Ash storage 2	Upgradient	Upgradient	07/03/2018	**5.2**	<50	25.8 M1	101	<0.5	0.5	0.19	1.1	0.82	**929**	**71.2**	0.058 j	**0.45**	21.8 B
GWA-12S	NE of Ash storage 2	Upgradient	Upgradient	10/01/2018	**5.0**	<50	28.4	81	<0.5	0.16	0.046 j	0.8	0.32	224	24.2	<0.1	**0.63**	4.3 j,B
GWA-14D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	01/02/2018	7.5	261	161	459	<0.5	0.46	<0.1	<0.5	0.061 j	187	**426**	<0.1	0.059 j	<10
GWA-14D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	04/03/2018	7.2	265	147	476	<0.5	0.49	<0.1	<0.5	0.059 j	**323**	**458**	<0.1	<0.3	<10
GWA-14D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	07/03/2018	7.2	283	179	482	<0.5	0.48	<0.1	0.35 j	0.073 j	265	**472**	<0.1	<0.3	<10
GWA-14D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	10/01/2018	7.0	224	195	**526**	<0.5	0.46	<0.1	<0.5	0.062 j	**304**	**450**	<0.1	0.07 j	2.9 j,B
GWA-14S	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	04/03/2018	**5.9**	<50	12.3	66	<0.5	0.095 j	0.02 j	2.3	0.048 j	45.8 j	14.7	<0.1	0.26 j	6 j
GWA-14S	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	10/01/2018	**5.6**	25.2 j	16.2	99	<0.5	0.26	0.024 j	2.8	0.17	**352**	10	<0.1	**1**	6.4 j,B
GWA-15D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	01/02/2018	7.2	94.5	**412**	**832**	<0.5	0.12	<0.1	0.34 j	0.22	<50	**525**	<0.1	<0.3	<10
GWA-15D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	04/03/2018	6.7	80.2	**272**	**644**	<0.5	0.17	<0.1	<0.5	0.19	<50	**406**	<0.1	0.16 j	<10
GWA-15D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	07/03/2018	6.5	102	211	499	<0.5	0.081 j	<0.1	0.45 j	0.1	<50	**104**	<0.1	0.2 j	4.5 j,B
GWA-15D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	10/01/2018	**5.7**	41.6 j	78.8	240	<0.5	0.09 j	0.028 j	0.63	0.23	<50	**109**	<0.1	**0.38**	5 j,B
GWA-16D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	01/02/2018	6.8	34.6 j	221	489	<0.5	0.12	<0.1	<0.5	**1.5**	**457**	**1850**	<0.1	0.14 j	<10
GWA-16D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	04/03/2018	6.5	31.4 j	232	**548**	<0.5	0.18	<0.1	<0.5	**2.1**	**520**	**2160**	<0.1	<0.3	<10
GWA-16D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	07/02/2018	6.6	36 j	187	472	<0.5	0.11	<0.1	<0.5	**1.9**	**590**	**1730**	<0.1	<0.3	<10
GWA-16D	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	10/02/2018	6.7	37.4 j	233	**553**	<0.5	0.1	0.011 j	0.22 j	**1.8**	**836 BC**	**1930 BC**	<0.1	<0.3	<10
GWA-16S	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	01/02/2018	**5.8**	<50	70.9	193	<0.5	0.064 j	<0.1	2.1	0.045 j	42.4 j	<5	<0.1	**1.1**	2.5 j
GWA-16S	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	04/03/2018	**6.2**	<50	74.6 M1	194	<0.5	0.12	<0.1	1.1	0.06 j	145	3.6 j	<0.1	**0.5**	2.9 j
GWA-16S	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	07/02/2018	6.5	<50	37.6	177	<0.5	0.073 j	<0.1	0.96	<0.1	83.5	2.8 j	<0.1	**0.4**	3 j
GWA-16S	SE of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	10/02/2018	**6.1**	<50	35.4	171	<0.5	0.099 j	<0.1	2.9	0.06 j,B	175 B,BC	4.6 j,B,BC	<0.1	**0.64 B**	4.3 j
GWA-17D	NE of Ash storage 2	Ash Basin	---	01/02/2018	6.7	<50	11.8	139	<0.5	0.13	<0.1	<0.5	0.22	182	**651**	<0.1	0.27 j	<10
GWA-17D	NE of Ash storage 2	Ash Basin	---	04/03/2018	6.6	<50	9.3 M1	143	<0.5	0.088 j	<0.1	<0.5	0.19	208	**641**	<0.1	0.14 j	<10
GWA-17D	NE of Ash storage 2	Ash Basin	---	07/03/2018	6.8	<50	8.8	137	<0.5	0.11	<0.1	<0.5	0.079 j	169	**477**	<0.1	<0.3	<10
GWA-17D	NE of Ash storage 2	Ash Basin	---	10/02/2018	6.8	<50	8.5	143	<0.5	0.13	0.019 j	0.13 j	0.22	261	**717**	<0.1	0.096 j	2.5 j
GWA-20D	S of Ash Basin - Primary Cell	Ash Basin	Downgradient	04/03/2018	6.5	<50	12.8	125	<0.5	0.4	<0.1	1.4	**1.3**	**312**	**1360**	<0.1	0.17 j	<10
GWA-20D	S of Ash Basin - Primary Cell	Ash Basin	Downgradient	07/02/2018	6.5	<50	13.8	134	<0.5	0.31	<0.1	0.43 j	**1.2**	250	**1540**	<0.1	0.15 j,B	<10
GWA-20D	S of Ash Basin - Primary Cell	Ash Basin	Downgradient	10/01/2018	**6.2**	<50	12.9	132	<0.5	0.55	<0.1	0.53	**1.8**	**376**	**1570**	<0.1	**0.38**	4.9 j,B
GWA-20S	S of Ash Basin - Primary Cell	Ash Basin	Downgradient	04/03/2018	**6.0**	<50	21.7	98	<0.5	<0.1	<0.1	4.9	0.054 j	46.9 j	**78.3**	<0.1	**0.36**	<10
GWA-20S	S of Ash Basin - Primary Cell	Ash Basin	Downgradient	07/02/2018	**5.5**	<50	21.7	106	<0.5	0.085 j	<0.1	5.9	0.034 j	46.4 j	35	<0.1	**0.45 B**	3.4 j
GWA-20S	S of Ash Basin - Primary Cell	Ash Basin	Downgradient	10/01/2018	**5.9**	<50	22	145	<0.5	0.1	<0.1	3.6	0.025 j	<50	<5	<0.1	**0.65**	4 j,B
LF-CCR-01D	N of Ash Fill 1	Ash Landfill	Upgradient	03/07/2018	7.3	29.7	8.9	300	<0.5	5.4	<0.1	1.2	0.16	NA	NA	<0.1	NA	NA
LF-CCR-01D	N of Ash Fill 1	Ash Landfill	Upgradient	06/07/2018	7.2	25.7	8.6	305	<0.5	3.6	<0.1	0.68 S1	0.12	NA	NA	<0.1	NA	NA
LF-CCR-01S	N of Ash Fill 1	Ash Landfill	Upgradient	03/07/2018	**6.1**	8.2	4.5	47	<0.5	0.16	<0.1	1.5	0.46	NA	NA	<0.1	NA	NA

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DAN RIVER
12/12/2018
BRANDON RUSSO
JERRY WYLIE

					PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)										
				Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
				15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	4*	10	1*	300	50	0.2*	0.3*	1000
				Provisional Background Threshold Values (Shallow Unit)	4.0-7.1	50	36.7	187	0.5	0.5	0.429	1.26	2.4	152	81.2	0.1	0.413	46.3
				Provisional Background Threshold Values (Deep Unit)	5.3-6.8	50	36.7	244	0.5	1.62	0.0772	3.42	0.85	2130	522	0.1	0.645	10
				Provisional Background Threshold Values (Bedrock Unit)	6.7-8.4	50.9	11.3	284	0.5	0.833	0.0625	8.31	1	1400	38.8	0.1	2.52	16

					PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)										
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Beryllium	Chromium	Cobalt	Iron	Manganese	Thallium	Vanadium	Zinc
LF-CCR-01S	N of Ash Fill 1	Ash Landfill	Upgradient	06/07/2018	**5.8**	3.6 j,B	6.7	52 D6	<0.5	0.071 j,S1	0.048 j	1.3 S1	0.86	NA	NA	<0.1	NA	NA
LF-CCR-02D	NW of Ash Fill 1	Ash Landfill	Source Area	03/08/2018	6.5	40.9	14.4	363	<0.5	0.17	0.071 j	1.1	0.026 j	NA	NA	<0.1	NA	NA
LF-CCR-02D	NW of Ash Fill 1	Ash Landfill	Source Area	06/07/2018	**6.4**	32.6	15.6	359	<0.5	0.13 S1	0.15 S1	2 S1	0.07 j	NA	NA	<0.1	NA	NA
LF-CCR-02S	NW of Ash Fill 1	Ash Landfill	Source Area	03/08/2018	**6.4**	40.6	25.7	306	0.21 j	0.77	<0.1	**28.9**	**3**	NA	NA	<0.1	NA	NA
LF-CCR-02S	NW of Ash Fill 1	Ash Landfill	Source Area	06/07/2018	**6.4**	41.1	19	306	<0.5	0.67	<0.1	**17.6**	**2.9**	NA	NA	<0.1	NA	NA
LF-CCR-04D	S of Ash Fill 1	Ash Landfill	Downgradient	03/07/2018	**6.3**	**1390**	**288**	**816**	<0.5	0.12	0.057 j	<0.5	**2.5**	NA	NA	<0.1	NA	NA
LF-CCR-04D	S of Ash Fill 1	Ash Landfill	Downgradient	06/07/2018	**6.3**	**976**	**253**	**724**	<0.5	0.1 S1	0.049 j	0.13 j,S1	**2.5**	NA	NA	<0.1	NA	NA
LF-CCR-04D (Pre-Closure)	S of Ash Fill 1	Ash Landfill	Downgradient	08/28/2018	**6.1**	**1130**	**310**	**760**	<1	<1	<1	0.474 j	**2.45**	**5150**	**1970**	<0.2	0.181 j	<5
LF-CCR-04S	S of Ash Fill 1	Ash Landfill	Source Area	03/07/2018	**6.0**	**1460**	116	**532**	0.59	0.31	<0.1	0.65	**3.5**	NA	NA	<0.1	NA	NA
LF-CCR-04S	S of Ash Fill 1	Ash Landfill	Source Area	06/07/2018	**6.3**	**1080**	99.1	478	0.57	0.38 S1	<0.1	1.1 S1	0.96	NA	NA	<0.1	NA	NA
LF-CCR-04S (Pre-Closure)	S of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	**6.2**	**1450**	250	**740**	0.466 j	0.682 j	<1	0.356 j	**4.32**	**311**	**1720**	<0.2	**0.829**	<5
LF-CCR-05D	S of Ash Fill 1	Ash Landfill	Source Area	03/08/2018	**5.4**	376	102	448	<0.5	0.39	0.055 j	2.6	0.2	NA	NA	<0.1	NA	NA
LF-CCR-05D	S of Ash Fill 1	Ash Landfill	Source Area	06/07/2018	**6.3**	401	116	450	<0.5	0.23 S1	0.1	6.4	0.43	NA	NA	<0.1	NA	NA
LF-CCR-05D (Pre-Closure)	S of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	**6.2**	466	0.4767 j	450	<1	<1	<1	0.43 j	<1	**2350**	**851**	<0.2	**0.607**	<5
LF-CCR-05S	S of Ash Fill 1	Ash Landfill	Source Area	03/08/2018	6.6	**2130**	149 M1	**608**	0.25 j	2.7	<0.1	7.8	**6.8**	NA	NA	<0.1	NA	NA
LF-CCR-05S	S of Ash Fill 1	Ash Landfill	Source Area	06/07/2018	**6.4**	**1400**	196	**622**	0.31 j	0.97	<0.1	0.96 S1	**4.2**	NA	NA	<0.1	NA	NA
LF-CCR-05S (Pre-Closure)	S of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	**5.9**	**948**	67	300	<1	0.546 j	<1	0.616 j	**1.92**	129	**532**	<0.2	**0.523**	<5
LF-CCR-07D	N of Ash Fill 1	Ash Landfill	Upgradient	03/07/2018	7.0	13.4	12.4	149	<0.5	0.37	<0.1	0.29 j	0.2	NA	NA	<0.1	NA	NA
LF-CCR-07D	N of Ash Fill 1	Ash Landfill	Upgradient	06/07/2018	7.0	9.1 B	12.2	166	<0.5	0.2 S1	<0.1	0.17 j,S1	0.17	NA	NA	<0.1	NA	NA
LF-CCR-07S	N of Ash Fill 1	Ash Landfill	Upgradient	03/07/2018	**5.9**	8.4	8.2	57 D6	<0.5	0.44	0.097 j	0.34 j	**7.5**	NA	NA	<0.1	NA	NA
LF-CCR-07S	N of Ash Fill 1	Ash Landfill	Upgradient	06/07/2018	**5.8**	3 j,B	8.1	64	<0.5	0.28 S1	0.1	2.2	**7.8**	NA	NA	<0.1	NA	NA
LF-CCR-08D	N of Ash Fill 1	Ash Landfill	Upgradient	03/08/2018	6.7	17.3	3	149	<0.5	2.5	<0.1	0.32 j	0.062 j	NA	NA	<0.1	NA	NA
LF-CCR-08D	N of Ash Fill 1	Ash Landfill	Upgradient	06/07/2018	6.6	5.4 B	3.2	159	<0.5	1.8	<0.1	0.33 j,S1	0.024 j	NA	NA	<0.1	NA	NA
LF-CCR-08S	N of Ash Fill 1	Ash Landfill	Upgradient	03/08/2018	**6.1**	13.4	1.3	79	<0.5	1.3	<0.1	0.25 j	**2.2**	NA	NA	<0.1	NA	NA
LF-CCR-08S	N of Ash Fill 1	Ash Landfill	Upgradient	06/07/2018	**6.2**	4.9 j,B	1.3	80	<0.5	0.9	<0.1	<0.5	**1.7**	NA	NA	<0.1	NA	NA
LF-CW-01D	N of Ash Fill 1	Ash Landfill	Source Area	05/16/2018	**5.3**	2.85 j	2.49	67	NA	<1	NA	0.822 j	NA	265	32.1	NA	NA	1.13 j
LF-CW-01S	N of Ash Fill 1	Ash Landfill	Source Area	05/16/2018	**5.2**	4.16 j	3.64	60	NA	<1	NA	0.19 j	NA	148	**53.6**	NA	NA	8.93
LF-CW-02D	N of Ash Fill 1	Ash Landfill	Source Area	05/15/2018	6.5	7.03 j	4.28	90	NA	1.37	NA	5.33	NA	**4840**	**427**	NA	NA	4.88 j
LF-CW-02S	N of Ash Fill 1	Ash Landfill	Source Area	05/15/2018	**5.8**	3.96 j	1.23	32	NA	<1	NA	0.924 j	NA	**584**	**72.7**	NA	NA	4.83 j
LF-CW-03D	NE of Ash Fill 1	Ash Landfill	Source Area	05/16/2018	**6.3**	1.2 j	4.13	99	NA	<1	NA	1.96 j	NA	251	29.1	NA	NA	6.29
LF-CW-03S	NE of Ash Fill 1	Ash Landfill	Source Area	05/15/2018	**6.1**	3.03 j	1.14	52	NA	<1	NA	0.335 j	NA	69.2	1.84 j	NA	NA	<5
LF-CW-04D	E of Ash Fill 1	Ash Landfill	Sidegradient	05/15/2018	7.3	43.5 j	10.8	246	NA	<1	NA	1.24 j	NA	**909**	**847**	NA	NA	3.68 j
LF-CW-04S	E of Ash Fill 1	Ash Landfill	Sidegradient	05/15/2018	**5.9**	16.5 j	15.3	98	NA	<1	NA	0.041 j	NA	**457**	**78.6**	NA	NA	3.91 j
LF-CW-05D CCR	SE of Ash Fill 1	Ash Landfill	Source Area	03/07/2018	6.9	17.3	28	285	<0.5	0.2	<0.1	0.65	0.18	NA	NA	<0.1	NA	NA
LF-CW-05D	SE of Ash Fill 1	Ash Landfill	Source Area	05/15/2018	6.7	12.7 j	29.2	252	NA	<1	NA	0.119 j	NA	**3060**	**832**	NA	NA	<5
LF-CW-05D CCR	SE of Ash Fill 1	Ash Landfill	Source Area	06/07/2018	6.9	13 B	29.8	305	<0.5	0.096 j,S1	<0.1	0.44 j,S1	0.22	NA	NA	<0.1	NA	NA
LF-CW-05D (Pre-Closure)	SE of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	**6.4**	<50	25	270	<1	<1	<1	<1	<1	**2960**	**810**	<0.2	0.215 j	1.932 j
LF-CW-05S	SE of Ash Fill 1	Ash Landfill	Source Area	05/15/2018	**5.4**	302	19.2	99	NA	<1	NA	0.428 j	NA	**486**	**358**	NA	NA	4.47 j
LF-CW-05S (Pre-Closure)	SE of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	**5.2**	129	13	89	<1	<1	<1	0.358 j	**1.77**	8.8 j	**87**	<0.2	**0.331**	2 j
LF-CW-06D	S of Ash Fill 1	Ash Landfill	Source Area	05/16/2018	7.0	43.7 j	20.1	310	NA	<1	NA	1.29 j	NA	**973**	**1040**	NA	NA	9.11
LF-CW-06D (Pre-Closure)	S of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	7.1	52	21	280	<1	<1	<1	<1	<1	**857**	**1020**	<0.2	0.165 j	<5
LF-CW-06S	S of Ash Fill 1	Ash Landfill	Source Area	05/16/2018	**5.6**	229	44.1	205	NA	0.599 j	NA	1.02 j	NA	**1340**	**1860**	NA	NA	7.5
LF-CW-06S (Pre-Closure)	S of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	**5.5**	122	21	140	<1	<1	<1	<1	**5.77**	**638**	**566**	<0.2	0.28 j	2 j
LF-CW-07D	SW of Ash Fill 1	Ash Landfill	Source Area	05/15/2018	6.9	31.3 j	124	373	NA	<1	NA	0.68 j	NA	**1020**	**922**	NA	NA	5.88
LF-CW-07D (Pre-Closure)	SW of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	6.8	36.549 j	100	370	<1	<1	<1	0.564 j	<1	**1000**	**927**	<0.2	0.278 j	10
LF-CW-07S	SW of Ash Fill 1	Ash Landfill	Source Area	05/15/2018	6.8	173	49.2	**665**	NA	<1	NA	1.16 j	NA	247	**109**	NA	NA	2.17 j
LF-CW-07S (Pre-Closure)	SW of Ash Fill 1	Ash Landfill	Source Area	08/28/2018	6.6	251	47	**750**	<1	<1	<1	0.337 j	0.42 j	241	**294**	<0.2	**1.21**	5
LF-CW-08D CCR	W of Ash Fill 1	Ash Landfill	Source Area	03/07/2018	6.9	18.5	161	**642**	<0.5	0.34	<0.1	3	0.5	NA	NA	<0.1	NA	NA
LF-CW-08D	W of Ash Fill 1	Ash Landfill	Source Area	05/16/2018	6.6	11.3 j	171	**617**	NA	0.522 j	NA	6.72	NA	**3500**	**1470**	NA	NA	<5
LF-CW-08D CCR	W of Ash Fill 1	Ash Landfill	Source Area	06/07/2018	6.8	13.1 B	162	**630**	<0.5	0.27 S1	<0.1	0.42 j,S1	0.37	NA	NA	<0.1	NA	NA
MW-09D	Ash Basin - Primary Cell	Ash Basin	Downgradient	01/02/2018	6.6	**970**	218	403	<0.5	<0.1	<0.1	0.56	0.23	<50	**581**	<0.1	**0.32**	6 j
MW-10D	SW of ash basin	Ash Basin	Downgradient	01/02/2018	6.5	471	45.2	219	<0.5	<0.1	<0.1	<0.5	0.55	150	**1010**	<0.1	<0.3	<10
MW-11D	SW Ash Basin - Secondary Cell	Ash Basin	Downgradient	01/03/2018	7.8	142	88.6	331	<0.5	0.18	<0.1	1.5	<0.1	<50	10	<0.1	**0.38**	3.9 j
MW-11D CCR	SW Ash Basin - Secondary Cell	Ash Basin	Downgradient	03/08/2018	7.9	159	90.2	323	<0.5	0.11	<0.1	0.76	<0.1	NA	NA	<0.1	NA	NA
MW-11D	SW Ash Basin - Secondary Cell	Ash Basin	Downgradient	04/04/2018	7.6	134	89.3	330	<0.5	0.16	<0.1	0.35 j	0.017 j	<50	27.7	<0.1	<0.3	<10
MW-11D CCR	SW Ash Basin - Secondary Cell	Ash Basin	Downgradient	06/07/2018	7.6	134	95.1	335	<0.5	0.18	<0.1	2.4 S1	0.024 j	NA	NA	<0.1	NA	NA
MW-11D	SW Ash Basin - Secondary Cell	Ash Basin	Downgradient	07/02/2018	7.7	142	94.8	345	<0.5	0.13	<0.1	0.53	0.051 j	<50	**214**	<0.1	0.13 j,B	<10
MW-11D (Pre-Closure)	SW Ash Basin - Secondary Cell	Ash Basin	Downgradient	08/28/2018	7.3	143	94	320	<1	<1	<1	0.98 j	<1	80	**126**	<0.2	0.181 j	2.063 j
MW-12	NE of Ash Storage 2	Ash Basin	Upgradient	01/02/2018	**5.8**	<50	11.8	65	<0.5	0.26	0.15	<0.5	**8.6**	**3060**	**369**	<0.1	<0.3 B	54.3
MW-12	NE of Ash Storage 2	Ash Basin	Upgradient	04/04/2018	**5.7**	<50	9.7	60	<0.5	0.3	0.11	0.49 j	**7.5**	**2560**	**374**	<0.1	<0.3	54.1

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JERRY WYLIE

					) PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)							
				Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
				15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	4*	10	1*	300	50	0.2*	0.3*	1000
				Provisional Background Threshold Values (Shallow Unit)	4.0-7.1	50	36.7	187	0.5	0.5	0.429	1.26	2.4	152	81.2	0.1	0.413	46.3
				Provisional Background Threshold Values (Deep Unit)	5.3-6.8	50	36.7	244	0.5	1.62	0.0772	3.42	0.85	2130	522	0.1	0.645	10
				Provisional Background Threshold Values (Bedrock Unit)	6.7-8.4	50.9	11.3	284	0.5	0.833	0.0625	8.31	1	1400	38.8	0.1	2.52	16

					) PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)									
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Beryllium	Chromium	Cobalt	Iron	Manganese	Thallium	Vanadium	Zinc
MW-12	NE of Ash Storage 2	Ash Basin	Upgradient	07/03/2018	NM	<50	11.1	76	<0.5	0.31	0.12	0.52	**7.5**	**3260**	**404**	<0.1	0.19 j	55.4
MW-12	NE of Ash Storage 2	Ash Basin	Upgradient	10/02/2018	**5.5**	<50	10.5	71	0.17 j	0.26	0.1	0.37 j	**7.4**	**2740 BC**	**367 BC**	<0.1	0.12 j,B	51.2
MW-12D	NE of Ash Storage 2	Ash Basin	Upgradient	01/02/2018	**6.4**	<50	29.8	146	<0.5	0.15	<0.1	1.9	**3.7**	**2550**	**960**	<0.1	<0.3 B	<10
MW-12D	NE of Ash Storage 2	Ash Basin	Upgradient	04/04/2018	**6.0**	<50	24.7	144	<0.5	0.2	0.022 j	0.41 j	**3.2**	**2500**	**1010**	<0.1	<0.3	8.1 j
MW-12D	NE of Ash Storage 2	Ash Basin	Upgradient	07/03/2018	NM	<50	26.7	148	<0.5	0.23	<0.1	0.42 j	**3.3**	**3050**	**1070**	<0.1	<0.3	7.8 j
MW-12D	NE of Ash Storage 2	Ash Basin	Upgradient	10/02/2018	**6.1**	<50	26.3	149	<0.5	0.18	0.015 j	0.46 j	**3.1**	**2960 BC**	**1040 BC**	<0.1	<0.3	9.2 j
MW-20D	NE of Ash Storage 2	Ash Basin	Upgradient	01/03/2018	7.6	<50	6.2	180	<1	<1	<1	<5	<1	105	**564**	<0.2	<0.3	<5
MW-20D	NE of Ash Storage 2	Ash Basin	Upgradient	05/15/2018	7.4	<50	6.3	180	<1	<1	<1	<5	<1	**369**	**540**	<0.2	<0.3	<5
MW-20D	NE of Ash Storage 2	Ash Basin	Upgradient	09/04/2018	7.3	<50	6.3	180	<1	<1	<1	<5	<1	164	**494**	<0.2	<0.3	5
MW-20S	NE of Ash Storage 2	Ash Basin	Upgradient	01/03/2018	**6.1**	<50	4.1	110	<1	<1	<1	<5	**1.7**	**549**	**743**	<0.2	<0.3	<5
MW-20S	NE of Ash Storage 2	Ash Basin	Upgradient	05/15/2018	**5.9**	<50	4.2	98	<1	<1	<1	<5	**2.27**	**2870**	**827**	<0.2	**0.303**	6
MW-20S	NE of Ash Storage 2	Ash Basin	Upgradient	09/04/2018	**5.9**	<50	3.8	130	<1	<1	<1	<5	**2.07**	**3050**	**807**	<0.2	**0.385**	5
MW-21D	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	01/03/2018	7.6	270	140	410	<1	<1	<1	6	<1	**676**	**756**	<0.2	**0.368**	<5
MW-21D CAMA	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	01/03/2018	7.6	245	138	431	<0.5	0.14	<0.1	6.6	0.1	225	**498**	<0.1	0.07 j	3.3 j
MW-21D CCR	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	03/07/2018	7.2	258	137	442	<0.5	0.27	<0.1	0.3 j	0.034 j	NA	NA	<0.1	NA	NA
MW-21D	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	04/03/2018	7.3	237	140	445	<0.5	0.094 j	<0.1	0.23 j	0.041 j	38.2 j	**216**	<0.1	<0.3	<10
MW-21D	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	05/15/2018	7.1	253	160	430	<1	<1	<1	<5	<1	32	**104**	<0.2	<0.3	<5
MW-21D CCR	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	06/08/2018	7.1	217	142	486	<0.5	0.12	<0.1	0.14 j,S1	<0.1	NA	NA	<0.1	NA	NA
MW-21D	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	09/04/2018	7.0	241	160	450	<1	<1	<1	<5	<1	**965**	**2950**	<0.2	**0.301**	6
MW-21D	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	10/02/2018	7.2	231	171	494	0.16 j	0.18	0.019 j	0.54	0.059 j,B	**400 BC**	**1030 BC**	<0.1	0.19 j,B	3.1 j
MW-21S	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	01/03/2018	7.3	315	84	200	<1	**17.1**	<1	<5	<1	<10	**342**	<0.2	**0.743**	<5
MW-21S CAMA	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	01/03/2018	7.3	275	81.9	222	0.31 j	**20**	<0.1	0.2 j	0.37	<50	**319**	<0.1	**0.97**	<10
MW-21S CCR	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	03/07/2018	6.8	263	81.1	218	0.33 j	**16.6**	<0.1	0.19 j	0.22	NA	NA	<0.1	NA	NA
MW-21S	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	04/03/2018	6.7	260	87.7	226	0.29 j	**14.8**	<0.1	<0.5	0.3	<50	**481**	<0.1	**1.3**	<10
MW-21S	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	05/15/2018	6.7	287	110	240	<1	**16.5**	<1	<5	**1.12**	20	**1150**	<0.2	**1.71**	<5
MW-21S CCR	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	06/08/2018	6.6	284	107	280	0.29 j	**15.5**	<0.1	<0.5	0.33	NA	NA	<0.1	NA	NA
MW-21S	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	09/04/2018	6.5	363	110	260	<1	**22.5**	<1	<5	<1	40	**868**	<0.2	**1.28**	<5
MW-21S	NW of Ash Basin - Secondary Cell	Ash Basin	Sidegradient	10/01/2018	6.5	376	125	312	0.42 j	**18.3**	<0.1	0.57	0.76	40.9 j	**548**	<0.1	**1.7**	3.8 j,B
MW-22BR	SW of Ash Basin - Primary Cell	Ash Basin	Sidegradient	01/03/2018	8.1	**830**	126	326	<0.5	0.33	<0.1	0.41 j	0.038 j	**638**	**203**	<0.1	0.13 j,B	6 j
MW-22BR	SW of Ash Basin - Primary Cell	Ash Basin	Sidegradient	04/03/2018	7.0	**814**	118	347	<0.5	0.23	<0.1	<0.5	0.013 j	**657**	**193**	<0.1	<0.3	<10
MW-22BR	SW of Ash Basin - Primary Cell	Ash Basin	Sidegradient	07/06/2018	7.6	**805**	147	375	<0.5	0.34	<0.1	0.35 j	0.03 j	**697**	**205**	<0.1	<0.3	<10
MW-22BR	SW of Ash Basin - Primary Cell	Ash Basin	Sidegradient	10/02/2018	7.7	**745**	119	349	0.21 j	0.47	0.016 j	5.1	0.24 B	**1050 BC**	**183 BC**	<0.1	**0.82 B**	11.3
MW-22D	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	01/03/2018	7.9	**840**	130	310	<1	1.49	<1	<5	<1	105	11	<0.2	**2.26**	<5
MW-22D CAMA	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	01/03/2018	7.9	**817**	130	324	0.24 j	1.1	0.039 j	5.4	0.17	245	19.4	<0.1	**3.4**	<10
MW-22D CCR	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	03/07/2018	7.8	**801**	75.1	337	0.25 j	0.84	<0.1	1.2	0.12	NA	NA	<0.1	NA	NA
MW-22D	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	04/03/2018	7.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-22D	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	05/15/2018	7.6	**817**	140	310	<1	<1	<1	<5	<1	82	43	<0.2	**2.27**	<5
MW-22D	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	09/04/2018	7.3	**752**	160	360	<1	<1	<1	<5	<1	26	<5	<0.2	**2.46**	<5
MW-22D	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	10/02/2018	7.4	**749**	147	380	0.2 j	0.75	<0.1	0.91	0.048 j,B	103 B,BC	<5 BC	<0.1	**2**	2.6 j
MW-22S	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	01/03/2018	6.9	637	0.61	200	<1	<1	<1	<5	<1	**15800**	**1070**	<0.2	**0.516**	<5
MW-22S CAMA	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	01/03/2018	6.9	656	1.5	196	<0.5	0.34	0.047 j	0.44 j	0.22	**16900**	**928**	<0.1	**0.44 B**	<10
MW-22S CCR	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	03/07/2018	6.8	606	1 j	218	<0.5	1.2	<0.1	0.51	0.36	NA	NA	<0.1	NA	NA
MW-22S	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	04/03/2018	**6.3**	635 M1	1.7	211	<1	0.47	<0.2	4.1	0.28	**10900**	**695 M1**	<0.2	<0.3	<10
MW-22S	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	05/15/2018	6.6	574	<0.5	190	<1	<1	<1	<5	<1	**13800**	**959**	<0.2	**0.429**	<5
MW-22S CCR	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	06/07/2018	**6.4**	473	<1	250	<0.5	1.1	<0.1	0.6 B,S1	0.35	NA	NA	<0.1	NA	NA
MW-22S	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	07/06/2018	**6.4**	511	<1	226 D6	<0.5	0.28	<0.1	0.39 j	0.29	**6310**	**881**	<0.1	0.18 j	<10
MW-22S	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	09/04/2018	**6.4**	426	<0.5	230	<1	1.31	<1	<5	<1	**14400**	**551**	<0.2	**0.425**	<5
MW-22S	SW of Ash Basin - Primary Cell	Ash Basin	Downgradient	10/02/2018	6.5	148	33.2	289	<0.5	1.3	<0.1	4.6	**1.6**	**8440 BC**	**357 BC**	<0.1	**0.37 B**	2.6 j
MW-23BR	Near NW corner of property	Background	Background	01/12/2018	7.6	51.5	11.8	263	<0.5	0.43	0.048 j	<0.5	<0.1	128	27.3	<0.1	0.1 j	<10
MW-23BR	Near NW corner of property	Background	Background	04/03/2018	7.5	38.2 j	9.5	249	<0.5	0.36	<0.1	0.23 j	<0.1	**592**	29	<0.1	<0.3	<10
MW-23BR	Near NW corner of property	Background	Background	07/02/2018	7.1	43.9 j	10.1	264	<0.5	0.33	<0.1	<0.5	<0.1	**791**	30.4	<0.1	<0.3	<10
MW-23BR	Near NW corner of property	Background	Background	10/02/2018	7.2	39.8 j	10	267	<0.5	0.32	0.01 j	<0.5	<0.1	**821 BC**	30.5 B,BC	<0.1	0.12 j,B	<10
MW-23D	Near NW corner of property	Background	Background	01/03/2018	6.8	<50	53	230	<1	<1	<1	<5	<1	104	**234**	<0.2	**0.351**	<5
MW-23D CAMA	Near NW corner of property	Background	Background	01/03/2018	6.8	<50	59.3	243	<0.5	0.21	<0.1	0.26 j	0.13	62.4	**108**	<0.1	0.21 j	3.1 j
MW-23D	Near NW corner of property	Background	Background	04/03/2018	**6.4**	<50	46.4	211	<0.5	0.14	<0.1	<0.5	0.056 j	60.3	4.2 j	<0.1	0.17 j	<10
MW-23D	Near NW corner of property	Background	Background	05/16/2018	6.6	<50	43	220	<1	<1	<1	<5	<1	85	29	<0.2	**0.464**	13
MW-23D	Near NW corner of property	Background	Background	07/02/2018	7.1	33.2 j	38.8	315	<0.5	0.27	<0.1	<0.5	0.064 j	49.3 j	**91**	<0.1	0.21 j	<10
MW-23D	Near NW corner of property	Background	Background	09/04/2018	6.8	<50	44	270	<1	<1	<1	<5	<1	83	**287**	<0.2	<0.3	<5
MW-23D	Near NW corner of property	Background	Background	10/02/2018	**6.3**	<50	51	250	<0.5	0.26	<0.1	0.41 j	0.1 B	117 B,BC	**60.6 BC**	<0.1	**0.33 B**	4.8 j
MW-317BR	Ash Storage 2	Ash Storage Area	Source Area	01/02/2018	**11.4**	<50	13.4	159	**1.1**	1.1	<0.1	2.1	0.086 j	104	48.3	<0.1	**5.9**	<10

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DAN RIVER					**) PARAMD**	**CFR257 APPENDIX III CONSTITU**			**INORGANIC PARAMETERS (TOTAL CONCENTRATION)**										
12/12/2018				**Reporting Units**	**S.U.**	**ug/L**	**mg/L**	**mg/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
BRANDON RUSSO				**15A NCAC 02L Standard**	**6.5-8.5**	**700**	**250**	**500**	**1***	**10**	**4***	**10**	**1***	**300**	**50**	**0.2***	**0.3***	**1000**
JERRY WYLIE				**Provisional Background Threshold Values (Shallow Unit)**	**4.0-7.1**	**50**	**36.7**	**187**	**0.5**	**0.5**	**0.429**	**1.26**	**2.4**	**152**	**81.2**	**0.1**	**0.413**	**46.3**
				Provisional Background Threshold Values (Deep Unit)	**5.3-6.8**	**50**	**36.7**	**244**	**0.5**	**1.62**	**0.0772**	**3.42**	**0.85**	**2130**	**522**	**0.1**	**0.645**	**10**
				Provisional Background Threshold Values (Bedrock Unit)	**6.7-8.4**	**50.9**	**11.3**	**284**	**0.5**	**0.833**	**0.0625**	**8.31**	**1**	**1400**	**38.8**	**0.1**	**2.52**	**16**

					) PARAMD	**CFR257 APPENDIX III CONSTITU**			**INORGANIC PARAMETERS (TOTAL CONCENTRATION)**									
Sample ID	**Location Description**	**Associated Unit**	**Location With Respect to Groundwater Flow Direction**	**Sample Collection Date**	**pH**	**Boron**	**Sulfate**	**Total Dissolved Solids**	**Antimony**	**Arsenic**	**Beryllium**	**Chromium**	**Cobalt**	**Iron**	**Manganese**	**Thallium**	**Vanadium**	**Zinc**
MW-317BR	Ash Storage 2	Ash Storage Area	Source Area	04/03/2018	**9.5**	<50	7.9	140	0.85	1.3	<0.1	1.9	0.061 j	212	**84.9**	<0.1	**5.9**	<10
MW-317BR	Ash Storage 2	Ash Storage Area	Source Area	07/02/2018	7.4	25.4 j	11.1	151	0.86	1.4	<0.1	0.83	0.16	**1280**	**160**	<0.1	**4.2**	7.6 j
MW-317BR	Ash Storage 2	Ash Storage Area	Source Area	10/02/2018	6.9	<50	5.1	140	0.3 j	0.66	0.045 j	1.3	0.34	**1650**	**199**	<0.1	**2.1**	8.3 j
MW-317BRL	Ash Storage 2	Ash Storage Area	Source Area	01/02/2018	**12.4**	33 j	22.8	236	**2.2**	2.7	<0.1	1	<0.1	<50	<5	<0.1	**1.3**	<10
MW-317BRL	Ash Storage 2	Ash Storage Area	Source Area	04/03/2018	**11.3**	<50	14.5	260	**1.5**	2.3	<0.1	0.63	0.011 j	<50	2.7 j	<0.1	**0.67**	<10
MW-317BRL	Ash Storage 2	Ash Storage Area	Source Area	07/02/2018	**9.9**	<50	7.8	181	**1.4**	1.9	<0.1	0.56	<0.1	<50	17.9	<0.1	0.3	<10
MW-317BRL	Ash Storage 2	Ash Storage Area	Source Area	10/02/2018	**9.7**	<50	5.6	166	0.82	1.9	<0.1	0.29 j	<0.1	<50	31.6	<0.1	0.23 j	2.7 j

COLOR NOTES

Bold highlighted concentration indicates exceedance of the 15A NCAC 02L .0202 Standard or the IMAC. (Effective date for 15A NCAC 02L .0202 Standard and IMAC is April 1, 2013)

Turbidity of Sample ≥ 10 NTUs

Provisional Background Threshold Values reflect the values represented in the NCDEQ letter dated 10/11/2017.

Analytical data review has not been completed for this dataset.

ABBREVIATION NOTES	
BGS - below ground surface	mV - millivolts
BOD - Biologic Oxygen Demand	NA - Not available or Not Applicable
CB - Compliance Boundary	ND - Not detected
COD - Chemical Oxygen Demand	NE - Not established
Deg C - Degrees Celsius	NM - Not measured
DMAs - dimethylarsinic acid	NTUs - Nephelometric Turbidity Units
DUP - Duplicate	pCi/L - picocuries per liter
Eh - Redox Potential	PSRG - Primary Soil Remediation Goals
ft - Feet	RL - Reporting Limit
GPM - gallons per minute	SeCN - selnocynante
IMAC - Interim Maximum Allowable Concentrations - From the 15A NCAC	SeMe (IV) - Selenomethionine
MDC - Minimum Detectable Concentr	SPLP - Synthetic Precipitation Leaching Procedure
MeSe - Methylseleninic acid	S.U. - Standard Units
mg/kg - milligrams per kilogram	TCLP - Toxicity Characteristic Leaching Procedure
mg/L - milligrams per liter	ug/L - micrograms per liter
mg-N/L - Milligram nitrogen per liter	ug/mL - microgram per milliliter
MMAs - monomethylarsonic acid	umhos/cm - micromhos per centimenter
Well Locations referenced to NAD83 and elevations referenced to	

mV - millivolts	
NA - Not available or Not Applicable	
ND - Not detected	
NE - Not established	
NM - Not measured	
NTUs - Nephelometric Turbidity Units	
pCi/L - picocuries per liter	
PSRG - Primary Soil Remediation Goals	
RL - Reporting Limit	
SeCN - selnocynante	
SeMe (IV) - Selenomethionine	
SPLP - Synthetic Precipitation Leaching Procedure	
S.U. - Standard Units	
TCLP - Toxicity Characteristic Leaching Procedure	
ug/L - micrograms per liter	
ug/mL - microgram per milliliter	
umhos/cm - micromhos per centimenter	

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/A

Hart Exhibit 53
Docket No. E-7, Sub 1214

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ENVIRONMENTAL AUDIT IN SUPPORT OF THE COURT APPOINTED MONITOR

Marshall Steam Station
Terrell, North Carolina
USA

August 2019

Final Report Issued To:

Duke Energy and the Court Appointed Monitor

Prepared By:

Advanced GeoServices Corp.
and
The Elm Consulting Group International LLC

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1.0 INTRODUCTION

Advanced GeoServices Corp. (AGC) and The Elm Consulting Group International LLC (Elm) (collectively, the Audit Team) are conducting environmental compliance audits (the Audits) of certain coal combustion residuals (CCR) management locations owned or operated by Duke Energy Business Services LLC, Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc. (collectively, Duke Energy). The Audits are being conducted under the direction of Mr. Benjamin Wilson, the Court Appointed Monitor (CAM), pursuant to an Order issued by the U.S. District Court, Eastern District of North Carolina, in case numbers 5:15-CR-62-H, 5:15-CR-67-H, and 5:15-CR-68-H.

The scope of the Audits is set forth in the plea agreements entered into by Duke Energy and the United States in the above cases, the Court's judgments in these cases, and a written Audit scoping document agreed to by Duke Energy and the United States.

1.1 BACKGROUND INFORMATION

The subject of this report is the Audit completed at Duke Energy's Marshall Steam Station located in Terrell, North Carolina (the Marshall Facility). The Audit was conducted on June 24-25, 2019 for a total of two days on-site. The Audit Team members were:

- Mr. Christopher Reitman, P.E. AGC — Project Director, Audit Team Leader, Sr. Subject Matter Expert (on-site)
- Mr. Joseph Cotier, CPEA, Elm — Sr. Environmental Auditor (on-site)
- Mr. Bernie Beegle, P.G., AGC — Environmental Auditor (off-site)

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The key representatives of the Marshall Facility were:

- Mr. Rick Roper, Station General Manager
- Mr. Greg Phillips, Operations Supervisor
- Mr. Dan Zakary, CCP System Owner
- Mr. Kyle Baucom, CCP Engineering & Closure Engineering
- Mr. Tim Hill, General Manager, Regional CCP Operations and Maintenance
- Mr. Chris Varner, CCP Projects
- Mr. Robert Wylie, EHS CCP Permitting and Compliance
- Mr. Brad Loveland, EHS CCP Permitting and Compliance
- Ms. Tyler Hardin, EHS CCP Waste & Groundwater
- Ms. Diana Kooser, Regulatory Affairs
- Mr. Andrew Stroud, Environmental Rover, EHS CCP Compliance
- Mr. Michael Phillips, Manager, EHS CCP Compliance
- Mr. Chris Randazzo, EHS CCP Environmental Field Support
- Mr. Scott La Sala, Station Environmental Field Support
- Ms. Erika Tuchbaum, Manager, Environmental Services
- Mr. Sean Wright, Station Health & Safety Field Support
- Mr. Steve Struble, Director, EHS CCP Compliance
- Mr. Keith Higgins, EHS CCP Compliance

1.2 FACILITY OVERVIEW

The Marshall Facility is located on a 2,050-acre property at 8320 North Carolina Highway in Terrell, Catawba County, North Carolina. Duke Energy personnel stated that the facility began operations in 1965. Between 1966 and 1970, Units 2-4 came on-line. All 4 units are coal-fired and currently operational and the total electrical generating capacity is 2,090 MW. In addition, a flue gas desulfurization (FGD) system was placed in operation in 2007.

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1.2.1 Ash Management Activities

The following CCR management facilities are present on-site:

- Active Ash Basin – The Marshall Steam Station O&M Manual states the Active Ash Basin has an area of approximately 450 acres, which represents the historical surface area of the impoundment. The Active Ash Basin was created by an earthen dam built across the headwaters of Holdsclaw Creek. The Active Ash Basin historically received runoff, leachate, and inflows from landfills, stormwater generated throughout the facility and the Photovoltaic Structural Fill, yard-drain sumps, discharges from the FGD Bio-Treatment System (through Internal Outfall 004), and sluiced bottom ash. The wet surface area of the impoundment is currently about 60 acres. The Active Ash Basin was utilized for disposal of fly ash prior to installation of a dry fly ash management system. A portion of the bottom ash was historically sluiced to the basin. For regulatory purposes, the Active Ash Basin Dam has been identified as CATAW-054 by the North Carolina Department of Environmental Quality (NCDEQ).

- Industrial Landfill No. 1 – Industrial Landfill No. 1 is permitted under NCDEQ (formerly NCDENR) Solid Waste Permit 18-12 and contains four cells with a total area of 35.5 acres. Cells 1 and 2 have been constructed and are currently in operation. A permit to operate cells 3 and 4 was issued by NCDEQ on April 18, 2018, and waste placement into these cells began in January 2019. Portions of the landfill were constructed over beneficially reused residual fly ash materials. A portion of cells 3 and 4 of the landfill was also constructed over the historical area of the Active Ash Basin. The Industrial Landfill No. 1 has a leachate collection and removal system and a three-component liner system consisting of two geomembrane liners separated by a leak detection system placed over a

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geosynthetic clay liner and a soil liner. The Industrial Landfill No. 1 is permitted to receive fly ash, bottom ash, FGD material, FGD clarifier sludge, coal mill rejects, waste limestone material, boiler slag, sand blast material, ball mill rejects, coal waste, and pyrites generated at the Marshall facility. Leachate generated from Industrial Landfill No. 1 is collected and piped to the Lined Retention Basin.

- FGD Landfill – The FGD Landfill is permitted under NCDEQ Solid Waste Permit 18-09. Phase 1 - Cell 1 has a footprint of 20.6 acres. Duke Energy personnel reported that operations at the FGD Landfill were suspended in October 2015 and an interim cover was placed over Cell 1. Historically, contact stormwater and leachate from Cell 1 are collected and piped or discharged to the Active Ash Basin. The FGD Landfill is not regulated under the CCR regulations as CCR residuals have reportedly not been placed into the landfill on or after October 19, 2015. Cell 1 received the following types of material generated at Marshall: FGD materials (gypsum), clarifier sludge, fly ash, bottom ash, construction and demolition waste, asbestos waste, mill rejects (pyrites), waste limestone material, land clearing and inert debris, boiler slag, ball mill rejects, sand blast material, and coal waste. Duke Energy initiated closure activities at the FGD Landfill in July 2018 that included placement of a cap over the FGD Landfill and were completed in March 2019. Leachate from the FGD Landfill is pumped to the Lined Retention Basin. The FGD Landfill groundwater monitoring network consists of one (1) background well and eight (8) detection wells that are sampled semi-annually (March and September).

- Dry CCP Landfills – There are four closed landfills that occupy approximately 58 acres and that are managed under the facility's Solid Waste Permit 18-04. These include an Ash Landfill built in two phases. Phase 1 is located to the north of the Active Ash Basin dam and received ash from September 1984 to March 1986. Phase 2 is located to the northwest of Phase 1 at the north end of the Active Ash Basin and received ash from March 1986 to 1999. The third landfill is the Asbestos Landfill to the northwest of Phase 2; it received asbestos containing material

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(ACM) from Marshall and other Duke Energy facilities from 1987 to 2008. The fourth landfill is the Demolition Landfill (east of the Asbestos Landfill and north of Phase 2), which received construction and demolition waste from the Marshall facility from 1984 to 2008. These four landfills were constructed prior to regulatory requirements for lining industrial landfills and were closed with soil cover systems. The Ash Landfill groundwater monitoring network consists of one (1) background well, four (4) detection wells, and three (3) observation wells that are sampled semi-annually in February and August. The Asbestos Landfill and the Demolition Landfill do not have groundwater monitoring networks.

- Photovoltaic (PV) Structural Fill – The PV Structural Fill was constructed of dry fly ash under NCDEQ's Solid Waste 1700 Rules and is located adjacent to and partially on top of the northwest portion of the Active Ash Basin. The PV Structural Fill is approximately 80 acres and received dry fly ash from October 2000 to February 2013. The PV Structural Fill is currently closed. The southern portion of the fill is utilized for renewable energy production from a solar panel field. No groundwater monitoring is conducted for the PV Structural Fill. Stormwater pipes exist beneath the PV Structural Fill. A stormwater redirection project which included grouting these pipes and redirecting stormwater flows around the perimeter of the PV Structural Fill area was being implemented when the Audit Team was on-site.

- Marshall Steam Station Road Structural Fill – The access road to the PV Structural Fill was constructed of beneficially reused dry fly ash from September 1997 to June 1998. The road was capped with beneficially reused bottom ash, soil, and vegetated side slopes. No groundwater monitoring is conducted for the Marshall Steam Station Road Structural Fill.

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Bottom ash that historically was sluiced to the Active Ash Basin is now processed in the recently installed submerged flight conveyor (SFC). Dry fly ash is pneumatically conveyed from precipitators to two silos located at the southeast end of the Active Ash Basin Dam for temporary storage. The dry fly ash is trucked from the silos to an on-site landfill or off-site for beneficial reuse.

Gypsum is moved using conveyors from the FGD system to the temporary gypsum pad (Gypsum Pad) where it is loaded into trucks for beneficial reuse or on-site landfill disposal. Stormwater and dust control water from the Gypsum Pad gravity drains to two recently lined Gypsum Pad Basins, which historically drained to the Active Ash Basin but now drain to the recently installed Lined Retention Basin.

1.2.2 Environmental Permits and Programs

The Marshall facility operates under a number of environmental permits and programs, which are described below:

- **National Pollutant Discharge Elimination System (NPDES) Industrial Wastewater Discharge Permit and Special Order by Consent Discharges** – In April 2018, NCDEQ issued a renewed NPDES Permit No. NC0004987 to the Marshall Facility with an effective date of May 1, 2018 and an expiration date of September 30, 2021. As it relates to ash and ash management activities, the following outfalls are in service:
  - Outfall 002 - discharge from the Active Ash Basin to the Catawba River (Lake Norman);
  - Internal Outfall 004 - discharges FGD wet scrubber wastewater to the Active Ash Basin (this waste stream has been rerouted to the newly constructed Lined Retention Basin via Internal Outfall 006);

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- Internal Outfall 006 – discharges FGD wet scrubber wastewater to the newly constructed Lined Retention Basin (LRB);
- Outfall 005 – discharges LRB water to the Catawba River (Lake Norman) (The LRB now receives all plant generated wastewater. Discharge commenced on January 22, 2019.);
- Outfall 007 – an emergency spillway for the Active Ash Basin to discharge to Catawba River (Lake Norman); and
- Internal Outfall 010 – A holding basin that will discharge coal pile runoff and stormwater to the LRB.

Groundwater monitoring is not required by the current NPDES Permit, No. NC0004987.

On April 25, 2018, the North Carolina Environmental Management Commission issued Special Order by Consent No. EMC SOC WQ S17-009 (SOC) to Duke Energy. The SOC has an expiration date of "no later than June 30, 2022." The SOC covers discharges from seeps S-01, S-02, S-03, and S-04, all considered non-constructed seeps. Non-constructed seeps are not on or within a dam structure and do not convey wastewater via a pipe or constructed channel directly to a receiving stream. Seep S-03 was located east of active ash basin as a minor area of wetness between basin dike and river bank. This AOW was determined to be same area of wetness as AOW S-02 and has been dispositioned.

Quarterly monitoring is required for parameters specified in the SOC. Monitoring for S-01 includes interim action levels for pH and total hardness. Seeps S-02 and S-04 are represented by instream monitoring both upstream and downstream of the seep locations and must meet the 15A NCAC 2B standards. At the time of the Audit, four rounds of sampling had been conducted. No exceedances of Interim Action Levels or other relevant standards were noted.

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Additional requirements of the SOC include:

- Payment of an upfront civil penalty within 30 days of SOC issuance. This penalty was paid May 7, 2018.
- Completion of the dry bottom ash system by March 31, 2019. In a January 25, 2019 letter to NCDEQ, Duke Energy reported connection to the system on October 26, 2018.
- Initiation of decanting of the Active Ash Basin via Outfall 002 by September 30, 2019. Decanting had not commenced as of the date of the Audit.
- Completion of decanting by March 31, 2021.
- Annual completion of a comprehensive survey of existing and potential new seeps. New non-constructed seeps identified and reported to NCDEQ in the Annual Seep Report are deemed covered by the SOC. The Annual Seep Survey was conducted on June 7, 2018, with a subsequent report submitted to NCDEQ on April 24, 2019. The SOC requires the Annual Seep Survey to be submitted by April 30 each year.
- Posting of a copy of the Marshall Facility NPDES Permit, SOC, and related reports on Duke Energy's external website. All required documents have been posted.

- **NPDES Industrial Stormwater Permit** – In 2015, NCDEQ issued Individual Stormwater Permit No. NCS000548, which became effective on May 15, 2015 and expires on April 30, 2020. The permit includes 14 stormwater outfalls. Two of the outfalls are related to ash or CCR management activities (outfalls SW004 and SW022). Two additional outfalls, SW024 and SW025, were added to the permit by NCDEQ on September 19, 2018. Neither outfall SW024 nor SW025 have been constructed or put into operation as of the date of the Audit. A Stormwater

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Pollution Prevention Plan (SWPPP) dated June 2018 has been revised and implemented.

- **Waste Unit Compliance Boundaries** – NCDEQ issued a letter dated August 25, 2017 to Duke Energy regarding compliance boundaries for North Carolina coal ash facilities. The letter advised Duke Energy that the compliance boundary at the Marshall Facility cannot extend into Lake Norman, regardless of the location of the property boundary.

  On December 21, 2017, Duke Energy submitted to NCDEQ an updated compliance boundary map for the Marshall Facility that included revisions around Lake Norman and the PV Structural Fill area. The updated compliance boundary map is included in the NPDES Permit No. NC0004987 that became effective on May 1, 2018.

- **Stormwater Construction Permitting** – NCDEQ has issued six stormwater construction permits for activities related to the Active Ash Basin and ash management at the Marshall Facility. These permits were issued by NCDEQ under its General Permit for Construction Activities, No. NCG010000.
  - CATAW-2016-008 was issued July 5, 2016 for the Soil Borrow Area. Inspections for this permit are conducted by Charah, Inc.
  - CATAW-2017-007 was reissued July 14, 2017 for the Industrial Landfill No. 1 Cells 1-4. Inspections for this permit are conducted by Charah, Inc.
  - CATAW-2018-019 was issued July 5, 2018 for the MAR-145 Project, Stormwater Reroute. Inspections for this permit are conducted by Earnhardt Grading.

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- CATAW-2017-019 was issued June 8, 2017 for construction of the Wastewater Treatment Plant. Inspections for this permit are conducted by Morgan Corp.
- CATAW-2019-009 was issued December 14, 2018 for the MAR-145 Project, Stormwater Reroute Piping. Inspections for this permit are conducted by Crowder Construction.
- CATAW-2019-017 was issued March 28, 2019 for Wastewater Treatment System Pad. Inspections for this permit are conducted by J. L. Raper.

Erosion and sedimentation control plans were in place for these projects.

Based on an NCDEQ inspection completed on June 19, 2019, the following two stormwater construction permits were closed:

- CATAW-2004-047, which covered the FGD Landfill operations; and
- CATAW-2018-016, which covered the FGD Landfill Closure.

- **Title V Permit** – NCDEQ-issued Title V Permit No. 03676T57 became effective on October 21, 2017. The Permit was last modified on May 3, 2019 and carries an expiration date of January 31, 2022. The May 2019 modifications removed some insignificant activities, including Source I-2, which covered fugitive dust from the ash basins and added requirements related to ozone, air toxics, and a natural gas supply line, none of which were related to the management of ash or ash basins. The permit covers the Marshall Facility for all facility activities, including ash and the Active Ash Basin management. Insignificant activities related to gypsum and gypsum management were listed as Sources I-71, I-72, and I-100 though I-105. Insignificant activities related to fly ash transfer systems were listed as I-139 through I-146. The dry fly ash silos and related loading equipment and pollution

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control equipment were listed as point sources in Section I of the Title V Permit. Fugitive dust control was included in Section 3.MM of the permit.

The Annual Compliance Certification (ACC) for 2018 was submitted to NCDEQ on February 26, 2019.

- **Spill Prevention, Control and Countermeasure (SPCC) Plan** – There are three SPCC Plans associated with Marshall Facility ash management, including:
  - Southland Excavating dated December 19, 2018;
  - SEFA Group (Transportation) dated October 29, 2018; and
  - Charah, Inc. dated January 31, 2019.

  Southland, SEFA, and Charah all operate at the Marshall Facility as contractors to Duke Energy.

- **Tier II Reporting** – Hazardous chemicals inventory reporting on Tier II for 2018 has been completed and was submitted on February 15, 2019.

- **FGD Landfill and Industrial Landfill No. 1 Permits** –The FGD Landfill permit to operate (PTO) was issued on December 20, 2016 and has an expiration date of November 21, 2021. As discussed above, Duke Energy initiated closure activities at the FGD Landfill in July 2018 that included placement of a cap over the FGD Landfill and were completed in March 2019. The Industrial Landfill No. 1 PTO was issued on April 18, 2018 and has an expiration date of March 7, 2071.

- **CCR Rule** – The Coal Combustion Residuals Rule (CCR Rule, 40 CFR, part 257, Subpart D) identifies standards for the disposal of CCR in landfills and surface impoundments. The Active Ash Basin and the Industrial Landfill No. 1 are subject to the CCR Rule. The Active Ash Basin and the Industrial Landfill No. 1 are part

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of a multi-unit CCR groundwater monitoring network that consists of 32 down gradient wells and four (4) background wells. Duke Energy is currently sampling an additional 11 monitoring wells to assist in the CCR characterization. Tables 1a and 1b summarize the CCR reports and plans posted by Duke Energy to their publicly available website in accordance with the CCR Rule for the Marshall Facility.

On February 27, 2018, Duke Energy provided notice on Duke Energy's public website that the Active Ash Basin and the Industrial Landfill No. 1 are now in the CCR assessment monitoring program due to statistically significant increases (SSI) over the background values of the Appendix III parameters.

On November 7, 2018, Duke Energy posted on Duke Energy's public website the required location restrictions for impoundments, which stated the Active Ash Basin did not meet the surface impoundment standard for placement above the uppermost aquifer (40 CFR § 257.60(a)) and for wetlands (40 CFR § 257.61(a)). Failure to meet the wetlands restriction requires Duke Energy to cease placing CCR and non-CCR waste streams into the Active Ash Basin and begin closure by April 12, 2019.

On December 14, 2018, Duke Energy provided notice on Duke Energy's public website that the following CCR Rule Appendix IV constituents were detected at levels above the applicable Groundwater Protection Standard (GWPS):

Active Ash Basin and Industrial Landfill No. 1 (Phase 1, Cells 1-4)

- Arsenic
- Beryllium
- Cobalt
- Lithium

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- Thallium
- Radium 226 and 228 combined

On February 19, 2019, Duke Energy provided notice on Duke Energy's public website that an assessment of corrective measures was initiated for the Active Ash Basin and the Industrial Landfill No.1 (Phase 1, Cells 1-4) in accordance with 40 CFR § 257.96(a). Duke Energy posted to their operational record a CCR Assessment of Corrective Measures Reports dated April 10, 2019 for the Active Ash Basin and the Industrial Landfill No.1.

On March 1, 2019, Duke Energy posted on its public website the 2018 CCR Annual Groundwater Monitoring and Corrective Action Reports for the Active Ash Basin and the Industrial Landfill No.1.

On May 20, 2019, Duke Energy provided notice on Duke Energy's public website that the following CCR Rule Appendix IV constituent was detected at levels above the applicable Groundwater Protection Standard (GWPS):

Active Ash Basin and Industrial Landfill No. 1 (Phase 1, Cells 1-4)

- Barium

- **Coal Ash Management Act of 2014 (CAMA)** – The NCDEQ initially assigned the Active Ash Basin at the Marshall Facility an "intermediate risk" classification under CAMA. An intermediate risk classification requires excavation, removal, and safe storage of the impounded CCR by December 31, 2024. Since then, Duke Energy completed dam improvements and local alternative potable drinking water, and as a result NCDEQ revised the site's ash basins' risk ranking to low on November 13, 2018. The low-risk ranking allows in-place closure activities at the Ash Basin and provides an extension of the closure deadline to June 2030.

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However, on April 1, 2019, NCDEQ issued a closure determination directing Duke Energy to excavate all of the coal ash from the Marshall Facility and properly dispose of it. On April 26, 2019, Duke Energy filed an administrative petition challenging NCDEQ's determination.

Other CAMA requirements include identification of drinking water supply wells within one-half mile of the facility, submission of Groundwater Assessment Plans, installation of and multiple rounds of sampling from groundwater assessment wells, submission of Groundwater Assessment Reports summarizing groundwater investigations, submission of an Annual Groundwater Protection and Restoration Report, submission of Discharge Assessment Plans to characterize seeps, and submission of a Groundwater Corrective Action Plan. All of these activities have been completed in accordance with the schedule required under CAMA.

On December 21, 2018, NCDEQ issued Duke Energy optimized Interim Monitoring Plans (IMPs) for all 14 Duke Energy facilities handling coal ash in North Carolina, with groundwater sampling to begin in the first quarter of 2019.

Under CAMA, Duke Energy submitted to NCDEQ the 2018 Groundwater Protection and Restoration Annual Report on January 25, 2019 and the required Submittal of 2018 Surface Water Protection and Restoration Annual Report on January 21, 2019, both regarding the Marshall Facility.

In a letter dated March 20, 2019, Duke Energy responded to NCDEQ's December 21, 2018 letter regarding the optimized IMPs for all 14 Duke Energy Facilities. Duke Energy's letter provided clarification and requested NCDEQ's concurrence on a few monitoring and reporting details related to the IMPs. NCDEQ approved these details for several sites, including the Marshall Facility, on April 4, 2019. Pursuant to Duke Energy's March 20, 2019 letter, the Marshall Facility CAMA

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groundwater monitoring network consists of sampling 88 wells quarterly and 59 wells sampled semi-annually beginning the first quarter 2019.

Under CAMA, on April 30, 2019 Duke Energy submitted to NCDEQ the 2018 Marshall Facility CAMA Annual Report.

1.2.3 Dam and Other Structural Permits and Approvals

The Active Ash Basin Dam (CATAW-054) at the Marshall Facility is associated with the ash management operations. The Active Ash Basin Dam was grandfathered in under North Carolina's Session Law 2009-390 (Senate Bill 1004, effective January 1, 2010). Under this grandfathering, the original design of the Active Ash Basin Dam is not subject to the current design standards for new construction, although modifications after the effective date may be subject to these standards. The Active Ash Basin Dam has a high hazard classification under the North Carolina Dam Safety system.

Duke Energy previously completed a series of investigations and analyses to better characterize the condition of the Active Ash Basin dam. This included placing additional stone materials on the downstream side of the Active Ash Basin Dam embankment, increasing monitoring, repairing erosion, and upgrading the basin discharge structure and the emergency spillway. The Active Ash Basin Dam appeared to be in good condition and functioning properly based on the Annual Inspection completed on April 11, 2019, by Wood Environmental and Infrastructure Solutions, an independent consultant working for Duke Energy. NCDEQ Dam Safety also conducted an annual inspection on October 2, 2019 and issued a Notice of Inspection letter on November 15, 2018, which identified no new concerns regarding the dam condition. Over the last year, a piezometer, a groundwater monitoring well, and a Water Treatment System Pad and electrical infrastructure were installed on the dam with the approval of NCDEQ.

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1.2.4 Audit Observations and Update of the Marshall Facility's Activities

Significant improvements were in progress or completed since the last Audit at the Marshall Facility. These improvement activities include the following items:

- Gypsum Pad Basins – At the time of the 2018 Audit, two Gypsum Pad holding basins were lined to hold water draining from the Gypsum Pad and the impounded water drained to the Active Ash Basin. At the time of the 2019 Audit, the discharge from these basins had been redirected to the Lined Retention Basin (LRB).

- LRB and Holding Basin – The new LRB had been completed at the time of the Audit. These basins are used as part of the infrastructure improvements required to replace the Active Ash Basin. These basins were put into service in April 2019.

- West and East Coal Run-off Basins – Construction of both of these basins was completed in the fall of 2018.

- Dry Bottom Ash Project – A submerged flight conveyor was installed to replace the bottom ash transfer system. The submerged flight conveyor works by removing solids and coarse particles from the slurried bottom ash materials. The submerged flight conveyor was fully operational and was put into service during the first quarter of 2019.

- Wastewater Treatment System – This system replaced the FGD Biotreatment wetlands and was put in service in April 2019

- Industrial Landfill Cells 3 and 4 – The permit to operate cells 3 and 4 of the Industrial landfill was dated April 18, 2018. Utilization of these cells began in January 2019.

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- PV Structural Fill Stormwater Reroute Planning – Construction activities associated with the abandonment of the existing culverts beneath the PV Structural Fill and the associated rerouting of stormwater began during the third quarter of 2018 and were ongoing during the 2019 Audit. These activities were expected to be substantially completed in 2019.

- Permanent Closure FGD Landfill – Grading and final closure activities for the FGD Landfill were completed in March 2019 and the final Construction Quality Assurance report documenting closure activities was submitted to NCDEQ on April 1, 2019.

Placement of CCR in the Ash Basin was discontinued as of March 1, 2019 and FGD wastewater flows to the basin were discontinued as of April 2, 2019.

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2.0 AUDIT SCOPE AND SUBJECT MATTER

The Audit was completed in accordance with the court documents and the Audit scoping document agreed to by Duke Energy and the United States. A description of the scope is provided in Attachment A. The Audit included ash management activities, including aspects of generation that affect the nature of the waste streams from the point of generation into surface impoundments or ash management basins, landfills, and/or storage piles. The Audit focused on the activities at the facility since the date of the last Audit, which was June 11-12, 2018.

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3.0 AUDIT FINDINGS

The following Findings at the Marshall Facility were identified by the Audit Team.

3.1 EXCEEDANCES OF THE STATE GROUNDWATER QUALITY STANDARDS

Requirement – The State groundwater rules establish maximum contaminant levels for groundwater at or beyond the compliance boundary for the Active Ash Basin. *See* 15A NCAC 02L.0202. 15A NCAC 02L.0103(d) provides that "[n]o person shall conduct or cause to be conducted, any activity which causes the concentration of any substance to exceed that specified" under the Class GA standards or the interim maximum acceptable concentrations (IMACs) established for groundwater quality pursuant to 15A NCAC 02L.0202. Further, under N.C.G.S.A. § 143-215.1(i), "[a]ny person … who is required to obtain an individual permit … for a disposal system under the authority of N.C.G.S.A. § 143-215.1 [water pollution control] … shall have a compliance boundary … beyond which groundwater quality standards may not be exceeded." *See also* 15A NCAC 02L.0102(3) (defining "compliance boundary" as "a boundary around a disposal system at and beyond which groundwater quality standards may not be exceeded").

In addition, under N.C.G.S.A. § 143-215.6A(a)(1), civil penalties may be assessed against any person who violates any standard established by the NCDEQ under the authority of N.C.G.S.A. § 143-214.1, which covers groundwater standards.

Finding – Constituents exceeding the standards for Class GA waters, established in 15A NCAC 02L.0202, were documented in monitoring wells located at or beyond the compliance boundary for the Active Ash Basin. Based on the review of the 2018 and 2019 CAMA groundwater monitoring analyses, pH, boron, cobalt, iron, manganese, sulfate, total dissolved solids (TDS), and vanadium were observed to exceed the 02L or IMAC groundwater standards, or the NCDEQ-approved provisional background threshold values (PBTVs) if the PBTV was greater than the 02L or IMAC groundwater standards, one or more times at or beyond the compliance boundary for the

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Active Ash Basin. A summary of the 2018 and 2019 groundwater data, compliance boundaries and sample location map are provided in Attachment B.

Since the 2017 Audit, Duke Energy has completed its assessment of background conditions to determine whether certain of the above-noted constituents were due to naturally occurring conditions. The recently approved PBTVs represent a site-specific background concentration for groundwater in the vicinity of the Active Ash Basin. Cobalt, iron, and manganese exceeded the PBTVs, and their presence in groundwater is believed to be due to the influence of the Active Ash Basin. Vanadium also exceeded the PBTV. Duke Energy personnel stated their opinion that the presence of vanadium in groundwater is associated with the Dry Ash Landfill Phase 2 (located on top of the Active Ash Basin) and not due to the Active Ash Basin.

Duke Energy has stated the opinion that, pursuant to a September 2015 Settlement Agreement with the NCDEQ, "Duke Energy is not subject to any further financial penalties for exceedances of groundwater standards" and "Duke Energy is not subject to any further enforcement action based on exceedances of groundwater standards as long as it remains in substantial compliance with CAMA groundwater requirements."

The CAM has advised the Audit Team that the Audit scope does not include an evaluation of compliance with the September 2015 Settlement Agreement. Therefore, the Audit Team does not take a position on Duke Energy's opinion.

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4.0 OPEN LINES OF INQUIRY

Open Lines of Inquiry are items identified by the Audit Team while on-site that, due to limited available information or the need for additional research, could not be determined as being in compliance or out of compliance.

4.1 FGD MATERIAL MANAGEMENT

Requirements – The CCR Rule regulates CCR piles in a manner similar to CCR landfills. A CCR pile is defined as "any non-containerized accumulation of solid, non-flowing CCR that is placed on the land." 40 C.F.R. § 257.53. EPA clarified in the preamble to the CCR Rule that "[t]he use of the phrase 'non-containerized' is not intended to require that all activities occur within tanks or containment structures, but merely that specific measures have been adopted to control exposures to human health and the environment. This could include placement of CCR on an impervious base such as asphalt, concrete, or a geomembrane: leachate and run-off collection: and walls and wind barriers." 80 Fed. Reg. 21302, 21536 (Apr. 17, 2015). The preamble further states that the "key concern" EPA sought to address with the inclusion of piles under the CCR Rule is "the uncontrolled exposure from the extended, repeated, or indefinite placement of large amounts of unconsolidated CCR directly on the land." 80 Fed. Reg. at 21356.

Open Line of Inquiry – Varying amounts of FGD materials that are intended to be transferred to the Gypsum Pad by way of the Facility's conveyor system equipment are instead lost to the ground surface under the normal operating conditions of the Facility's conveyor system. Under the current management practices, FGD materials appear to accumulate on the ground in the vicinity of the conveyor equipment relatively quickly, and remain in place with continuing deposition for up to one month before being cleaned up and disposed of as a solid waste. Deposits and accumulations of waste FGD materials under the conveyor system as a result of Duke Energy's operating practices may qualify as "CCR piles" under the CCR Rule. If so, the accumulations of FGD material under and around the Facility's conveyor system would need to meet the requirements applicable to CCR landfills under the CCR Rule.

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Background and Observed Conditions

The Audit Team observed evidence of accumulations of FGD materials on the ground next to and beneath the conveyors leading to the Gypsum Pad. Accumulations of FGD materials were also noted on plants underneath the conveyors, particularly in the area where the conveyor passes over the railroad track embankments. The observed accumulations of FGD material on the ground surface ranged from a coating up to an inch, and the FGD extended in some cases 5-10 feet or more laterally from the conveyor on the ground surface. No protective liners were observed under the conveyors, and the design of the conveyor system does not appear to prevent the continuing release of FGD to the ground surface during normal operations. Similar FGD accumulations were also documented by Duke Energy in monthly maintenance documentation from the last year. The field observations and the maintenance documentation show that the deposition of FGD from the conveyor system equipment to the surrounding ground surface is a relatively persistent issue.

Similar observations were made during previous Audits. To address this issue, over the last year Duke Energy has modified the conveyor equipment since the 2018 Audit (i.e., installation of brushes and air-tensioned scrapes). These measures, combined with the regular maintenance measures have helped to significantly to reduce the gypsum accumulations at the take-up pulleys compared to previous Audits. During the 2019 Audit, the most significant area of gypsum accumulations was observed in the area where the conveyor passes over the railroad track embankments. Duke Energy personnel noted that the steeply sloped embankments in this area make it difficult and unsafe to access these areas and remove any fugitive FGD dust which may accumulate in these areas.

Current Management Practices

The FGD gypsum produced at the Facility is transferred from the Facility's FGD scrubbers to the Facility's Gypsum Pad by way of a conveyor system. Duke Energy has stated that any FGD

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material that is lost as part of the transfer from the scrubbers to the Gypsum Pad or that falls off the conveyor system equipment is managed under Duke Energy's Conveyor Systems Fugitive CCP Materials Management Guidelines (Guidelines). These Guidelines require a "not less than once monthly" inspection of the entire conveyor system to, among other things, "view the surrounding ground areas for deposits or accumulation." Under the Guidelines, any identified deposits or accumulation of fugitive CCP materials must be scheduled "for cleanup and disposal" at the first reasonable opportunity, but not more than 7 days from identification. The FGD material that is cleaned up is disposed of in the Industrial Landfill. In addition, if the monthly inspection shows "moderate or greater quantities" (as defined in the Guidelines) of deposited fugitive CCP materials, the frequency of inspections should be adjusted to twice monthly until the deposits/accumulations are reduced or eliminated. Despite the fact that the deposits at the site were documented to exist continually in the monthly records (i.e., the monthly records regularly indicated that certain specific areas along the conveyor system required cleaning over at least a nine month period), no change in either the inspection procedures or the conveyor containment approach appeared to be implemented.

The Duke Energy team documentation reviewed by the Audit Team and the discussions with Duke Energy personnel indicated that FGD gypsum clean-up activities were completed on a near continual basis. Duke Energy personnel stated that almost immediately (within about a day) following the completion of the monthly clean-up of the FGD materials, a thin white layer of FGD materials could be observed accumulating in the vicinity of the conveyor on recently cleaned, unlined soil areas, if the conveyor was operating. Although it was clear that Duke Energy was applying resources including near continuous daily operation of vacuum trucks to maintain the areas under the conveyors, there continued to be a quick and persistent build-up of FGD materials underneath the conveyor, particularly in the area where the conveyor passes over the railroad track embankments. This conclusion is based on observations of areas of FGD materials build-up within a day of vacuum truck cleaning, discussions with Duke Energy personnel, and a review of monthly maintenance records and procedures.

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Other Information

The Audit Team notes that FGD is water soluble and is managed with liners to prevent infiltration to groundwater at other areas of the Facility, including the Gypsum Pad and the FGD Landfill.

Summary and Conclusions

A solid waste is defined under RCRA to mean in relevant part "*discarded* material." 80 Fed. Reg. at 21347 (emphasis added). In the preamble to the CCR Rule, EPA explains that:

> For some beneficial uses, CCR is a raw material used as an ingredient in a manufacturing process that have [sic] never been 'discarded,' and thus, would not be considered solid wastes under the existing RCRA regulations. For example, synthetic gypsum is a product of the FGD process at coal-fired power plants.

In this case, Duke Energy designs and operates its air pollution control devices to produce an optimal product, including the oxidation of the FGD to produce synthetic gypsum. Duke Energy treats FGD as a valuable input into a production process, i.e., as a product, rather than as something that is intended to be discarded, and has stated that the Marshall Facility manages the FGD gypsum as a valuable product and transfers the material to the lined Gypsum Pad for temporary storage before it is transported off-site to third parties for use. Thus, under the preamble guidance quoted above, the FGD material that is successfully transferred from the Facility's FGD scrubbers to the Gypsum Pad is a product and would not be considered solid waste and therefore is not subject to the CCR Rule.

However, the product/waste status of the FGD material that is lost in transfer and that accumulates on the ground underneath the conveyor system is uncertain. Under Duke Energy's Guidelines, Duke Energy manages these depositions as a solid waste ("deposits or accumulations of fugitive

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CCP materials shall be scheduled for *cleanup and disposal* at the first reasonable opportunity, but not more than 7 days from identification") (emphasis added). Thus, the FGD material that is lost to the ground from the conveyors carrying the FGD material from the scrubbers is being managed by Duke Energy as discarded material and not as a valuable product. As such, it would appear to be a solid waste.

The preamble to the CCR Rule and EPA's FAQ guidance indicate that whether FGD gypsum is managed as a "waste" or a "product" is a fact-specific determination, and that if FGD gypsum is managed as a "waste" then "FGD piles must be containerized in order to not be considered a CCR pile (and by definition, a CCR landfill)." *See* EPA, Frequent Questions on the Implementation of the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule, at 4-5. Where FGD gypsum is consistently released to the ground surface from the conveyors transporting the material from the scrubbers as part of routine operations, and where that material is managed as a solid waste, there is a reasonable potential that the released FGD material would qualify as a CCR pile (a "non-containerized accumulation of solid, non-flowing CCR that is placed on the land") and thus be subject to the CCR Rule.

However, it is not clear from the language of the CCR Rule or from EPA guidance what quantity of CCR must accumulate to qualify as a CCR pile, nor is it clear whether a continual coating of CCR appearing on the ground and accumulating until removal would qualify as a pile. Here, the observations of gypsum, the available documentation, and the discussions with Duke Energy personal indicate that the loss of FGD gypsum from the operation of the conveyor system at the Facility could represent the "extended, repeated, and indefinite placement" of FGD material "directly on the land." 80 Fed. Reg. at 21356.

It is also not clear whether the monthly inspections and clean-up activities that Duke Energy personnel implement pursuant to the Guidelines sufficiently control potential exposures to human or environmental receptors, as contemplated by the CCR Rule's discussion of the term "non-containerized," such that the accumulations of FGD material under and around the conveyor

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system would not be considered CCR piles. Relatedly, the Audit Team concluded that the release and accumulation of FGD material to the ground appears to be a function of the design and operation of the FGD management system, and the monthly maintenance records show that a build-up of the FGD material is consistently observed on the ground surface near the conveyor system, particularly in the area where the conveyor passes over the railroad embankments.

In conclusion, it is not clear from the language of the CCR Rule or from EPA guidance whether FGD material that is consistently released to the ground from the FGD conveying system and that is managed by Duke Energy as a solid waste for disposal, constitutes CCR under the CCR Rule, and if so, whether the CCR that accumulates on the ground is subject to regulation as a CCR pile and therefore as a CCR landfill. If the FGD material that is released does constitute CCR and if it is subject to regulation as a CCR pile, Duke Energy would be required to apply the CCR Rule landfill standards to this area and this would constitute a Finding. Due to the lack of clarity, the Audit Team includes this observation as an Open Line of Inquiry.

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5.0 AUDIT APPROACH

5.1 ON-SITE ACTIVITIES

During its time on-site, the Audit Team conducted an opening conference with facility personnel to discuss the scope of work and the plan for accomplishing necessary tasks while at the facility. A site tour of the coal ash management and program support areas was subsequently completed. Following the tour, the Audit Team conducted a review of pertinent files, interviews with facility representatives, and verification of facility activities related to the ECPs, written programs, and permits. A debrief was conducted each Audit day to advise the facility representatives of Audit progress, open lines of inquiry, possible Audit findings, and needs for the next day. At the completion of the Audit, the Audit Team led a verbal discussion of draft Audit findings with facility representatives.

5.2 STANDARDS OF PRACTICE

The fieldwork portion of the Audit was conducted on June 24-25, 2019, with compliance reporting commencing May 14, 2015, the date of the Court's judgments. The Audit focused on the activities at the facility since the date of the last Audit, which was June 11-12, 2018and was based on:

- Physical inspections of the facility;
- Examination of selected administrative and operating records made available by facility staff at the Audit Team's request;
- Interviews and discussions with key facility management and staff; and
- Verification procedures designed to assess the facility's application of, and adherence to, terms of the Probation, environmental laws and regulations, and site policies and procedures. In addition, the Audit Team reviewed the facility's adherence to good management practices.

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The Audit followed established audit protocols and procedures. It should be understood that the Audit consisted of evaluating a sample of practices and was conducted over a short period of time.

Efforts were made to sample major facets of environmental performance during the period under review. This method is intended to uncover major system deficiencies, and the Audit may not have identified all potential problems.

To support the overall independence of the Audit process, the Audit included an auditing professional certified by the Board of Environmental, Health and Safety Auditor Certifications (BEAC). BEAC is an accredited professional certification board that issues the Certified Professional Environmental Auditor (CPEA) designation to qualified auditors. Under BEAC, auditor independence is a key criterion for the implementation of an effective third-party audit program. The Audit was implemented in accordance with the standards related to auditor independence.

The process by which the Audit was conducted was consistent with the general state of the art of environment auditing and the best professional judgment of the Audit Team. To conduct the Audit, the team implemented a formal approach, drawing on process guidance from both BEAC and the Auditing Roundtable (AR) guidance documents. Guidance documents included:

- *Standards for the Professional Practice of Environmental, Health and Safety Auditing*. Prepared by the Board of Environmental, Health and Safety Auditor Certifications, 2008.

- ISO 19011:2002 – *Guidelines for Quality and/or Environmental Management Systems Auditing*. Prepared by the International Organization for Standardization, 2002.

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- *Standard for the Design and Implementation of an Environmental, Health and Safety Audit Program*. Prepared by The Auditing Roundtable, Inc., 1995.

- *Minimum Criteria for the Conduct of Environmental, Health and Safety Audits*. Prepared by The Auditing Roundtable, Inc.

5.3 REPRESENTATIVE SAMPLING

When confronted with a large population of data to review or equipment to inspect, the Audit Team employed representative sampling techniques to evaluate records over the Audit period requested, and as necessary, for physical inspection of some types of common equipment. The sample size for records reviews or equipment inspections required professional judgment.

The Audit Team's judgement considered the following:

- The outcome of the evaluation of the records sampled. If problems are found in the representative sample, more records may need to be examined to evaluate compliance status.
- Potential for or severity of non-compliance.
- The general appearance and observed practices of certain operating areas.
- Information obtained during an interview that indicates a potential problem.
- Other specific information or guidance from the CAM.
- Time available during the Audit.

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The Audit Team also employed the following types of sampling techniques, depending upon the characteristics of a specific population:

- Random sampling – every item has an equal chance of being selected.
- Interval sampling – select every nth item, (e.g., every third manifest in chronological order as contained in facility files).
- Block sampling – auditor uses his/her judgment to select a specific block of items, (e.g., petroleum storage tank inspections from April to October).
- Stratified sampling – population is divided into groups, which are then sampled through random or judgmental techniques.

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TABLES

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TABLE 1A
Active Ash Basin
Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
Notice of Groundwater Protection Standard Exceedance 2019	Groundwater Monitoring and Corrective Action	05/20/2019
Notice of Intent to Close	Closure and Post Closure Care	05/20/2019
CCR Assessment of Corrective Measures Report	Groundwater Monitoring and Corrective Action	05/07/2019
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan Main Ash Basin Dam	Design Criteria	10/01/2018
Annual Meeting with Local Emergency Responders 2018	Design Criteria	09/18/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	07/17/2018

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TABLE 1A
(Continued)

Document Name	Category	Release Date
Notice of Establishment of an Assessment Monitoring Program Marshall Active Ash Basin	Groundwater Monitoring and Corrective Action	02/27//2018
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification Marshall Active Ash Basin	Groundwater Monitoring and Corrective Action	02/27/2018
Groundwater Monitoring System Certification Marshall Active Ash Basin	Groundwater Monitoring and Corrective Action	02/27/2018
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Emergency Action Plan for Marshall Main Ash Basin Revision 007A	Design Criteria	01/25/2018
Marshall Inundation Maps	Design Criteria	01/25/2018
2017 Annual CCR Fugitive Dust Control Report-Marshall	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Marshall Active Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017
Groundwater Monitoring System Certification-Marshall Active Ash Basin	Groundwater Monitoring and Corrective Action	10/25/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	09/26/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	08/02/2017
Marshall Fugitive Dust Control Plan Revision 1	Operating Criteria	06/06/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016

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TABLE 1A
(Continued)

Document Name	Category	Release Date
Post Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Closure Plan for Impoundments	Closure and Post Closure Care	11/11/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report 2016	Operating Criteria	08/11/2016
Annual Surface Impoundment Report (Initial)	Operating Criteria	02/16/2016
Annual Surface Impoundment Report (Initial) Revision 1	Operating Criteria	02/19/2016

*Tables generated from information on Duke Energy's CCR website on June 13, 2019

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TABLE 1B
Industrial Landfill #
Plans and Reports Posted by Duke Energy under the CCR Rule

Document Name	Category	Release Date
Notice of Groundwater Protection Standard Exceedance 2019	Groundwater Monitoring and Corrective Action	05/20/2019
CCR Assessment of Corrective Measures Report	Groundwater Monitoring and Corrective Action	05/07/2019
CCR Annual Groundwater Monitoring and Corrective Action Report 2018	Groundwater Monitoring and Corrective Action	03/01/2019
Notice of Initiation of Assessment of Corrective Measures	Groundwater Monitoring and Corrective Action	02/19/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
CCR Annual Landfill Inspection Report 2018	Operating Criteria	11/19/2018
Run On Run Off Control System Plan	Operating Criteria	06/19/2018
Location Restriction for Unstable Areas Marshall Industrial Landfill No. Cells 1 and 2	Location Restrictions	03/14/2018
Marshall Industrial Landfill No 1 Cells 3 and 4 Certification of Liner System and Leachate Collection and Removal System	Location Restrictions	03/14/2018
Closure Plan for Marshall Industrial Landfill #1	Closure and Post Closure Care	03/14/2018
Notice of Establishment of an Assessment Monitoring Program Marshall Industrial Landfill No. 1 Phase 1 Cells 1-4	Groundwater Monitoring and Corrective Action	02/27/2018

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TABLE 1B
(Continued)

Document Name	Category	Release Date
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification Marshall Industrial Landfill No. 1 Phase 1 Cells 1-4	Groundwater Monitoring and Corrective Action	02/27/2018
Groundwater Monitoring System Certification Marshall Industrial Landfill No. 1 Phase 1 Cells 1-4	Groundwater Monitoring and Corrective Action	02/27/2018
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
Location Restrictions for Fault Areas for Marshall Industrial Landfill No. 1 Cells 3 and 4	Location Restrictions	01/11/2018
Placement Above the Uppermost Aquifer Marshall Industrial Landfill No. 1 Cells 3 and 4	Location Restrictions	01/11/2018
Location Restrictions for Seismic Impact Zones Marshall Industrial Landfill No. 1 Cells 3 and 4	Location Restrictions	01/11/2018
Location Restrictions for Unstable Areas Marshall Industrial Landfill No. 1 Cells 3 and 4	Location Restrictions	01/11/2018
Wetlands Impacts for Marshall Industrial Landfill No. 1 Cells 3 and 4	Location Restrictions	01/11/2018
2017 Annual CCR Fugitive Dust Control Report-Marshall	Operating Criteria	11/29/2017
CCR Annual Landfill Report 2017-Marshall Industrial Landfill No. 1	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-Marshall Industrial Landfill No. 1	Groundwater Monitoring and Corrective Action	11/06/2017
Groundwater Monitoring System Certification-Marshall Industrial Landfill # 1	Groundwater Monitoring and Corrective Action	10/25/2017
Marshall Fugitive Dust Control Plan Revision 1	Operating Criteria	06/06/2017

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TABLE 1B
(Continued)

Document Name	Category	Release Date
Liner Design and Leachate Collection and Removal System Certification	Design Criteria	05/24/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria/	12/05/2016
CCR Annual Landfill Inspection Report 2016	Operating Criteria	11/22/2016
Post Closure Plan for Industrial Landfill	Closure and Post Closure Care	11/11/2016
Run-on and Run-off Control System Plan	Operating Criteria	11/03/2016
Annual Landfill Report (Initial)	Operating Criteria	02/03/2016

*Tables generated from information on Duke Energy's CCR website on June 13, 2019

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ATTACHMENT A

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ATTACHMENT A
AUDIT SCOPE

A-1 GENERAL AUDIT SCOPE ITEMS

The general Audit scope items included:

- Review and evaluation of documentation for maintenance and repair of structures and equipment used for coal ash disposal,

- Review and evaluation of documentation of modifications, failures, leaks, damage, disrepair and other problems at the coal ash management units,

- Review and evaluation of documentation of efforts to correct failures, leaks, damage, disrepair and other problems where they determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding,

- Review and evaluation of documentation of communication of the items above within the organization,

- Review and evaluation of documentation associated with the specific environmental compliance items described below and laws, regulations, and policies associated these items and

- Review of compliance with administrative aspects and regulatory submissions related to coal ash management-specific regulations, including:

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▪ Coal Combustion Residuals	40 CFR Part 257 Subpart D
▪ NC Coal Ash Management Act of 2014	NC General Statutes Chapter 130A, Article 9

More specific items which were addressed in the audits to comply with the General Audit Scope are described below.

A-2 SPECIFIC COMPLIANCE WITH THE ECP-NC

The following items related to specific ECP-NC compliance were reviewed as part of the audit:

1. Verify maintenance and sufficient funding of corporate compliance organizations (ABSAT, CCP organization, National Ash Management Advisory Board). Where a root cause of a compliance finding appears in an auditor's judgment to result from inadequate funding, the AGC/ELM Audit Team will identify this in the Audit finding.

2. Verify timely production of satisfactory Compliance Officer (CO) reports to the CAM relating to the development, implementation, and enforcement of the ECP-NC. No auditing work is associated with this work at this time.

3. Evaluate existence and efficacy of toll-free hotline/e-mail inbox for violation reporting, including the appropriateness of the follow-up investigation and disposition of each reported matter. This requirement will be evaluated for the first year of audits and then reassessed.

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4. Evaluate completion and efficacy of periodic notices (via Internet, Intranet, email, notices in employee work areas, and publication in community outlets) to employees and the public of the availability of the toll-free hotline and electronic mail inbox.

5. Evaluate training materials and curricula utilized in the mandated training program, particularly those tailored to employee's specific job descriptions, to determine whether it advances the goal of "ensuring that every domestic employee of Duke Energy Corporation and its wholly-owned or operated affiliates understands applicable compliance policies and is able to integrate the compliance objectives in the performance of his/her job." Ensure that the subjects specifically named in the plea agreements are covered by the training (namely, notice and reporting requirements in the event of a release or discharge and the safe and proper handling of pollutants, hazardous substances and/or wastes.)

6. Evaluate whether Defendants are using "Best Efforts" to comply with the obligations under the ECP-NC. Where the Audit Team makes compliance findings, the Audit Team will, upon request, provide their opinion on whether this best efforts standard applies, and if so, whether best efforts have been used.

7. Verify compliance at each facility with the specific procedures and protocols set forth in the ECP-NC.

A-3 SPECIFIC COMPLIANCE WITH OTHER PROVISIONS OF THE PLEA AGREEMENT

The following items related to specific items in the Plea Agreement were reviewed as part of the Audit:

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1. Determine whether Defendants have opened, expanded, or reopened any coal ash or coal ash wastewater impoundment and, if so, verify that they are lined and do not allow unpermitted discharges of coal ash or coal ash wastewater to waters of the United States.

2. Verify that Defendants have determined the volume of wastewater and coal ash in each wet-storage coal ash impoundment in North Carolina as described in the plea agreements and that written or electronic records of this information is maintained in a location available to facility staff and employees responsible for making environmental or emergency reports.

3. Review citations/notices of violation/notices of deficiency related to violations of federal, state, or local law to assure that they have been properly relayed to the Court and, as appropriate under the plea agreements, determine their materiality.

4. Evaluate Defendants' efforts to close coal ash impoundments at Dan River, Riverbend, Asheville, and Sutton for legal compliance.

5. Note any observations made during the Audit that cause concern regarding the assets and/or security available to the Defendants to meet the obligations imposed by the Judgment in this case.

A-4 GENERAL ENVIRONMENTAL COMPLIANCE SUBJECT AREAS

The following items related to General Environmental Compliance were reviewed as part of the Audit:

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1. Assess all waste streams from Duke Energy facilities with coal ash impoundments. Review Duke Energy's processes, procedures, and practices, as well as compliance with those processes, procedures, and practices, for:

    a. identifying waste streams (especially, but not limited to, waste streams with discharge points into bodies of water),
    b. identifying and communicating any modifications or changes, or potential modifications or changes, to waste streams,
    c. ensuring proper handling/disposal of waste streams,
    d. identifying, preventing, and mitigating any risks or hazards that could affect waste streams and/or the disposal of waste streams, and
    e. ensuring proper permitting for waste streams.

For Item 1.d., the Audit Team evaluated such risk/hazard issues where there were compliance findings associated with waste streams.

2. Review and evaluate documentation of:

    a. Maintenance and repair of structures and equipment related to coal ash disposal,
    b. Modification of the coal ash impoundments and related pollution prevention equipment and structures,
    c. Failures, leaks, damage, disrepair, and other problems,
    d. Communication of the information described in a-c within the organization, and
    e. Efforts to correct failures, leaks, damage, disrepair, and other problems.

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3. Assess the employees responsible for inspection, maintenance, and repair of coal ash basins and related structures and equipment. The assessment included an assessment of the workloads of such employees to assure that Duke Energy's facilities are adequately staffed. These assessments were made where the Audit Team determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

4. Review the results and recommendations of any other audits (internal or external/state mandated) and assess Duke Energy's implementation of those recommendations.

5. Review and assess Duke Energy's processes, procedures, and practices for identifying, communicating, and addressing problems and potential problems at its coal ash basins (leaks, unpermitted discharges, etc.).

6. Review and assess Duke Energy's policies, procedures, practices, and equipment for handling emergency releases from its coal ash basins and evaluate the personnel with duties in such situations.

7. Verify that Duke Energy is complying with its NPDES wastewater and stormwater permits, as well as other relevant environmental permits. This should include verifying Duke Energy's timely submission of permit applications, permit renewal applications, and responses to requests for additional information from the relevant regulatory authority.

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8. Review and assess any actions or measures Duke Energy has undertaken to assure accountability and prevent recurrences when problems and/or failures occur (i.e. disciplinary actions, re-training, revision to policies and procedures, etc.). This review will be completed where the Audit Team determines that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

9. Review and assess compliance with the following environmental regulations, as applicable to the management of coal ash:

a.	Wastewater Discharges	40 CFR 122; 15A NCAC 2H.0100 *et seq*
b.	Stormwater Discharges	40 CFR 122.26; 15A NCAC 2H.1000 *et seq;* NC General Permit (Construction) No. NCG010000
c.	NC Groundwater Standards	15A NCAC 02L.0202(h)
d.	Hazardous Waste Management	15A NCAC 13A.0100 to 13A.0107
e.	Oil Pollution Prevention	40 CFR Part 112
f.	Air Pollution (Title V)	15A NCAC 2Q, and
g.	Hazardous Chemicals (Tier II)	40 CFR Part 370.

Reviews also included an analysis of overall compliance and the status and security of the asset. Subsequent reviews of individual facilities will evaluate the movement towards compliance. The Audit did not include an evaluation of compliance with the September 2015 Settlement Agreement with NCDEQ.

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A–5 LIST OF PERMITS AND PROGRAMS DEEMED TO BE EITHER DIRECTLY OR INDIRECTLY IN SUPPORT OF ASH MANAGEMENT

During the Audit, the Audit Team reviewed a variety of written programs developed and implemented by Duke Energy and facility staff. State-issued permits and supporting documentation relative to environmental programs and geotechnical aspects of ash basin management were also requested and reviewed.

Requested documents, pertinent to management of ash in basins, landfills, ponds, etc. were outlined in the pre-audit questionnaire for each facility and included, but were not limited to:

1. The Compliance Register developed for ETrac for the Site.

2. The Duke Energy Operations Manual for the facility.

3. A site plan, site map, or aerial photo which shows the entire facility and key features, of the facility, including NPDES outfalls associated environmental monitoring locations, storage tanks, etc.

4. Most recent 2 years of maintenance, monitoring, and inspection records for each coal ash/CCR basin (just the physical inspections, not the groundwater records).
5. A “Phase 1 and Phase 2” summary of ash basin conditions prepared by an outside consultant.

6. Duke Energy’s permitting plans for addressing ash impoundments and landfills at this facility.

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7. Applicable pages from the Duke Energy basin-by-basin coal ash/CCR project tracking document for this facility.

8. Original basin/landfill/coal ash management unit construction records.

9. Documentation of changes to these units.

10. Coal ash unit construction permit application and approval.

11. State-issued permits and application materials for permits associated with coal ash/CCR management (including, e.g., dam permits).

12. Any currently effective state order, consent order, or similar state direction that addresses coal ash/CCR management at the site.

13. Records required to be maintained in the site's operating record under the federal CCR regulation and/or any state CCR regulatory program.
14. Records of off-site ash shipments from May 2015 forward.

15. Stormwater permit application and approval for all outfalls.

16. Industrial wastewater (NPDES/POTW) permit application and approval for all outfalls/discharges.

17. Industrial and stormwater sampling and monitoring records, and any corrective action plans (last 2 years).

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18. Stormwater pollution prevention plan.

19. Landfill operating permit with maintenance and monitoring requirements.

20. Landfill leak detection and groundwater monitoring records from the last 2 years along with any workplans that describes the rationale for the monitoring system at the Site.

21. Landfill operating permit with maintenance and monitoring requirements.

22. Copies of any air permits and applications for coal ash units and ancillary operations.

23. Any testing and monitoring records completed to comply with the air permits.

24. Any notices of violations associated with the coal ash/CCR management activities received over the last 2 years.

25. Copy of SPCC Plan.

26. Community Right-to-Know
    a. Copies of lists of hazardous chemicals or MSDSs submitted;
    b. Copies of Tier I or II reports; and
    c. Copies of Form R (toxic release inventory) reports.

27. Copies of communications with employees and the public regarding availability of toll-free hotline and electronic mail inbox for reporting suspected environmental violations.

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28. Management Systems:
    a. List of responsible party for each environmental activity.
    b. All environmental-related training records.
    c. All environmental policies and procedures.
    d. Organization chart.
    e. Site diagram identifying storage areas, tanks, etc.

29. Employee training records related to environmental programs and ash management policies.

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ATTACHMENT B

2018 and 2019 Groundwater Data and Sample Location Map

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INDUSTRIAL LANDFILL #1
ILF STRUCTURAL FILL
ASBESTOS LANDFILL
C&D LANDFILL
ASH BASIN
DRY ASH LANDFILL (PHASE II)
DRY ASH LANDFILL (PHASE I)
PV STRUCTURAL FILL
BORROW AREA
ACCESS ROAD STRUCTURAL FILL
FGD RESIDUE LANDFILL
HOLDING BASIN
LRB
LAKE NORMAN
BEATTY RD
SHERRILLS FORD RD
MARSHALL RD

GWA-4S GWA-4D
GWA-14S GWA-14D
GWA-3S GWA-3D
GWA-13S GWA-13DA GWA-13D
GWA-12S GWA-12D/BR
GWA-8S GWA-8D
GWA-5S GWA-5D
GWA-6S GWA-6D
GWA-7S GWA-7D
GWA-10S GWA-10D
GWA-11S GWA-11D
GWA-15S GWA-15D
GWA-1S GWA-1D
GWA-2S GWA-2DA GWA-2D

BG-1BRA BG-1S BG-1BR BG-1D
BG-3BR BG-3S BG-3D
BG-2S BG-2BR

MW-13S MW-13D GWA-9BR
MW-12S MW-12D
MW-11S MW-11D
MW-4D MW-4
MW-3
MW-5
MW-2
MW-14S MW-14D MW-14BR/BRL
MW-1
MW-6S MW-6D
MW-7S MW-7D
MW-10S MW-10D
MW-8S MW-8D
MW-9S MW-9D

AB-17S/D
M-6
AB-18S/D/DU
AB-16S/DU AB-16D
M-16
OB-3 (MW-7)
AL-3S AL-3D AL-3BR
AL-4D AL-4BR/BRL
OB-2 (MW-6)
AB-11S AB-11D
AB-15S/SL AB-15D/BR
AB-20S AB-20D
AL-2S AL-2D AL-2BR/BRL/BRLL/BRLLL
AB-13S AB-13D
AB-14S AB-14DU AB-14D
AB-12S/SL AB-12D/BR
AB-10S/SL AB-10D/BR/BRL
CCR-15D
CCR-16S CCR-16D
CCR-14S CCR-14D
AL-1S AL-1D AL-1BR/BRL
CCR-13S CCR-13D
CCR-12S CCR-12D
OB-1 (Dry Ash Landfill)
CCR-11S CCR-11D
CCR-9S CCR-9DA CCR-9D
CCR-10S/D
AB-1S AB-1D AB-1BR/BRL/BRLL/BRLLL
AB-9S AB-9D/BR
AB-8S AB-8DU AB-8D
AB-7S AB-7DU AB-7D
AB-6D/BR/BRA/BRL AB-6S AB-6BR
AB-21S AB-21D
OB-1 (Ash Basin)
AB-4S/SL AB-4D
AB-5S AB-5D AB-5DU AB-5BR
AB-3S AB-3D
AB-2S AB-2D AB-2BR
CCR-2S CCR-2D
CCR-1S CCR-1D
CCR-5S CCR-5D
CCR-4S CCR-4D
GWA-1S GWA-1D
CCR-3S CCR-3D

MS-8 MS-9 MS-16 MS-10 MS-11 MS-12 MS-1 MS-15 MS-7 MS-2 MS-14 MS-3 MS-6 MS-13 MS-5 MS-4
MW-PZ10 MW-PZ2 MW-PZ1 MW-PZ3 MW-PZ4 MW-PZ6 MW-PZ5 MW-PZ7 MW-PZ8 MW-PZ9
LRB-1S LRB-2S

LEGEND

- MONITORING WELL IN ASH PORE WATER
- MONITORING WELL IN SHALLOW ZONE
- MONITORING WELL IN DEEP ZONE
- MONITORING WELL IN BEDROCK ZONE
- MONITORING WELL ABANDONED
- PIEZOMETER IN SHALLOW ZONE
- WATER SUPPLY WELL
- ASH BASIN WASTE BOUNDARY
- LANDFILL BOUNDARY
- STRUCTURAL FILL BOUNDARY
- ASH BASIN COMPLIANCE BOUNDARY
- LANDFILL COMPLIANCE BOUNDARY
- DUKE ENERGY CAROLINAS MARSHALL PLANT SITE BOUNDARY
- STREAM (MCKIM & CREED)
- WETLAND (MCKIM & CREED)

NOTES:

STREAM AND WETLAND DELINEATION CONDUCTED BY MCKIM & CREED MARCH 2016.

PROPERTY BOUNDARY PROVIDED BY DUKE ENERGY CAROLINAS.

AERIAL PHOTOGRAPHY OBTAINED FROM GOOGLE EARTH PRO ON SEPTEMBER 12, 2017. AERIAL WAS COLLECTED ON OCTOBER 8, 2016.

DRAWING HAS BEEN SET WITH A PROJECTION OF NORTH CAROLINA STATE PLANE COORDINATE SYSTEM FIPS 3200 (NAD83).

synTerra

DUKE ENERGY CAROLINAS

500 0 500 1,000
GRAPHIC SCALE IN FEET

148 RIVER STREET, SUITE 220
GREENVILLE, SOUTH CAROLINA 29601
PHONE 864-421-9999
www.synterracorp.com

DRAWN BY: B. YOUNG DATE: 04/25/2019
PROJECT MANAGER: B. WILKER
CHECKED BY: J. THAO

FIGURE 1-2
SITE MAP WITH MONITORING WELL LOCATIONS
2018 CAMA ANNUAL INTERIM MONITORING REPORT
MARSHALL STEAM STATION
DUKE ENERGY CAROLINAS, LLC
TERRELL, NORTH CAROLINA

| | | |

| | | |

Hart Exhibit 54
Docket No. E-7, Sub 1214

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ENVIRONMENTAL AUDIT IN SUPPORT OF THE COURT APPOINTED MONITOR

Riverbend Steam Station
Mount Holly, North Carolina
USA

July 2019

Final Report Issued To:

Duke Energy and the Court Appointed Monitor

Prepared By:

Advanced GeoServices Corp.
and
The Elm Consulting Group International LLC

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1.0 INTRODUCTION

Advanced GeoServices Corp. (AGC) and The Elm Consulting Group International LLC (Elm) (collectively, the Audit Team) are conducting environmental compliance audits (the Audits) of certain coal combustion residuals (CCR) management locations owned or operated by Duke Energy Business Services LLC, Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc. (collectively, Duke Energy). The Audits are being conducted under the direction of Mr. Benjamin Wilson, the Court Appointed Monitor (CAM), pursuant to an Order issued by the U.S. District Court, Eastern District of North Carolina, in case numbers 5:15-CR-62-H, 5:15-CR-67-H, and 5:15-CR-68-H.

The scope of the Audits is set forth in the plea agreements entered into by Duke Energy and the United States in the above cases, the Court's judgments in these cases, and a written Audit scoping document agreed to by Duke Energy and the United States.

1.1 BACKGROUND INFORMATION

The subject of this report is the Audit completed at Duke Energy's Riverbend Steam Station located in Mount Holly, North Carolina (Riverbend Facility). The Audit was conducted on May 15-16, 2019 for a total of two days on-site. The Audit Team members were:

- Mr. Christopher Reitman, P.E. AGC — Project Director, Audit Team Leader, Sr. Subject Matter Expert (on-site)
- Mr. Joseph Cotier, CPEA, Elm — Sr. Environmental Auditor (on-site)
- Mr. Bernard B. Beegle, P.G., AGC — Sr. Subject Matter Expert (off-site)

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Key representatives of the Riverbend Facility were:

- Mr. Dan Zakary, CCP System Owner
- Mr. Tim Hill, General Manager, CCP Operations and Maintenance
- Mr. John Kwon, CCP Engineering & Closure Engineering
- Mr. Chris Varner, CCP Projects
- Mr. Rick Massey, EHS CCP Environmental Field Support
- Mr. Brad Loveland, EHS CCP Permitting and Compliance
- Ms. Bristol Grohol, EHS CCP Waste & Groundwater
- Ms. Diana Kooser, Regulatory Affairs
- Mr. Drew Stroud, Environmental Rover, EHS CCP Compliance
- Mr. Keith Higgins, EHS CCP Compliance
- Mr. Michael Phillips, Manager, EHS CCP Compliance
- Mr. Randy Hart, Manager, CCP Regulatory Affairs
- Ms. Anne Pifer, Manager, EHS CCP and Compliance

1.2 FACILITY OVERVIEW

The Riverbend Facility is located on a 420-acre property at 175 Steam Plant Road, Mount Holly, Gaston County, North Carolina. Duke Energy personnel reported that the first two coal-fired units at the Riverbend Facility began operation in 1929. By 1954, facility operations increased to a total of seven coal-fired units. All seven of the coal-fired units were retired by 2013. During the later period of usage, the Riverbend Facility was brought on-line only during peak periods of energy need. At the time of the Audit, the former powerhouse building had been demolished and stabilized with vegetation and all the CCR from the facility had been excavated and transported off-site.

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1.2.1 Ash Management Activities

Duke Energy personnel provided the following information regarding historical on-site management of CCR materials at the Riverbend Facility:

- Primary Ash Basin – The Primary Ash Basin historically had an impounded area of approximately 41 acres and was constructed in 1957.

- Secondary Ash Basin – The Secondary Ash Basin historically had an impounded area of 27 acres and was also constructed in 1957.

- Dry Ash Stack – The Dry Ash Stack was 29 acres in area. The Dry Ash Stack was constructed with the materials generated during clean-out of the Primary and Secondary Ash Basins. The last recorded ash basin cleanout project was in 2007.

- Cinder Pit – Prior to 1957 and the construction of the ash basin system, bottom ash (i.e., "cinders") was deposited in the "Cinder Pit," which covered an area of approximately 13 acres. This area was used for storage of CCR materials at the Riverbend Facility prior to the installation of precipitators and the wet sluicing system which brought ash to the Primary Ash Basin.

Excavation and removal of the CCR materials from each of the units described above had been completed prior to the Audit.

1.2.2 Environmental Permits and Programs

The Riverbend Facility operates under a number of environmental permits and programs, including:

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- **National Pollutant Discharge Elimination System (NPDES) Waste Water Permitting** – NCDEQ issued NPDES permit (No. NC0004961) on February 12, 2016 with an effective date of March 1, 2016 and an expiration date of February 29, 2020. As it relates to ash and ash management activities, the permit covers:
  - Outfall 002: the Secondary Ash Basin discharge, which discharges to the Catawba River (Mountain Island Lake), and
  - Outfall 011: the former stormwater outfall 1, which is a combined stormwater and groundwater sampling outfall to the Catawba River.

The NPDES Permit was modified by Section 2.e of Special Order by Consent (SOC) No. S16-005, issued by the North Carolina Environmental Management Commission on November 10, 2016 in resolution of Duke Energy's challenge to the version of the permit issued in February 2016. The SOC supersedes Part I.A(16) of NPDES Permit No. NC0004961 as follows:

- Outfall 102: modification of the discharge limits as identified in Attachment A of the SOC, and
- Outfalls 101 to 112: modification of the discharge limits for pH and hardness as listed in Section 2.3 of the SOC.

The NPDES permit includes coverage of 12 seeps, 10 of which were classified as "jurisdictional waters" by the U.S. Army Corps of Engineers. Sections A(16) and A(21) through A(32) of the permit address seep identification and monitoring requirements. The seeps and corresponding outfall numbers are as follows:

Seep ID	Outfall Number
S-1	101
S-2	102
S-3	103

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S-4	104
S-5	105 (non-jurisdictional seep)
S-6	106
S-7	107
S-8	108 (non-jurisdictional seep)
S-9	109
S-10	110
S-11	111
S-12	112

Additional Areas of Wetness

On November 20, 2015, Duke Energy submitted a letter to NCDEQ identifying additional Areas of Wetness (AOWs) S-13 through S-22, including S21A. The letter indicated that the AOWs would be further evaluated to determine if they qualify as new seeps and require NPDES permitting. The Auditors note that the final NPDES permit did not include any reference to AOWs S-13 through S-22.

On March 16, 2017, Duke Energy dispositioned AOW S-13 through S-21 and S21A because the AOWs no longer had flow or there were no CCR related constituents in the flow. Dispositioning of AOWs eliminates routine monitoring, although the AOWs are still observed as part of the regular semi-annual events. AOW S-22 is a low spot that was graded and dispositioned by Duke Energy in 2016. A new AOW, S-23, was identified in the Spring 2017 inspection and is under observation. Because there is no flow away from S-23, it has not been sampled.

Outfall Closure

The Riverbend Facility has completed all dewatering in the ash basins. A notice of closure of Outfall 002 was submitted by Duke Energy to NCDEQ on March 27, 2019.

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Groundwater Monitoring

Duke Energy has prepared a Draft Groundwater Monitoring Plan under the requirements of the NPDES permit. The Plan requires groundwater monitoring for 21 compliance wells three times per year pursuant to 15A NCAC 2L.0200 until the the NPDES expiration date of February 29, 2020.

- **National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater Permitting** – NCDEQ issued an individual stormwater permit No. NCS000549 to Duke Energy on May 15, 2015. The permit carries an expiration date of April 30, 2020. The permit identifies 17 different outfalls and includes monitoring requirements and discharge limits for each outfall.

- **NPDES Stormwater Construction Permit** – The Riverbend Facility operates under one NCDEQ-issued stormwater construction permit for activities related to ash basins and ash management. This permit was issued by NCDEQ under its General Permit for Construction Activities, No. NCG010000:
  - GASTO-2019-001 was issued August 6, 2018 for Final Closure of Former Ash Storage Areas.

An erosion and sedimentation control plan was in place for this project.

NCDEQ closed the following stormwater construction permits pursuant to their site inspection on March 15, 2019:

- GASTO-2015-008: Subsurface Exploration (Data Gap Wells);
- GASTO-2018-008: Cinder Storage Area CCR Removal;
- GASTO-2015-011: for Riverbend Steam Station (RBSS) Demo-Phases 1, 3 and 4 only, which included grading of the Dry Ash Stack.

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- **Spill Prevention, Control and Countermeasure (SPCC) Plans** – A Tier I Qualified Plan was prepared and implemented by Earnhardt Grading, a contractor to Duke Energy, for ash basin grading activities. The SPCC Plan was signed and dated April 4, 2019.

- **Tier II Reporting** – Duke Energy submitted a Tier II report for reporting year 2018 on February 5, 2019.

- **Title V Permitting –** With demolition complete, there is no NCDEQ-issued air permit in place at the Riverbend Facility. All activities related to fugitive dust control at the ash basins are covered by state air pollution control regulations.

- **CAMA Statute** – Section 3(b) of the Coal Ash Management Act of 2014 (CAMA) identifies the Primary and Secondary Ash Basins at the Riverbend Facility as "high-priority" and requires excavation, removal, and safe storage of the coal ash from the basins as soon as practicable but no later than August 1, 2019. Pursuant to an order of Judge Ridgeway of the North Carolina Superior Court, if NCDEQ determines that the Dry Ash Stack and Cinder Pit are CCR surface impoundments under CAMA, Duke Energy is required by the order to remove these by August 1, 2019. Initially, all excavated CCR was shipped off-site by truck, but over the last two and a half years, the CCR has been shipped off-site by rail. On March 21, 2019, Duke Energy notified NCDEQ that on March 16, 2019 it had completed excavation, removal, and off-site shipment of all CCR at the site.

  Other CAMA requirements include identification of drinking water supply wells within one-half mile of the facility, submission of Groundwater Assessment Plans, installation and multiple rounds of sampling from 78 groundwater assessment wells, submission of Groundwater Assessment Reports summarizing groundwater

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investigations, submission of an Annual Groundwater Protection and Restoration Report, submission of Discharge Assessment Plans to characterize seeps, and submission of a Groundwater Corrective Action Plan. This information was provided by Duke Energy in a timely manner.

On December 20, 2017, under CAMA, NCDEQ issued to Duke Energy the Revised Interim Monitoring Plans (IMPs) for groundwater monitoring for 14 Duke Energy facilities located in North Carolina, including the Riverbend Facility. The revised facility IMPs require groundwater monitoring on a quarterly basis commencing the fourth quarter of calendar year 2017 pursuant to 15A NCAC 02L.0110, until Corrective Action Plans are accepted for the individual facilities or as directed otherwise by the NCDEQ. The quarterly sampling events will be conducted in conjunction with planned compliance monitoring sampling events for three quarters during the calendar year, supplemented with an additional sampling event conducted at each facility in order to provide four rounds of monitoring data to evaluate seasonal fluctuations during a year-long timeframe.

On September 1, 2017, NCDEQ approved provisional background threshold values (PBTVs) for the Riverbend Facility. On October 31, 2017, Duke Energy submitted to NCDEQ the 2018 Comprehensive Site Assessment Update for the Riverbend Facility applying updated PBTVs that incorporated additional background data produced since the previous submittal of PBTVs to NCDEQ. These updated values were approved by NCDEQ on May 14, 2018.

On December 21, 2018, NCDEQ issued Duke Energy optimized Interim Monitoring Plans (IMPs) for all 14 Duke Energy facilities, with groundwater sampling to begin in the first quarter of 2019.

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Under CAMA, Duke Energy submitted to the NCDEQ the 2018 Groundwater Protection and Restoration Annual Report on January 25, 2019 and the required Submittal of 2018 Surface Water Protection and Restoration Annual Report on January 21, 2019, both regarding the Riverbend Facility.

In a letter dated March 20, 2019, Duke Energy responded to NCDEQ's December 21, 2018 letter regarding the optimized IMPs for all 14 Duke Energy Facilities. Duke Energy's letter provided clarification and requested NCDEQ's concurrence on a few monitoring and reporting details related to the IMPs. NCDEQ approved these details on April 4, 2019. Pursuant to Duke Energy's March 20, 2019 letter, the Riverbend Facility CAMA groundwater monitoring network consists of 23 wells sampled quarterly and 68 wells sampled semi-annually, beginning the first quarter of 2019.

- **CCR Rule** – The Riverbend Facility has reportedly not generated electricity since prior to October 19, 2015, the effective date of the federal Coal Combustion Residuals Rule (CCR Rule) at 40 CFR Part 257, and therefore it is not subject to the provisions of the CCR Rule.

1.2.3 Dam and Other Structural Permits and Approvals

Historically, three active dams existed on-site and were associated with ash management operations:

- The Primary Ash Basin Dam (GASTO – 097);
- The Secondary Ash Basin Dam (GASTO – 098);
- The Intermediate Ash Basin Dam (GASTO – 099).

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The dams were grandfathered under North Carolina's Session Law 2009-390 (Senate Bill 1004, effective January 1, 2010). Under this grandfathering, the original design of the dams is not subject to the current design standards for new construction, although modifications after the effective date may be subject to these standards. Each of the dams were given a high hazard classification under the North Carolina Dam Safety system.

Duke Energy received a Certificate of Authorization to breach the Primary Ash Basin Dam from NCDEQ on June 7, 2018 and provided their 10-day notification prior to the start of activities to NCDEQ Dam Safety on January 29, 2019. For the Secondary Ash Basin Dam, Duke Energy received a Certificate of Authorization to breach on June 7, 2018 and provided their 10-day notification prior to the start of activities on July 3, 2018. At the time of Audit, all CCR materials had been removed from the Primary and Secondary Ash Basins.

The breach of the Intermediate Ash Basin Dam was completed in February 2017, and Final Approval of the completed activities was received for this work on May 3, 2017. The breach of the Intermediate Ash Basin Dam effectively created a single impoundment area. Decommissioning of the Primary Ash Basin Dam and Secondary Ash Basin was ongoing during the Audit.

1.2.4 Recent Activities and Audit Team Observations

As part of closure, in October 2016 Duke Energy began excavation and removal of the estimated 3.5 million tons of CCR materials within the Primary Ash Basin and Secondary Ash Basin, with excavation completed in January 2019. Duke Energy began excavation and removal of the estimated 1.55 million tons of the CCR materials within the Dry Ash Stack area in May 2015 with excavation completed in February 2019. Duke Energy began excavation and removal of the estimated 0.3 million tons of the CCR materials within the Cinder Pit in May 2018 with excavation completed in February 2019. As noted above, on March 21, 2019, Duke Energy notified NCDEQ that on March 16, 2019 it had completed excavation, removal, and off-site shipment of all CCR at

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the site. On April 18, 2019, Duke Energy submitted a CCR Removal Verification Report to NCDEQ for the Primary Ash Basin, the Secondary Ash Basin, the Dry Ash Stack area, and the Cinder Pit.

The CCR material was disposed at the following facilities:

- Waste Management R&B Landfill, Homer, GA (15,762 tons);
- Marshall Steam Station, FGD and Industrial Landfills, Catawba County, NC (88,745 tons);
- Brickhaven Structural Fill, Chatham County, NC (5,227,258 tons);
- Republic Services Charlotte Motor Speedway Landfill (19,543 tons).

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2.0 AUDIT SCOPE AND SUBJECT MATTER

The Audit was completed in accordance with the court documents and the Audit scoping document agreed to by Duke Energy and the United States. A description of the scope is provided in Attachment A. The Audit included ash management activities, including aspects of generation that affect the nature of the waste streams from the point of generation into surface impoundments or ash management basins, landfills, and/or storage piles. The Audit focused on the activities at the facility since the date of the last Audit which was May 16-17, 2018.

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3.0 AUDIT FINDINGS

The following findings at the Riverbend Facility were identified by the Audit Team.

3.1 EXCEEDANCES OF THE STATE GROUNDWATER QUALITY STANDARDS

Requirement – The State groundwater rules establish maximum contaminant levels for groundwater at or beyond the compliance boundaries for the Primary Ash Basin, the Secondary Ash Basin, and the Dry Ash Stack. *See* 15A NCAC 02L.0202. 15A NCAC 02L.0103(d) provides that "[n]o person shall conduct or cause to be conducted, any activity which causes the concentration of any substance to exceed that specified" under the Class GA standards or the interim maximum acceptable concentrations (IMACs) established for groundwater quality pursuant to 15A NCAC 02L.0202. Further, under N.C.G.S.A. § 143-215.1(i), "[a]ny person … who is required to obtain an individual permit … for a disposal system under the authority of N.C.G.S.A. § 143-215.1 [water pollution control] … shall have a compliance boundary … beyond which groundwater quality standards may not be exceeded." *See also* 15A NCAC 02L.0102(3) (defining "compliance boundary" as "a boundary around a disposal system at and beyond which groundwater quality standards may not be exceeded").

In addition, under N.C.G.S.A. § 143-215.6A(a)(1), civil penalties may be assessed against any person who violates any standard established by the NCDEQ under the authority of N.C.G.S.A. § 143-214.1, which covers groundwater standards.

Finding – Constituents exceeding the standards for Class GA waters, established in 15A NCAC 2L.0202, were documented in monitoring wells located at or beyond the compliance boundaries for the Primary Ash Basin, the Secondary Ash Basin, and the Dry Ash Stack. Based on the review of the 2018 CAMA groundwater monitoring analyses, beryllium, chromium (total) and chromium (VI), cobalt, iron, manganese, strontium, sulfate, total dissolved solids (TDS), and vanadium were observed to exceed the North Carolina 2L groundwater standards, the IMAC groundwater

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standards, or the NCDEQ approved provisional background threshold values (PBTVs), if the PBTV was greater than the 02L or IMAC groundwater standards, one or more times at or beyond the compliance boundaries of the Primary Ash Basin, the Secondary Ash Basin, and the Dry Ash Stack. The 2018 CAMA groundwater data summary and well location map are presented in Attachment B.

Duke Energy personnel stated their opinion that the source of beryllium, sulfate, and TDS in groundwater at the Riverbend facility may be the former coal pile area and not the Primary Ash Basin, Secondary Ash Basin, or Dry Ash Stack. Duke Energy is in the process of further assessing the source of beryllium, sulfate, and TDS in groundwater at the Riverbend Facility.

In addition, Duke Energy personnel stated their opinion that the exceedances of chromium (total) and chromium (VI) and vanadium in groundwater at the Riverbend Facility may be due to elevated turbidity of the groundwater samples, which were not filtered, or natural variations associated with geologic conditions or sampling protocols. Duke Energy personnel indicated that the company is further assessing the source of chromium (total) and chromium (VI) and vanadium in groundwater at the Riverbend Facility.

Duke Energy has also stated its opinion that pursuant to a September 2015 Settlement Agreement with the NCDEQ, "Duke Energy is not subject to any further financial penalties for exceedances of groundwater standards" and "Duke Energy is not subject to any further enforcement action based on exceedances of groundwater standards as long as it remains in substantial compliance with CAMA groundwater requirements."

The CAM has advised the Audit Team that the Audit scope does not include an evaluation of compliance with the September 2015 Settlement Agreement and therefore the Audit Team does not take a position on Duke Energy's opinion.

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4.0 OPEN LINES OF INQUIRY

Open Lines of Inquiry are items identified by the Audit Team while on-site that, due to limited available information or the need for additional research, could not be determined as being in compliance or out of compliance. There were no Open Lines of Inquiry identified as part of this Audit.

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5.0 AUDIT APPROACH

5.1 ON-SITE ACTIVITIES

During its time on-site, the Audit Team conducted an opening conference with facility personnel to discuss the scope of work and the plan for accomplishing necessary tasks while at the facility. A site tour of the coal ash management and program support areas was subsequently completed. Following the tour, the Audit Team conducted a review of pertinent files, interviews with facility representatives, and verification of facility activities related to the ECPs, written programs, and permits. A debrief was conducted each Audit day to advise the facility representatives of Audit progress, open lines of inquiry, possible Audit findings, and needs for the next day. At the completion of the Audit, the Audit Team led a verbal discussion of draft Audit findings with facility representatives.

5.2 STANDARDS OF PRACTICE

The fieldwork portion of the Audit was conducted on May 15-16, 2019, with compliance reporting commencing May 14, 2015, the date of the Court's judgments. The Audit focused on the activities at the facility since the date of the last Audit, which was May 16-17, 2018 and was based on:

- Physical inspections of the facility;
- Examination of selected administrative and operating records made available by facility staff at the Audit Team's request;
- Interviews and discussions with key facility management and staff; and
- Verification procedures designed to assess the facility's application of, and adherence to, terms of the Probation, environment laws and regulations, and site policies and procedures. In addition, the Audit Team reviewed the facility's adherence to good management practices.

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The Audit followed established audit protocols and procedures. It should be understood that the Audit consisted of evaluating a sample of practices and was conducted over a short period of time.

Efforts were made to sample major facets of environmental performance during the period under review. This method is intended to uncover major system deficiencies and the Audit may not have identified all potential problems.

To support the overall independence of the Audit process, the Audit included an auditing professional certified by the Board of Environmental, Health and Safety Auditor Certifications (BEAC). BEAC is an accredited professional certification board that issues the Certified Professional Environmental Auditor (CPEA) designation to qualified auditors. Under BEAC, auditor independence is a key criterion for the implementation of an effective third-party audit program. The Audit was implemented in accordance with the standards related to auditor independence.

The process by which the Audit was conducted was consistent with the general state of the art of environment auditing and the best professional judgment of the Audit Team. To conduct the Audit, the team implemented a formal approach, drawing on process guidance from both BEAC and the Auditing Roundtable (AR) guidance documents. Guidance documents included:

- *Standards for the Professional Practice of Environmental, Health and Safety Auditing*. Prepared by the Board of Environmental, Health and Safety Auditor Certifications, 2008.

- ISO 19011:2002 – *Guidelines for Quality and/or Environmental Management Systems Auditing*. Prepared by the International Organization for Standardization, 2002.

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- *Standard for the Design and Implementation of an Environmental, Health and Safety Audit Program*. Prepared by The Auditing Roundtable, Inc., 1995.

- *Minimum Criteria for the Conduct of Environmental, Health and Safety Audits*. Prepared by The Auditing Roundtable, Inc.

5.3 REPRESENTATIVE SAMPLING

When confronted with a large population of data to review or equipment to inspect, the Audit Team employed representative sampling techniques to evaluate records over the Audit period requested, and as necessary, for physical inspection of some types of common equipment. The sample size for records reviews or equipment inspections required professional judgment.

The Audit Team's judgement considered the following:

- The outcome of the evaluation of the records sampled. If problems are found in the representative sample, more records may need to be examined to evaluate compliance status.
- Potential for or severity of non-compliance.
- The general appearance and observed practices of certain operating areas.
- Information obtained during an interview that indicates a potential problem.
- Other specific information or guidance from the CAM.
- Time available during the Audit.

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The Audit Team also employed the following types of sampling techniques, depending upon the characteristics of a specific population:

- Random sampling – every item has an equal chance of being selected.

- Interval sampling – select every nth item, (e.g., every third manifest in chronological order as contained in facility files).

- Block sampling – auditor uses his/her judgment to select a specific block of items, (e.g., petroleum storage tank inspections from April to October).

- Stratified sampling – population is divided into groups, which are then sampled through random or judgmental techniques.

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ATTACHMENT A

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ATTACHMENT A
AUDIT SCOPE

A-1 GENERAL AUDIT SCOPE ITEMS

The general Audit scope items included:

- Review and evaluation of documentation for maintenance and repair of structures and equipment used for coal ash disposal,

- Review and evaluation of documentation of modifications, failures, leaks, damage, disrepair and other problems at the coal ash management units,

- Review and evaluation of documentation of efforts to correct failures, leaks, damage, disrepair and other problems where they determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding,

- Review and evaluation of documentation of communication of the items above within the organization,

- Review and evaluation of documentation associated with the specific environmental compliance items described below and laws, regulations, and policies associated these items and

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- Review of compliance with administrative aspects and regulatory submissions related to coal ash management-specific regulations, including:

  - Coal Combustion Residuals — 40 CFR Part 257 Subpart D
  - NC Coal Ash Management Act of 2014 — NC General Statutes Chapter 130A, Article 9

More specific items which were addressed in the audits to comply with the General Audit Scope are described below.

A-2 SPECIFIC COMPLIANCE WITH THE ECP-NC

The following items related to specific ECP-NC compliance were reviewed as part of the audit:

1. Verify maintenance and sufficient funding of corporate compliance organizations (ABSAT, CCP organization, National Ash Management Advisory Board). Where a root cause of a compliance finding appears in an auditor's judgment to result from inadequate funding, the AGC/ELM Audit Team will identify this in the Audit finding.

2. Verify timely production of satisfactory Compliance Officer (CO) reports to the CAM relating to the development, implementation, and enforcement of the ECP-NC. No auditing work is associated with this work at this time.

3. Evaluate existence and efficacy of toll-free hotline/e-mail inbox for violation reporting, including the appropriateness of the follow-up investigation and disposition of each reported matter. This requirement will be evaluated for the first year of audits and then reassessed.

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4. Evaluate completion and efficacy of periodic notices (via Internet, Intranet, email, notices in employee work areas, and publication in community outlets) to employees and the public of the availability of the toll-free hotline and electronic mail inbox.

5. Evaluate training materials and curricula utilized in the mandated training program, particularly those tailored to employee's specific job descriptions, to determine whether it advances the goal of "ensuring that every domestic employee of Duke Energy Corporation and its wholly-owned or operated affiliates understands applicable compliance policies and is able to integrate the compliance objectives in the performance of his/her job." Ensure that the subjects specifically named in the plea agreements are covered by the training (namely, notice and reporting requirements in the event of a release or discharge and the safe and proper handling of pollutants, hazardous substances and/or wastes.)

6. Evaluate whether Defendants are using "Best Efforts" to comply with the obligations under the ECP-NC. Where the Audit Team makes compliance findings, the Audit Team will, upon request, provide their opinion on whether this best efforts standard applies, and if so, whether best efforts have been used.

7. Verify compliance at each facility with the specific procedures and protocols set forth in the ECP-NC.

A-3 SPECIFIC COMPLIANCE WITH OTHER PROVISIONS OF THE PLEA AGREEMENT

The following items related to specific items in the Plea Agreement were reviewed as part of the Audit:

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1. Determine whether Defendants have opened, expanded, or reopened any coal ash or coal ash wastewater impoundment and, if so, verify that they are lined and do not allow unpermitted discharges of coal ash or coal ash wastewater to waters of the United States.

2. Verify that Defendants have determined the volume of wastewater and coal ash in each wet-storage coal ash impoundment in North Carolina as described in the plea agreements and that written or electronic records of this information is maintained in a location available to facility staff and employees responsible for making environmental or emergency reports.

3. Review citations/notices of violation/notices of deficiency related to violations of federal, state, or local law to assure that they have been properly relayed to the Court and, as appropriate under the plea agreements, determine their materiality.

4. Evaluate Defendants' efforts to close coal ash impoundments at Dan River, Riverbend, Asheville, and Sutton for legal compliance.

5. Note any observations made during the Audit that cause concern regarding the assets and/or security available to the Defendants to meet the obligations imposed by the Judgment in this case.

A-4 GENERAL ENVIRONMENTAL COMPLIANCE SUBJECT AREAS

The following items related to General Environmental Compliance were reviewed as part of the Audit:

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1. Assess all waste streams from Duke Energy facilities with coal ash impoundments. Review Duke Energy's processes, procedures, and practices, as well as compliance with those processes, procedures, and practices, for:
   a. identifying waste streams (especially, but not limited to, waste streams with discharge points into bodies of water),
   b. identifying and communicating any modifications or changes, or potential modifications or changes, to waste streams,
   c. ensuring proper handling/disposal of waste streams,
   d. identifying, preventing, and mitigating any risks or hazards that could affect waste streams and/or the disposal of waste streams, and
   e. ensuring proper permitting for waste streams.

For Item 1.d., the Audit Team evaluated such risk/hazard issues where there were compliance findings associated with waste streams.

2. Review and evaluate documentation of:
   a. Maintenance and repair of structures and equipment related to coal ash disposal,
   b. Modification of the coal ash impoundments and related pollution prevention equipment and structures,
   c. Failures, leaks, damage, disrepair, and other problems,
   d. Communication of the information described in a-c within the organization, and
   e. Efforts to correct failures, leaks, damage, disrepair, and other problems.

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3. Assess the employees responsible for inspection, maintenance, and repair of coal ash basins and related structures and equipment. The assessment included an assessment of the workloads of such employees to assure that Duke Energy's facilities are adequately staffed. These assessments were made where the Audit Team determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

4. Review the results and recommendations of any other audits (internal or external/state mandated) and assess Duke Energy's implementation of those recommendations.

5. Review and assess Duke Energy's processes, procedures, and practices for identifying, communicating, and addressing problems and potential problems at its coal ash basins (leaks, unpermitted discharges, etc.).

6. Review and assess Duke Energy's policies, procedures, practices, and equipment for handling emergency releases from its coal ash basins and evaluate the personnel with duties in such situations.

7. Verify that Duke Energy is complying with its NPDES wastewater and stormwater permits, as well as other relevant environmental permits. This should include verifying Duke Energy's timely submission of permit applications, permit renewal applications, and responses to requests for additional information from the relevant regulatory authority.

8. Review and assess any actions or measures Duke Energy has undertaken to assure accountability and prevent recurrences when problems and/or failures occur (i.e. disciplinary actions, re-training, revision to policies and procedures, etc.). This

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review will be completed where the Audit Team determines that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

9. Review and assess compliance with the following environmental regulations, as applicable to the management of coal ash:

a.	Wastewater Discharges	40 CFR 122; 15A NCAC 2H.0100 *et seq*
b.	Stormwater Discharges	40 CFR 122.26; 15A NCAC 2H.1000 *et seq;* NC General Permit (Construction) No. NCG010000
c.	NC Groundwater Standards	15A NCAC 02L.0202(h)
d.	Hazardous Waste Management	15A NCAC 13A.0100 to 13A.0107
e.	Oil Pollution Prevention	40 CFR Part 112
f.	Air Pollution (Title V)	15A NCAC 2Q, and
g.	Hazardous Chemicals (Tier II)	40 CFR Part 370.

Reviews also included an analysis of overall compliance and the status and security of the asset. Subsequent reviews of individual facilities will evaluate the movement towards compliance. The Audit did not include an evaluation of compliance with the September 2015 Settlement Agreement with NCDEQ.

A–5 LIST OF PERMITS AND PROGRAMS DEEMED TO BE EITHER DIRECTLY OR INDIRECTLY IN SUPPORT OF ASH MANAGEMENT

During the Audit, the Audit Team reviewed a variety of written programs developed and implemented by Duke Energy and facility staff. State-issued permits and supporting documentation relative to environmental programs and geotechnical aspects of ash basin management were also requested and reviewed.

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Requested documents, pertinent to management of ash in basins, landfills, ponds, etc. were outlined in the pre-audit questionnaire for each facility and included, but were not limited to:

1. The Compliance Register developed for ETrac for the Site.

2. The Duke Energy Operations Manual for the facility.

3. A site plan, site map, or aerial photo which shows the entire facility and key features, of the facility including NPDES outfalls associated environmental monitoring locations, storage tanks, etc.

4. Most recent 2 years of maintenance, monitoring, and inspection records for each coal ash/CCR basin (just the physical inspections, not the groundwater records).

5. A "Phase 1 and Phase 2" summary of ash basin conditions prepared by an outside consultant.

6. Duke Energy's permitting plans for addressing ash impoundments and landfills at this facility.

7. Applicable pages from the Duke Energy basin-by-basin coal ash/CCR project tracking document for this facility.

8. Original basin/landfill/coal ash management unit construction records.

9. Documentation of changes to these units.

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10. Coal ash unit construction permit application and approval.

11. State-issued permits and application materials for permits associated with coal ash/CCR management (including, e.g., dam permits).

12. Any currently effective state order, consent order, or similar state direction that addresses coal ash/CCR management at the site.

13. Records required to be maintained in the site's operating record under the federal CCR regulation and/or any state CCR regulatory program.

14. Records of off-site ash shipments from May 2015 forward.

15. Stormwater permit application and approval for all outfalls.

16. Industrial wastewater (NPDES/POTW) permit application and approval for all outfalls/discharges.

17. Industrial and stormwater sampling and monitoring records, and any corrective action plans (last 2 years).

18. Stormwater pollution prevention plan.

19. Landfill operating permit with maintenance and monitoring requirements.

20. Landfill leak detection and groundwater monitoring records from the last 2 years along with any workplans that describes the rationale for the monitoring system at the Site.

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21. Landfill operating permit with maintenance and monitoring requirements.

22. Copies of any air permits and applications for coal ash units and ancillary operations.

23. Any testing and monitoring records completed to comply with the air permits.

24. Any notices of violations associated with the coal ash/CCR management activities received over the last 2 years.

25. Copy of SPCC Plan.

26. Community Right-to-Know
    a. Copies of lists of hazardous chemicals or MSDSs submitted;
    b. Copies of Tier I or II reports; and
    c. Copies of Form R (toxic release inventory) reports.

27. Copies of communications with employees and the public regarding availability of toll-free hotline and electronic mail inbox for reporting suspected environmental violations.

28. Management Systems:
    a. List of responsible party for each environmental activity.
    b. All environmental-related training records.
    c. All environmental policies and procedures.
    d. Organization chart.
    e. Site diagram identifying storage areas, tanks, etc.

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29. Employee training records related to environmental programs and ash management policies.

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ATTACHMENT B

2018 CAMA Groundwater Data Summary and Well Location Map

NOTES:
WELL LOCATIONS WERE DERIVED FROM VARIOUS SOURCES AND ARE A MIX OF SURVEYED AND APPROXIMATE LOCATIONS. THEREFORE, WELL LOCATIONS ARE TO BE DEEMED APPROXIMATE.

NATURAL RESOURCES TECHNICAL REPORT (NRTR) PREPARED BY AMEC FOSTER WHEELER INC., JULY 23, 2015.

PROPERTY BOUNDARY PROVIDED BY DUKE ENERGY CAROLINAS.

AERIAL PHOTOGRAPHY OBTAINED FROM GOOGLE EARTH PRO ON JANUARY 4, 2019. IMAGE COLLECTED ON FMARCH 30, 2018.

DRAWING HAS BEEN SET WITH A PROJECTION OF NORTH CAROLINA STATE PLANE COORDINATE SYSTEM FIPS 3200 (NAD83).

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MW-15/DA/BR
MW-15D
MW-12
GWA-10S/D/BRU
MW-3S/D
GWA-1S/BRU
MW-4S/D
MW-13
MW-11SR/DR
MW-2SA/D
MW-2S
AB-1S/D
MW-5S/D
ASH BASIN SECONDARY CELL
MW-6S/D
GWA-9S/D/BR
AB-2S/D
GWA-2S/BR/BRU
AB-4S/SA/D
MW-10
MW-14
GWA-8S/D
AB-3S/D/BR
BG-3S/D
MW-1S/D
AB-6S/BRU
AB-5S/SL/D
MW-9/DA/BRA
MW-9D/BR
ASH BASIN PRIMARY CELL
GWA-7S/D/BR
GWA-3SA/D/BR
GWA-3S
GWA-15S/D
AB-8S/D
BG-2S/D/BR
CATAWBA RIVER
GWA-11S/D
C-1S/BRU/BRUA
CPA-3S/D
C-2S/D
CINDER STORAGE
AB-7S/I/D
OB-1
OB-2
CPA-2S/D
CPA-5S/D
MW-7S/BR
MW-7SR/D/BRA
GWA-6S/D
ASH STORAGE
AS-3S/D
AS-2S/D
GWA-12S/D
FORMER COAL PILE
BG-1S/DA
BG-1D
GWA-14S/D
CPA-1S/D
AS-1S/D
GWA-23S/DA/BR
GWA-22S/D/BRA
GWA-5S/D
CPA-4S/D
GWA-23D
GWA-22BR
CPA-7S/D
HORSESHOE BEND BEACH RD
GWA-20S/DA/BR
MW-8S/I/D
CPA-6S
GWA-4S/D/BR
GWA-20D
GWA-13S/D
GWA-21S/D/BR
SILVER CLIFF DR.
STONEWATER BAY LN
WOODWARD RIDGE DR.
BG-4S/D/BR
BG-5D/BR
COVE POINTE

LEGEND

- CAMA MONITORING WELL
- ABANDONED CAMA MONITORING WELL
- ASH BASIN WASTE BOUNDARY
- ASH BASIN COMPLIANCE BOUNDARY
- ASH STORAGE BOUNDARY
- DUKE ENERGY CAROLINAS RIVERBEND PLANT SITE BOUNDARY
- STREAM (AMEC NRTR 2015)

290 0 290 580
GRAPHIC SCALE IN FEET

synTerra

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DUKE ENERGY CAROLINAS

DRAWN BY: B. YOUNG
PROJECT MANAGER: J. MAHAN
CHECKED BY: J. THAO
DATE: 01/10/2019

P:\Duke Energy Progress.1026\00 GIS BASE DATA\Riverbend\MapDocs\Program\Riverbend_WellLoc_CAMA_20190104.mxd

FIGURE 7
CAMA WELL & ASW LOCATION MAP
RIVERBEND STEAM STATION
DUKE ENERGY CAROLINAS, LLC
MOUNT HOLLY, NORTH CAROLINA

		PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS			INORGANIC PARAMETERS (TOTAL CONCENTRATION)													RADIONUCLIDES
RIVERBEND	Reporting Units	S.U.	ug/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg-N/L	ug/L	ug/L	ug/L	pCi/L
04/29/2019	15A NCAC 02L Standard	6.5-8.5	700	250	500	1*	10	4*	2	10	10	1*	300	50	100	10	0.2*	0.3*	1000	5^
BRANDON RUSSO	Provisional Background Threshold Values (Shallow Unit)	4.9-7.0	50	1.2	50	1	1	0.144	0.08	1	5	14.2	593	478	5	NE	0.2	2.02	15	0.825
JUDD MAHAN	Provisional Background Threshold Values (Deep Unit)	5.4-8.2	50	21.9	179	1.1	1	1	0.1	1.2	5	0.547	56.3	7.9	5	NE	0.2	12	10	NE
	Provisional Background Threshold Values (Bedrock Unit)	7.6-7.8	50	29	223	2.9	2.9	0.1	0.08	0.16	1.5	0.088	125	24.5	0.87	NE	0.1	0.33	10	0.494

					PARAMETERS	40CFR257 APPENDIX III CONSTITUENTS				INORGANIC PARAMETERS (TOTAL CONCENTRATION)													RADIONUCLIDES
Sample ID	Location Description	Associated Unit	Location With Respect to Groundwater Flow Direction	Sample Collection Date	pH	Boron	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Beryllium	Cadmium	Chromium (VI)	Chromium	Cobalt	Iron	Manganese	Nickel	Nitrate (as N)	Thallium	Vanadium	Zinc	Total Radium
AB-01D	AB - Secondary Cell	Ash Basin	Beneath Ash Basin	01/11/2018	**10.0**	172	35.2	153	0.54	1.3	<0.1	<0.08	**10.6**	**12.2**	0.13	181	3.5 j	0.6	NA	<0.1	**9.3**	<10	NA
AB-01D	AB - Secondary Cell	Ash Basin	Beneath Ash Basin	04/11/2018	**10.0**	151	28.8	137	0.82	0.89	<0.1	<0.08	9 M6	**11**	0.33	65.6	<5	3	NA	<0.1	**6.1**	<10	NA
AB-01D	AB - Secondary Cell	Ash Basin	Beneath Ash Basin	07/11/2018	**9.6**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AB-01D	AB - Secondary Cell	Ash Basin	Beneath Ash Basin	10/12/2018	**9.1**	170	28.6 M1	165	0.21 j	0.71	<0.1	<0.08	**13.1 M6**	**10.4**	0.22	210	4.3 j	0.78 BC	NA	<0.1	**7.5**	<10	NA
AB-02D	AB - Secondary Cell	Abandoned	Beneath Ash Storage	01/11/2018	6.9	394	13.8	167 D6	<0.5	0.11	<0.1	<0.08	0.48	1.5	0.2	261	16.6	0.75	NA	<0.1	**4.8**	2.7 j	NA
AB-02D	AB - Secondary Cell	Abandoned	Beneath Ash Storage	04/11/2018	6.7	455	15.8	167	<0.5	0.11	<0.1	<0.08	0.69	1.7	**2.2**	28.4 j	9	1.3	NA	<0.1	**4.5**	<10	NA
AB-02D	AB - Secondary Cell	Abandoned	Beneath Ash Storage	07/11/2018	7.3	400	15.1	180	0.18 j	0.13	<0.1	0.029 j	0.093	0.63	0.59	**862**	**56.7**	1.7	NA	<0.1	**4**	4.7 j,B	NA
AB-02D	AB - Secondary Cell	Abandoned	Beneath Ash Storage	10/12/2018	6.5	390	15.5	166	<0.5	0.085 j	<0.1	<0.08	0.42	1.4 B	0.37	**322**	16.9	0.72 BC	NA	<0.1	**5.7**	<10	NA
AB-02S	AB - Secondary Cell	Ash Basin	Within Ash Storage	01/12/2018	**5.3**	<50	8.5	51	0.61	0.16	0.047 j	<0.08	0.24	3.5	**11.7**	**2680**	**221**	6.4	NA	0.036 j,B	**2.1**	5.7 j,B	NA
AB-02S	AB - Secondary Cell	Ash Basin	Within Ash Storage	04/11/2018	**5.4**	<50	10	47	<0.5	0.22	0.038 j	0.022 j	<0.025	2.2	**9.9**	**945**	**212**	4.6	NA	<0.1	**1.8**	7.3 j	NA
AB-02S	AB - Secondary Cell	Ash Basin	Within Ash Storage	07/11/2018	**5.1**	<50	4.3	48	<0.5	0.058 j	<0.1	<0.08	0.033	4	**12.7**	**3400**	**247**	7.7	NA	<0.1	**0.33**	4.2 j,B	NA
AB-02S	AB - Secondary Cell	Ash Basin	Within Ash Storage	10/12/2018	**5.2**	<50	3.3	33	<0.5	0.074 j	0.034 j	<0.08	0.1	2.2	**9.9**	**1560**	**202**	2.2 BC	NA	0.018 j	**2**	7.3 j	NA
AB-08D	AB - Primary Cell	Ash Basin	Beneath Ash Basin	01/10/2018	**6.2**	388	95.1	238	<0.5	0.086 j	<0.1	<0.08	<0.025	0.22 j	0.4	93.7	**62.5**	2.8	NA	<0.1	**2.4**	<10	NA
AB-08D	AB - Primary Cell	Ash Basin	Beneath Ash Basin	04/10/2018	**6.2**	372	86.8	235	<0.5	<0.1	<0.1	<0.08	0.039	0.59	0.44	135	**62.3**	1.5	NA	<0.1	**2.5**	104	NA
AB-08D	AB - Primary Cell	Ash Basin	Beneath Ash Basin	07/09/2018	**6.2**	388	82.7	240	<0.5	0.11	<0.1	<0.08	0.11	1.2	0.4	**392**	**57.9**	1.3	NA	<0.1	**2.6**	<10	NA
AB-08D	AB - Primary Cell	Ash Basin	Beneath Ash Basin	10/08/2018	**6.1**	335	79.6	221	<0.5	0.085 j	<0.1	<0.08	0.059	0.41 j,B	0.28	34.4 j	40.2	1	NA	<0.1	**2.1 BC**	2.6 j	NA
AB-08D	AB - Primary Cell	Ash Basin	Beneath Ash Basin	02/07/2019	**6.1**	323	72	200	<1	<1	<1	NA	0.1 S1	0.375 j	<1	26	39	0.863 j	NA	<0.2	**1.92**	NA	NA
AB-08S	AB - Primary Cell	Ash Basin	Within Ash Basin	01/10/2018	**5.7**	227	94	185	<0.5	<0.1	0.075 j	0.04 j	3	3.3	0.033 j	42.3 j	11.5	0.9	NA	<0.1	**1.2**	3.1 j	NA
AB-08S	AB - Primary Cell	Ash Basin	Within Ash Basin	04/10/2018	**5.6**	220	84.4	178	<0.5	<0.1	0.066 j	0.058 j	3.3	3.6	0.036 j	60.7	9.2	0.92	NA	<0.1	0.27 j	4.5 j,B	NA
AB-08S	AB - Primary Cell	Ash Basin	Within Ash Basin	07/09/2018	**5.6**	245	87.6	194	<0.5	0.077 j	0.077 j	0.052 j	**10.4**	9.3	0.15	146	11.3	8.6	NA	<0.1	0.08 j,S1	3.8 j,B	NA
AB-08S	AB - Primary Cell	Ash Basin	Within Ash Basin	10/08/2018	**5.6**	221	88.5	195	<0.5	0.072 j	0.058 j	<0.08	6.7	6.9	0.066 j	51.6	8.4	2.5	NA	<0.1	**0.42 BC**	5.6 j	NA
AB-08S	AB - Primary Cell	Ash Basin	Within Ash Basin	02/07/2019	**5.4**	218	76	170	<1	<1	<1	NA	4.8	5.39	<1	74	18	8.07	NA	<0.2	0.279 j	NA	NA
BG-01DA	SE of AB - Primary Cell	Ash Basin	Sidegradient	01/08/2018	8.5	<50	4	134	**1.1**	0.54	<0.1	<0.08	0.026	1.8	0.2	**311**	37	1.5	NA	<0.1	**8.6**	13	NA
BG-01DA	SE of AB - Primary Cell	Ash Basin	Sidegradient	02/26/2018	7.9	<50	5.8	120	<1	<1	<1	<1	NA	<5	<1	23	**146**	<5	0.06	<0.2	**10.5**	<5	NA
BG-01DA	SE of AB - Primary Cell	Ash Basin	Sidegradient	04/09/2018	7.9	<50	4.6	124	0.45 j	0.53	<0.1	<0.08	0.062	0.72	0.086 j	41.2 j	**88.8**	1.2	NA	<0.1	**7.5**	3 j,B	NA
BG-01DA	SE of AB - Primary Cell	Ash Basin	Sidegradient	07/11/2018	7.7	<50	6	144	0.52	0.84	<0.1	<0.08	0.057	0.6	0.068 j	95.6	**63.3**	1.8	NA	<0.1	**4.1**	3.4 j,B	NA
BG-01DA CAMA	SE of AB - Primary Cell	Ash Basin	Sidegradient	10/08/2018	7.1	<50	5.1 M1,R1	<25	0.86	0.66	<0.1	<0.08	0.085	1.3	0.18	52.8	**83.1**	2.2	NA	<0.1	**2.9 BC**	4.4 j,B	NA
BG-01DA	SE of AB - Primary Cell	Ash Basin	Sidegradient	10/08/2018	7.1	<50	5.4	96	<1	<1	<1	<1	NA	<5	<1	41	**96**	<5	<0.023	<0.2	**3.06**	<5	NA
BG-01DA	SE of AB - Primary Cell	Ash Basin	Sidegradient	02/21/2019	7.4	<50	3.6	110	<1	0.365 j	<1	NA	0.093 S1	<1	<1	12	**61**	0.731 j	NA	<0.2	**9.75**	NA	NA
BG-01S	SE of AB - Primary Cell	Background	Background	01/08/2018	**5.5**	<50	<1	<25	<0.5	0.08 j	<0.1	<0.08	0.051	0.34 j	0.12	**318**	23	0.7	NA	<0.1	0.25 j	8.6 j	NA
BG-01S	SE of AB - Primary Cell	Background	Background	02/26/2018	**5.3**	<50	<0.5	44	<1	<1	<1	<1	NA	<5	<1	56	18	<5	0.14	<0.2	<0.3	8	NA
BG-01S	SE of AB - Primary Cell	Background	Background	04/09/2018	**5.5**	<50	<1	27	<0.5	<0.1	0.029 j	<0.08	0.091	<0.5	0.065 j	29.6 j	13.7	0.53	NA	<0.1	<0.3	5.6 j,B	NA
BG-01S	SE of AB - Primary Cell	Background	Background	06/13/2018	**5.4**	<50	0.29	<25	<1	<1	<1	<1	NA	<5	<1	159	28	<5	0.13	<0.2	<0.3	6	NA
BG-01S	SE of AB - Primary Cell	Background	Background	07/09/2018	**5.3**	<50	<1	26	<0.5	<0.1	<0.1	<0.08	0.026	<0.5	0.11	186	22.6	0.56	NA	<0.1	0.16 j,S1	5 j,B	NA
BG-01S CAMA	SE of AB - Primary Cell	Background	Background	10/08/2018	**5.1**	<50	<1	142	<0.5	0.048 j	0.025 j	<0.08	<0.025	0.2 j	0.098 j	50.7	16.2	0.46 j	NA	<0.1	**0.35 BC**	8.1 j,B	NA
BG-01S	SE of AB - Primary Cell	Background	Background	10/08/2018	**5.1**	<50	0.29	<25	<1	<1	<1	<1	NA	<5	<1	189	22	<5	0.12	<0.2	<0.3	6	NA
BG-01S CAMA	SE of AB - Primary Cell	Background	Background	02/21/2019	**5.5**	<50	0.14	31	<1	<1	<1	NA	0.046 S1	<1	<1	19	14	0.335 j	NA	<0.2	0.155 j	NA	NA
BG-01S	SE of AB - Primary Cell	Background	Background	02/21/2019	**5.5**	<50	0.55	<25	<1	<1	<1	<1	NA	<5	<1	28	13	<5	0.13	<0.2	<0.3	6	NA
BG-02BR	E of AB - Primary Cell	Sidegradient	Sidegradient	01/11/2018	**10.1**	<50	25.3	230	<0.5	0.91	<0.1	<0.08	2.2	3.8	0.56	106	42.4	0.66	NA	<0.1	**3**	<10	NA
BG-02BR	E of AB - Primary Cell	Sidegradient	Sidegradient	02/20/2018	**9.8**	<50	25	220	<1	<1	<1	<1	NA	<5	<1	55	18	<5	0.4	<0.2	**2.39**	<5	NA
BG-02BR	E of AB - Primary Cell	Sidegradient	Sidegradient	04/12/2018	**10.0**	<50	23	<250	<0.5	0.82	<0.1	<0.08	4.3	3.9	0.54	65.5	17.9	0.68	NA	<0.1	**2.3**	<10	NA
BG-02BR	E of AB - Primary Cell	Sidegradient	Sidegradient	06/14/2018	**9.8**	<50	20	190	<1	<1	<1	<1	NA	9	<1	67	16	<5	0.48	<0.2	**2.78**	<5	NA
BG-02BR	E of AB - Primary Cell	Sidegradient	Sidegradient	07/11/2018	8.1	28.8 j	52	263	0.19 j	1.4	<0.1	<0.08	0.15	0.42 j	0.21	66.5	**64.6**	0.77	NA	<0.1	**0.9**	2.6 j,B	NA
BG-02BR CAMA	E of AB - Primary Cell	Sidegradient	Sidegradient	10/10/2018	**9.0**	<50	20.9	172	0.28 j	0.62	<0.1	<0.08	1.1	1.7	0.25	65.7	**58.8**	<0.5	NA	<0.1	**2.6**	2.6 j	NA
BG-02BR	E of AB - Primary Cell	Sidegradient	Sidegradient	10/10/2018	**9.0**	<50	21	150	<1	<1	<1	<1	NA	<5	<1	62	**62**	<5	0.55	<0.2	**2.76**	<5	NA
BG-02BR	E of AB - Primary Cell	Sidegradient	Sidegradient	02/25/2019	7.9	52	97	340	<1	1.93	<1	<1	NA	<5	<1	145	**125**	<5	<0.023	<0.2	**0.508**	<5	NA
BG-02D	E of AB - Primary Cell	Sidegradient	Sidegradient	01/08/2018	**10.0**	<50	9.6	149	0.99	1	<0.1	<0.08	1.1 M6	1.3	0.056 j	<50	<5	0.24 j	NA	<0.1	**9.3**	69.9	NA
BG-02D	E of AB - Primary Cell	Sidegradient	Sidegradient	02/20/2018	**9.7**	<50	8.9	140	<1	<1	<1	<1	NA	<5	<1	<10	<5	<5	2.4	<0.2	**7.94**	<5	NA
BG-02D	E of AB - Primary Cell	Sidegradient	Sidegradient	04/09/2018	**9.9**	<50	8.3	147	0.67	0.76	<0.1	<0.08	0.9	0.96	0.054 j	<50	<5	<0.5	NA	<0.1	**8.1**	<10	NA
BG-02D	E of AB - Primary Cell	Sidegradient	Sidegradient	06/13/2018	**9.4**	<50	9.7	140	<1	<1	<1	<1	NA	<5	<1	<10	<5	<5	2.4	<0.2	**7.81**	<5	NA
BG-02D	E of AB - Primary Cell	Sidegradient	Sidegradient	07/09/2018	**10.0**	<50	9.4	156	0.73	0.86	<0.1	<0.08	1.4	1.2	0.074 j	<50	<5	0.19 j	NA	<0.1	**9**	7 j,B	NA
BG-02D	E of AB - Primary Cell	Sidegradient	Sidegradient	10/09/2018	**9.5**	<50	10	140	<1	<1	<1	<1	NA	<5	<1	30	<5	<5	2.3	<0.2	**8.48**	<5	NA
BG-02D	E of AB - Primary Cell	Sidegradient	Sidegradient	10/10/2018	**9.0**	<50	4.9	136	0.38 j	0.48	<0.1	<0.08	0.71	0.79 B	0.047 j	<50	<5	<0.5	NA	<0.1	**5.7**	2.8 j	NA
BG-02D	E of AB - Primary Cell	Sidegradient	Sidegradient	02/21/2019	**9.6**	<50	5.4	120	<1	<1	<1	<1	NA	<5	<1	<10	<5	<5	2.2	<0.2	**5.73**	<5	NA
BG-02S	E of AB - Primary Cell	Sidegradient	Sidegradient	01/08/2018	**5.5**	<50	<1	124	<0.5	<0.1	0.1	0.063 j	0.22	0.45 j	0.034 j	108	42.5	0.56	NA	0.028 j	0.17 j	9 j	NA
BG-02S	E of AB - Primary Cell	Sidegradient	Sidegradient	02/20/2018	**5.4**	<50	0.43	160	<1	<1	<1	<1	NA	<5	<1	34	38	<5	**13**	<0.2	<0.3	7	NA
BG-02S	E of AB - Primary Cell	Sidegradient	Sidegradient	04/09/2018	**5.7**	<50	<1	165	<0.5	0.09 j	0.09 j	0.043 j	0.5	0.8	0.035 j	<50	37.8	0.76	NA	<0.1	0.18 j	7 j	NA
BG-02S	E of AB - Primary Cell	Sidegradient	Sidegradient	06/13/2018	**5.5**	<50	0.4	130	<1	<1	<1	<1	NA	<5	<1	34	38	<5	**14**	<0.2	<0.3	6	NA
BG-02S	E of AB - Primary Cell	Sidegradient	Sidegradient	07/09/2018	**5.4**	<50	<1	147	<0.5	0.1	0.13	<0.08	0.29	0.33 j	<0.1	<50	18.7	0.39 j	NA	0.034 j	0.24 j,S1	5.8 j,B	NA
BG-02S CAMA	E of AB - Primary Cell	Sidegradient	Sidegradient	10/09/2018	**5.4**	<50	<1	125	<0.5	<0.1	0.11	0.05 j	0.4	0.61	0.032 j	25.5 j	25.4	0.56	NA	0.034 j	<0.3	8 j	NA
BG-02S	E of AB - Primary Cell	Sidegradient	Sidegradient	10/09/2018	**5.4**	<50	3.8	110	<1	<1	<1	<1	NA	<5	<1	42	43	<5	**12**	<0.2	<0.3	10 B	NA
BG-02S	E of AB - Primary Cell	Sidegradient	Sidegradient	02/21/2019	**5.7**	<50	0.62	160	<1	<1	<1	<1	NA	<5	<1	<10	29	<5	**16**	<0.2	<0.3	6	NA
BG-03D	E of AB - Secondary Cell	Sidegradient	Sidegradient	01/08/2018	6.8	<50	0.9 j,M1	93	<0.5	0.078 j	<0.1	<0.08	0.087	0.14 j	0.58	81.3	16	0.14 j	NA	<0.1	**2.7**	2.6 j	NA
BG-03D	E of AB - Secondary Cell	Sidegradient	Sidegradient	02/20/2018	6.6	<50	1	120	<1	<1	<1	<1	NA	<5	**1.09**	52	11	<5	1.8	<0.2	**2.79**	<5	NA
BG-03D	E of AB - Secondary Cell	Sidegradient	Sidegradient	04/09/2018	6.8	<50	0.8 j	88	<0.5	0.081 j	<0.1	<0.08	0.062 M1	<0.5	0.28	<50	3.3 j	<0.5	NA	<0.1	**2.3**	<10	NA
BG-03D	E of AB - Secondary Cell	Sidegradient	Sidegradient	06/14/2018	6.6	<50	1	79	<1	<1	<1	<1	NA	<5	<1	21	9	<5	1.8	<0.2	**2.64**	<5	NA
BG-03D	E of AB - Secondary Cell	Sidegradient	Sidegradient	07/09/2018	6.7	<50	0.79 j	99	<0.5	<0.1	<0.1	<0.08	0.046	0.22 j	0.14	<50	2.7 j	0.11 j	NA	<0.1	**2.6**	<10	NA
BG-03D CAMA	E of AB - Secondary Cell	Sidegradient	Sidegradient	10/09/2018	6.6	<50	0.84 j	94	<0.5	<0.1	<0.1	<0.08	0.13	0.33 j	0.34	<50	2.8 j	<0.5	NA	<0.1	**2.4**	2.9 j	NA

Hart Exhibit 55
Docket No. E-7, Sub 1214

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ENVIRONMENTAL AUDIT IN SUPPORT OF THE COURT APPOINTED MONITOR

W. S. Lee Steam Station
Belton, South Carolina
USA

March 2019

Final Report Issued To:

Duke Energy and the Court Appointed Monitor

Prepared By:

Advanced GeoServices Corp.
and
The Elm Consulting Group International LLC

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Table 1a Primary Ash Basin - Plans and Reports Posted by Duke Energy Under the CCR Rule
Table 1b Secondary Ash Basin - Plans and Reports Posted by Duke Energy Under the CCR Rule

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Attachment B CCR Groundwater Sampling Locations and Groundwater Data

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1.0 INTRODUCTION

Advanced GeoServices Corp. (AGC) and The Elm Consulting Group International LLC (Elm) (collectively, the Audit Team) are conducting environmental compliance audits (the Audits) of certain coal combustion residuals (CCR) management locations owned or operated by Duke Energy Business Services LLC, Duke Energy Carolinas, LLC, and Duke Energy Progress, Inc. (collectively, Duke Energy). The Audits are being conducted under the direction of Mr. Benjamin Wilson, the Court Appointed Monitor (CAM), pursuant to an order issued by the U.S. District Court, Eastern District of North Carolina, in case numbers 5:15-CR-62-H, 5:15-CR-67-H, and 5:15-CR-68-H.

The scope of the Audits is set forth in the plea agreements entered into by Duke Energy and the United States in the above-referenced cases, the court's judgments in these cases, and a written audit scoping document agreed to by Duke Energy and the United States.

1.1 BACKGROUND INFORMATION FOR THE W. S. LEE AUDIT

The subject of this report is the Audit completed at Duke Energy's W.S. Lee Steam Station located in Belton, South Carolina (W.S. Lee facility). The on-site portion of the Audit was conducted on January 14-15, 2019 for a total of two days on-site. The Audit Team consisted of the following senior auditors:

- Mr. Christopher Reitman, AGC — Project Director, Audit Team Leader, Sr. Subject Matter Expert (on-site)
- Mr. Joseph Cotier, CPEA, Elm — Sr. Environmental Auditor (on-site)
- Mr. Bernie Beegle, AGC — Sr. Subject Matter Expert (off-site)

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The W.S Lee facility was represented by:

- Mr. Matt McMasters, Station General Manager
- Ms. Jessica Snyder, CCP System Owner and CCP Engineering & Closure Engineering
- Mr. Tim Hill, General Manager, Carolinas West Region, CCP Operations and Maintenance
- Mr. Jackson Rollins, CCP Projects
- Mr. Robert Wylie, EHS CCP Permitting and Compliance
- Ms. Anne Pifer, Manager, EHS CCP Permitting and Compliance
- Ms. Courtney Murphy, EHS CCP Waste & Groundwater
- Ms. Tyler Hardin, EHS CCP Waste & Groundwater
- Ms. Tammy Jett, EHS CCP Waste & Groundwater (by phone)
- Ms. Diana Kooser, Regulatory Affairs
- Mr. Andrew Stroud, Environmental Rover, EHS CCP Compliance
- Mr. Michael Phillips, Manager, EHS CCP Compliance
- Mr. Kevin Poore, EHS CCP Environmental Field Support
- Ms. Gina Pruitt, Station Environmental Field Support
- Mr. John Brown, EHS CCP Health & Safety Field Support
- Mr. Adam Jackson, Station Health & Safety Field Support
- Mr. Keith Higgins, EHS CCP Compliance
- Mr. Gary Bohenberger, Evoqua Site Operator

1.2 FACILITY OVERVIEW

The Duke Energy W.S. Lee facility is located at 205 Lee Steam Plant Road, Belton, South Carolina. The W.S. Lee facility is located along the west side of the Saluda River and according to Duke Energy personnel first began power generation in 1951. Three coal-fired power plants

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(Units 1, 2, and 3) were operated during the W.S. Lee facility's history. Units 1 and 2 were retired in 2014 and Unit 3 was converted to natural gas in 2015. According to Duke Energy personnel, coal combustion has not occurred at the W.S. Lee facility since the conversion of Unit 3 to natural gas. Since there is no coal combustion on-site, there was no active ash generation observed by the Audit Team.

Three Natural Gas/Fuel Combustion Turbines, identified as Units 4, 5, and 6 also operated onsite from 1967 till 2007. These units were recently removed. Units 7 and 8 can operate on natural gas or oil and began operation in 2007. A 750 MW combined-cycle natural gas unit commenced operation in April 2018.

1.2.1 Ash Management Activities

The Operations and Maintenance Manual for the W.S. Lee facility indicates ash generated by coal combustion was placed in the following five discrete on-site areas:

- **Inactive Ash Basin** – This basin was reported by Duke Energy personnel to be 19 acres and was used from 1951 to 1974. Most of the CCR in the Inactive Ash Basin was excavated and trucked to the Waste Management R&B Lined Landfill in Homer, Georgia from May 2015 to October 2017. A small area of CCR still exists within the berm of this basin and just outside the basin, adjacent to the Saluda River which will be addressed as part of the final closure and grading activities.

- **Ash Fill Area/Borrow Area** – CCR was historically placed in the former Borrow Area, which was previously a source of soils used for constructing ash basin dikes. Duke Energy's Ash Removal Plan (Revision 01) indicates this area to be 16 acres. During 2017, the CCR material in this area was excavated and trucked to the Waste Management R&B Landfill in Homer, Georgia. At the time of the Audit, the excavated area was temporarily stabilized with hydroseed.

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- **Primary Ash Basin** – No ash is currently being received by this basin. Accumulated water flows from the Primary Ash Basin to the Secondary Ash Basin via a discharge structure and pipe and an emergency spillway. The 2016 Annual CCR Impoundment Initial Inspection Report indicates the pond area of the Primary Ash Basin is approximately 48 acres.

- **Secondary Ash Basin** – No ash is currently being received by this basin. Accumulated water discharges to the Saluda River via NPDES Outfall 004. The 2016 Annual CCR Impoundment Initial Inspection Report indicates the pond area of the Secondary Ash Basin is approximately 37 acres.

- **Interim (Structural) Fill Area** – This area is also referred to as the Dry Stacking Area. The Operations Manual indicates it is 12 acres and is covered with soil.

CCR Unit Closure plans call for construction of a permitted South Carolina Department of Health and Environmental Control (DHEC) Class 3 landfill in the approximate footprint of the Secondary Ash Basin and relocating ash from the Primary and Secondary Ash Basins and Interim Fill Area to the landfill. Construction of a new landfill is still in the planning stages with a 60% permit level design underway. The target landfill application submittal date to DHEC is 2020. The current estimated capacity of the landfill is 3,600,000 cubic yards.

1.2.2 Environmental Permits and Programs

The W.S. Lee facility operates under the following environmental permits and programs:

- **National Pollutant Discharge Elimination System (NPDES) Wastewater Permitting –** DHEC issued NPDES Permit No. SC0002291 on January 19, 2016 with an effective date of April 1, 2016 and an expiration date of March 31, 2021.

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The permit was modified on March 15, 2017 with an effective modification date of May 1, 2017. Discharges from the W.S. Lee facility flow to the Saluda River.

As it relates to ash and ash management activities, the permit covers the following:

- Outfall 004 – The Secondary Ash Basin discharges to the Saluda River via outfall 004; this outfall receives water from the ash basins, yard drain sump, combustion turbines 7 and 8, and storm water runoff. At the time of the Audit, outfall 004 only received water from the decanting operation.
- Outfalls 005, 006, and 007 – These outfalls include "engineered" seeps from the ash basins which commingle with industrial storm water in toe drains. A modification request to include seeps in the NPDES Permit was submitted to DHEC on July 25, 2014. At that time, Outfalls 005, 006 and 007 were referred to as SW005, SW006, and SW007. These seeps are covered in the current NPDES permit referenced above.
- Industrial stormwater discharges from Outfalls 001, 003, 004, 005, 006, 007, 008 and 009 are covered under Part V.E.21 and require the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The W.S. Lee facility's SWPPP is dated December 2018.

The NPDES Permit requires Duke Energy to notify DHEC in advance of commencing decanting or dewatering activities for the Secondary Ash Basin. An initial decant notification was submitted on July 25, 2018 for decant operations beginning in August 2018. This notification was revised on August 22, 2018 for decant operations beginning September 2018, and decant operations began September 18, 2018. A dewatering notification was submitted on December 20, 2018 in anticipation of beginning dewatering operations in late January 2019. At the time of the Audit, water from the Secondary Ash Basin was being decanted.

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Seeps A thru I were identified by Duke Energy subsequent to the effective date of the NPDES Permit and are specifically covered by the permit pursuant to Part IV.A.7, which allows for investigation, sampling/analysis, and reporting of results to DHEC. The required seep assessment report, due to DHEC by July 1, 2018, was submitted by Duke Energy on June 30, 2018.

The NPDES permit also requires groundwater monitoring for 15 compliance wells. Field parameters, specific metals, and Radium 226 and 228 are analyzed from groundwater collected from each well semi-annually, and the sample results are reported to DHEC. In the NPDES and CCR groundwater data, combined radium 226/228 has been observed sparsely and periodically slightly over the maximum contaminant levels (MCL) of 5 picocuries per Liter (pCi/L), as set forth in Regulation 61-58.5, the State Primary Drinking Water Regulations. The Audit Team also noted that combined radium 226/228 was observed above the groundwater standard of 5 pCi/L in NPDES and CCR background wells located hydraulically upgradient of the ash. Published literature indicates that there is a statewide issue with radium 226/228 in groundwater above the South Carolina Class GB combined groundwater standard of 5 pCi/L.[1]

The pattern of radium 226/228 observed in the groundwater at the W.S. Lee facility was inconsistent. It was not clear to the Audit Team that the data indicated a source of radium 226/228 (such as the CCR basins) or that the data showed a downgradient plume. The Audit Team also noted that the radium 226/228 in groundwater is generally marginally over the South Carolina Class GB combined groundwater standard of 5 pCi/L, which is often within the range of uncertainty identified by the laboratory. Additional investigations would likely be needed to differentiate the

[1] Uranium, Radium and Radon in Well Water in South Carolina: Distribution and Problems. Peter A. Stone, Robert J. Devlin, Bruce Crawford, Hydrologist/Geologist and David G. Baize, Director, Bureau of Water, South Carolina Department of Health and Environmental Control, P*roceedings of the 2005 Georgia Water Resources Conference,* held April 25-27, 2005, at The University of Georgia. Kathryn J. Hatcher, editor, Institute of Ecology, The University of Georgia, Athens, Georgia.

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naturally occurring radium in groundwater from any potential impacts from the Primary and Secondary Ash Basins. However, based on the limited review of the available data described above, the Audit Team did not consider radium concentrations in the W.S. Lee facility groundwater to be attributed to the CCR Basins.

On August 24, 2016, Duke Energy submitted a modification request to DHEC for future Outfalls 008 and 009 to be covered under NPDES Permit No. SC0002291. Discharge to the Saluda River via future Outfall 008 would first pass through two Ash Management Project (AMP) Sedimentation Ponds which became operational during 2018. The following waste streams would be directed to the ponds under the proposed permit:

- Fan floor cooling water,
- Yard drainage and water treatment water,
- Boiler blowdown,
- Floor drains and miscellaneous equipment and cooling systems,
- Combustion turbine yard via an oil/water separator, and
- Inactive ash basin and ash fill area water.

Outfall 009 is an emergency overflow pipe from the yard drainage system which flows to the Saluda River.

Duke Energy has constructed a wastewater treatment system (WWTS) at the W.S. Lee facility that receives water from the Secondary Ash Basin during decanting and dewatering activities. The WWTS routes treated waters back to current Outfall 004. Final Approval to place the WWTS into operation was issued by DHEC on September 10, 2018, coinciding with Duke Energy's commencement of decanting

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activities at the Secondary Ash Basin. The WWTS is operated by Evoqua Water Technologies, LLC, a contractor to Duke Energy.

- **NPDES Stormwater Construction Permitting** – DHEC issues coverage for stormwater discharges associated with construction activity under the State Stormwater General Permit for Construction Activities, No. SCR100000. The local authority for activities at the W.S. Lee facility is the Anderson County Stormwater Department. In Anderson County, both a County-issued permit and a DHEC-issued permit are required prior to commencement of construction. Under the County permit, land disturbance is prohibited until DHEC issues its permit. The W.S. Lee facility has two active stormwater construction permits associated with ash management. The active project includes:

  - County-issued Permit No. STW0416-10 for CCR Landfill Pre-Construction Activities was issued by Anderson County on July 27, 2016 with DHEC coverage issued under Permit No. SCR10A033 on July 22, 2016. Coverage was for areas of improvement around the Interim Ash Fill (IAF) and a stormwater ditch that runs from the IAF towards the Secondary Ash Basin.
  - County-issued Permit No. 2018026 was issued by Anderson County on November 20, 2018 with DHEC coverage issued under Permit No. SCR10Z2AT on November 9, 2018. Coverage was for construction of the West Sediment Basin (adjacent to the Secondary Basin) and an area that will accommodate a pipeline from the Basin to the Saluda River, in the vicinity of Outfall 004.

- **Title V Permitting** – DHEC issued Title V permit No. TV-0200-0004 on October 2, 2015 with an effective date of January 1, 2016. The Title V permit was revised on October 26, 2018 (relating to operation of the combined cycle units) and has an

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expiration date of December 31, 2020. Ash basin management is addressed under the requirement to control emissions of fugitive dust in Section M.4.

- **Spill Prevention, Control and Countermeasure (SPCC) Plan** – The W.S. Lee facility's SPCC Plan, dated April 2018, has been implemented by Duke Energy and covers oil storage activities across the entire W.S. Lee facility. Based on activities observed by the Audit Team, it appeared that the SPCC regulations were not specifically applicable to ash basin management activities at the W.S. Lee facility.

- **Tier II Reporting** – Hazardous chemicals inventory reporting on Tier II for 2017 was completed and submitted on February 9, 2018.

- **CCR Rule** – The Primary and Secondary Ash Basins are subject to the CCR Rule since there is active power generation at the facility. A network of 28 monitoring wells has been established and electronic deliverables of the nine (9) sampling events were provided to the Audit Team. Duke Energy has also developed numerous submittals required by the CCR Rule for the Primary and Secondary Ash Basins as shown in Table 1a and 1b.

  On February 6, 2018, Duke Energy posted on its public website the CCR Annual Groundwater Monitoring and Corrective Action Reports, dated January 10, 2018, for the Primary Ash Basin and the Secondary Ash Basin.

  On April 3, 2018, Duke Energy provided notice on Duke Energy's public website that the Primary Ash Basin and the Secondary Ash Basin are now in the CCR assessment monitoring program due to statistically significant increases over the background values of the Appendix III parameters. On December 14, 2018, Duke Energy provided notice on Duke Energy's public website that the following CCR

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Rule Appendix IV constituents were detected at levels above the applicable Groundwater Protection Standard (GWPS):

- Antimony,
- Beryllium,
- Cobalt, and
- Lithium.

Duke Energy was continuing to implement the groundwater assessment process prescribed by the CCR Rule at the time of the Audit.

On November 7, 2018, Duke Energy provided notice on Duke Energy's public website that the Primary Ash Basin and the Secondary Ash Basin did not meet specific location restrictions under the CCR Rule. The Primary Ash Basin did not meet the restrictions for placement above the uppermost aquifer. The Secondary Ash Basin did not meet the restrictions for placement above the uppermost aquifer and wetlands.

On January 3, 2018, Duke Energy provided notice on their website that they had a Level 3 activation event of their Environmental Action Plan. A Level 3 event is an abnormal, slowly developing event. Duke Energy described the event as a "29-foot crack and slough on slope of Primary Ash Basin." The Audit Team observed the area of concern, which was located on the northern side (the outside) of the Primary Ash Basin Dam and characterized the slough as a shallow (less than 2-3' deep) soil slope failure. Duke monitored and reviewed the conditions and determined the slough was stable on December 11, 2018 and terminated the EAP activation. Duke Energy continues to monitor the slope conditions and is preparing plans to permanently address the area of concern.

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1.2.3 Dam and Other Structural Permits and Approvals

Two active dams exist at the W.S. Lee facility: the Primary Ash Basin (State ID No. D4887) and the Secondary Ash Basin (State ID No. D4888). Both dams were inspected on June 5, 2017 by a representative of the DHEC Dams and Reservoir Safety Program as part of DHEC's bi-annual inspection program. The Primary Dam was reported to be in satisfactory condition which means "No existing or potential dam safety deficiencies are recognized." A report was provided from DHEC to Duke Energy for the Secondary Ash Basin on January 22, 2018.

The 2018 Annual CCR Impoundment Initial Inspection Report (Inspection Report) prepared by Duke Energy Coal Combustion Products (CCP) Engineering was completed on August 15, 2018, based on their inspection conducted on May 1, 2018. The report indicates that the Primary Ash Basin dam length is 1,700 feet, the maximum dam height is 56 feet with a pond area of approximately 48 acres. According to the Inspection Report, the Primary Ash Basin has approximately 939.42 acre-feet of water and 1,121.90 acre-feet (about 1,810,000 cubic yards) of CCR materials.

The Inspection Report indicates that the Secondary Ash Basin dam length is 1,200 feet and the maximum dam height is 58 feet, with a pond area of 37 acres. According to the Inspection Report, the Secondary Ash Basin has approximately 1131.5 acre-feet of water and 14.88 acre-feet (about 24,000 cubic yards) of CCR materials. The inspection report notes the following regarding the Primary and Secondary Basins: "[N]o conditions were observed during the field inspection nor identified by existing engineering analysis that represent an unsafe structural stability concern requiring immediate action."

1.2.4 Audit Update and 2019 Observations

During 2017, the remaining 394,146 tons of CCR materials in the Inactive Ash Basin (total excavated volume was 1,178,338 tons) and the entire 378,989 tons of CCR materials in the Ash Fill Area were removed and transported to a lined landfill in Homer, Georgia. A small volume of ash remains in the

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Inactive Ash Basin berm and between the Saluda River and the Inactive Ash Basin. These materials will be addressed as part of the final closure activities. No significant changes were made to the Inactive Ash Basin since the last Audit.

The Ash Removal report summarizing the excavation activities was submitted by Duke Energy to DHEC on December 14, 2017 and approved on January 26, 2018. Removal confirmation in the basins was based on visual confirmation that CCR and co-mingled CCR/soil material were removed by Duke Energy. Visual confirmation sampling was completed to a depth of 2' on a 100' x 100' grid in both excavated areas. In accordance with the Consent Agreement with DHEC for this work, an Assessment Plan was submitted in early January 2018; the Plan described Duke Energy's proposed approach to evaluate CCR influences of the ash and soil on groundwater. Duke completed the required assessment activities and was expecting to submit a summary of results during late winter or early spring of 2019 and to submit a final closure plan for the Inactive Ash Basin and the Ash Fill Area by April 1, 2019. Duke Energy was planning closure construction to start in 2019 or 2020, pending receipt of the required approvals from DHEC.

In addition to the above activities, the new lined AMP Sedimentation Ponds were constructed and were put into operation in October 2018. These basins will eliminate the need to use the existing Primary and Secondary Ash Basins for treatment of non-CCR plant water and stormwater. Tree clearing activities and construction of a water treatment pad and installation of the treatment system for water removed from the Secondary Ash Basin also took place during 2018.

A phased dewatering and excavation approach was being used in the Secondary Ash Basin. Decanting activities began on September 18, 2018 and were ongoing. An emergency spillway was also built between the Primary and Secondary Ash Basins. Future phases of planned activities include removal of the rip-rap within the Secondary Ash Basin, removal of the riser structure, excavation of the ash, and lowering of the Secondary Ash Basin Dam. Excavation and grading activities associated with the West Sediment Basin, which is adjacent to the Secondary Ash Basin, began in December 2018 and were ongoing during the Audit. The West Sediment Basin will be used to help divert run-on away from the Secondary Ash Basin.

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Final closure planning calls for construction of a 34-acre DHEC Class 3 landfill within the footprint of the Secondary Ash Basin. Following dewatering, a final determination of the groundwater conditions in the area of the Landfill will be made, and Duke Energy has targeted submission of the landfill application in 2020. Construction of the landfill and placement of materials from the Interim Fill Area and both ash basins are anticipated to occur between 2021 and 2024.

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2.0 AUDIT SCOPE AND SUBJECT MATTER

The Audit was completed in accordance with the court documents and the Audit scoping document agreed to by Duke Energy and the United States. A description of the scope is provided as Attachment A. The Audit included ash management activities, including aspects of generation that affect the nature of the waste streams from the point of generation into surface impoundments or ash management basins, landfills, and/or storage piles. The Audit focused on the activities at the W. S. Lee facility since the date of the last Audit, which was January 15-16, 2018.

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3.0 AUDIT FINDINGS

The Audit Finding for the W.S. Lee facility is described below.

3.1 EXCEEDANCE OF STATE GROUNDWATER STANDARDS

Requirement – The groundwater beneath the W.S. Lee facility is designated as Class GB (underground source of drinking water) under South Carolina's Water Classification Standards, Regulation 61-68. Regulation 61-68 further provides that "all ground waters of the State shall be protected to a quality consistent with the use associated with the classes described herein. Further, the Department may require the owner or operator of a contaminated site to restore the ground water quality to a level that maintains and supports the existing and classified uses…." The applicable water quality standards for Class GB Ground Waters are the maximum contaminant levels (MCLs) as set forth in Regulation 61-58.5, the State Primary Drinking Water Regulations. The MCL for beryllium is 4 micrograms/liter (µg/L).

Finding – A review of the W. S. Lee facility's validated CCR groundwater data from May 2018 identified beryllium at a concentration of 4.36 µg/L in well CCR-105S, which exceeds the MCL of 4.0 µg/L. The location of the CCR monitoring well referenced above is provided on a figure in Attachment B along with the CCR groundwater data tables. Duke Energy is continuing to monitor the groundwater and working with the state to complete the closure of the Ash Basins at the Facility.

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4.0 OPEN LINES OF INQUIRY

Open Lines of Inquiry are items identified by the Audit Team while on-site that, due to limited available information or the need for additional research, could not be determined as being in compliance or out of compliance.

4.1 EXCEEDANCE OF STATE GROUNDWATER STANDARDS

Requirement – The groundwater beneath the W.S. Lee facility is designated as Class GB (underground source of drinking water) under South Carolina's Water Classification Standards, Regulation 61-68. Regulation 61-68 further provides that "all ground waters of the State shall be protected to a quality consistent with the use associated with the classes described herein. Further, the Department may require the owner or operator of a contaminated site to restore the ground water quality to a level that maintains and supports the existing and classified uses…." The applicable water quality standards for Class GB Ground Waters are the maximum contaminant levels (MCLs) as set forth in Regulation 61-58.5, the State Primary Drinking Water Regulations.

Open Line of Inquiry – A review of the W. S. Lee facility's validated CCR groundwater data from May 2018 identified antimony at a concentration of 11.9 µg/L in well MW-29M which exceeds the MCL of 6.0 µg/L. Well MW-29M is characterized as a deep well, and antimony concentrations in the nine surficial monitoring wells were all less than 1 µg/L. The source of the antimony was not clear to the Audit Team from the limited available data, and the data did not show a downgradient plume. During the Audit, Duke Energy personnel stated they plan to conduct additional investigations to evaluate potential antimony impacts from the Primary and Secondary Ash Basins. The location of Well MW-29M is provided on a figure in Attachment B along with the CCR groundwater data tables. Considering the seemingly anomalous nature of the antimony in just the one isolated area of the site, at levels marginally above the regulatory levels, the Audit Team classified this issue as an Open Line of Inquiry.

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5.0 AUDIT APPROACH

5.1 ON-SITE ACTIVITIES

During its time on-site, the Audit Team conducted an opening conference with facility personnel to discuss the scope of work and the plan for accomplishing necessary tasks while at the W.S. Lee facility. A site tour of the coal ash management and program support areas was subsequently completed. Following the tour, the Audit Team conducted a review of pertinent files, interviews with facility representatives, and verification of facility activities related to the Environmental Compliance Plans (ECPs), written programs, and permits. A debrief was conducted each Audit day to advise the facility representatives of Audit progress, Open Lines of Inquiry, possible Audit Findings, and needs for the next day. At the completion of the Audit, the Audit Team led a verbal discussion of draft Audit findings with facility representatives.

5.2 STANDARDS OF PRACTICE

The fieldwork portion of the Audit was conducted on January 14-15, 2019, with compliance reporting commencing May 14, 2015, the date of the court's judgments. The Audit focused on the activities at the W. S. Lee facility since the date of the last Audit, which was January 15-16, 2018. The Audit was based on:

- Physical inspections of the facility;
- Examination of selected administrative and operating records made available by facility staff at the Audit Team's request;
- Interviews and discussions with key facility management and staff; and

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- Verification procedures designed to assess the facility's application of, and adherence to, terms of the probation, environmental laws and regulations, and site policies and procedures. In addition, the Audit Team reviewed the facility's adherence to good management practices.

The Audit followed established audit protocols and procedures. It should be understood that the Audit consisted of evaluating a sample of practices and was conducted over a short period of time. Efforts were made toward sampling major facets of environmental performance during the period under review. This method is intended to uncover major system deficiencies and the Audit may not have identified all potential problems.

To support the overall independence of the Audit process, the Audit included an auditing professional certified by the Board of Environmental, Health and Safety Auditor Certifications (BEAC). BEAC is an accredited professional certification board that issues the Certified Professional Environmental Auditor (CPEA) designation to qualified auditors. Under BEAC, auditor independence is a key criterion for the implementation of an effective third-party audit program. The Audit was implemented in accordance with the standards related to auditor independence.

The process by which the Audit was conducted was consistent with the general state of the art of environment auditing and the best professional judgment of the Audit Team. To conduct the Audit, the team implemented a formal approach, drawing on process guidance from both BEAC and the Auditing Roundtable (AR) guidance documents. Guidance documents included:

- *Standards for the Professional Practice of Environmental, Health and Safety Auditing*. Prepared by the Board of Environmental, Health and Safety Auditor Certifications, 2008.

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- ISO 19011:2002 – Guidelines for Quality and/or Environmental Management Systems Auditing. Prepared by the International Organization for Standardization, 2002.

- Standard for the Design and Implementation of an Environmental, Health and Safety Audit Program. Prepared by The Auditing Roundtable, Inc., 1995.

- Minimum Criteria for the Conduct of Environmental, Health and Safety Audits. Prepared by The Auditing Roundtable, Inc.

5.3 REPRESENTATIVE SAMPLING

When confronted with a large population of data to review or equipment to inspect, the Audit Team employed representative sampling techniques to evaluate records over the Audit period requested, and as necessary, for physical inspection of some types of common equipment. The sample size for record reviews or equipment inspections required professional judgment.

The Audit Team's judgement considered the following:

- The outcome of the evaluation of the records sampled. If problems are found in the representative sample, more records may need to be examined to evaluate compliance status.
- Potential for or severity of non-compliance.
- The general appearance and observed practices of certain operating areas.
- Information obtained during an interview that indicates a potential problem.
- Other specific information or guidance from the CAM.
- Time available during the Audit.

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The Audit Team also employed the following types of sampling techniques, depending upon the characteristics of a specific population:

- Random sampling – every item has an equal chance of being selected.
- Interval sampling – select every n^{th} item, (e.g., every third manifest in chronological order as contained in facility files).
- Block sampling – auditor uses his/her judgment to select a specific block of items, (e.g., petroleum storage tank inspections from April to October).
- Stratified sampling – population is divided into groups, which are then sampled through random or judgmental techniques.

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TABLES

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Table 1a
Primary Ash Basin- Plans and Reports Posted by Duke Energy Under the CCR Rule

Document Name	Category	Release Date
EAP Activation Level 3 29-foot Crack and Slough on Downstream Slope of Primary Ash Basin Dam	Design Criteria	01/03/2019
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Fugitive Dust Control Plan	Operating Criteria	11/19/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan WS Lee Primary and Secondary Ash Basins	Design Criteria	10/01/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	08/31/2018
Annual Meeting with Local Emergency Responders 2018	Design Criteria	07/31/2018
Notice of Establishment of an Assessment Monitoring Program	Groundwater Monitoring and Corrective Action	04/03/2018
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
WS Lee Inundation Maps	Design Criteria	01/25/2018
WS Lee Closure Plan Revision 1		01/11/2018
2017 Annual CCR Fugitive Dust Control Report-WS Lee	Operating Criteria	11/29/2017

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Table 1a
(Continued)

Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-WS Lee Primary Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017
Groundwater Monitoring System Certification-WS Lee Primary Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	09/12/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	07/21/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report 2016	Operating Criteria	09/13/2016
Annual Surface Impoundment Report Primary	Operating Criteria	02/03/2016

*This summary of reports was downloaded on January 10, 2019

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Table 1b
Secondary Ash Basin- Plans and Reports Posted by Duke Energy Under the CCR Rule

Document Name	Category	Release Date
Notice of Groundwater Protection Standard Exceedance 2018	Groundwater Monitoring and Corrective Action	12/14/2018
Annual Fugitive Dust Control Report 2018	Operating Criteria	12/05/2018
Fugitive Dust Control Plan	Operating Criteria	11/19/2018
Wetlands	Location Restriction	11/07/2018
Unstable Areas	Location Restriction	11/07/2018
Seismic Impact Zones	Location Restriction	11/07/2018
Fault Areas	Location Restriction	11/07/2018
Placement Above Uppermost Aquifer	Location Restriction	11/07/2018
Emergency Action Plan WS Lee Primary and Secondary Ash Basins	Design Criteria	10/01/2018
CCR Annual Surface Impoundment Inspection Report 2018	Operating Criteria	08/31/2018
Annual Meeting with Local Emergency Responders 2018	Design Criteria	07/31/2018
Notice of Establishment of an Assessment Monitoring Program	Groundwater Monitoring and Corrective Action	04/03/2018
CCR Annual Groundwater Monitoring and Corrective Action Report	Groundwater Monitoring and Corrective Action	02/06/2018
WS Lee Inundation Maps	Design Criteria	01/25/2018
WS Lee Closure Plan Revision 1		01/11/2018
2017 Annual CCR Fugitive Dust Control Report-WS Lee	Operating Criteria	11/29/2017
Groundwater Sampling and Analysis Program Selection of Statistical Method Certification-WS Lee Secondary Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017

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Table 1b
(Continued)

Groundwater Monitoring System Certification-WS Lee Secondary Ash Basin	Groundwater Monitoring and Corrective Action	11/06/2017
CCR Annual Surface Impoundment Inspection Report 2017	Operating Criteria	09/12/2017
Annual Meeting with Local Emergency Responders 2017	Design Criteria	07/21/2017
Annual Fugitive Dust Control Report 2016	Operating Criteria	12/05/2016
Initial Structural Stability Assessment	Design Criteria	11/16/2016
Initial Factor of Safety Assessment	Design Criteria	11/15/2016
Inflow Design Flood Control System	Operating Criteria	11/03/2016
History of Construction	Design Criteria	10/25/2016
Initial Hazard Classification Assessment Certification	Design Criteria	10/12/2016
Existing Liner Design Criteria	Design Criteria	10/11/2016
Annual Surface Impoundment Report 2016	Operating Criteria	09/13/2016
Annual Surface Impoundment Report Secondary	Operating Criteria	02/03/2016

*This summary of reports was downloaded on January 10, 2019

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ATTACHMENT A

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ATTACHMENT A
AUDIT SCOPE

A-1 GENERAL AUDIT SCOPE ITEMS

The general Audit scope items included:

- Review and evaluation of documentation for maintenance and repair of structures and equipment used for coal ash disposal.

- Review and evaluation of documentation of modifications, failures, leaks, damage, disrepair and other problems at the coal ash management units.

- Review and evaluation of documentation of efforts to correct failures, leaks, damage, disrepair and other problems where they determine that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

- Review and evaluation of documentation of communication of the items above within the organization.

- Review and evaluation of documentation associated with the specific environmental compliance items described below and laws, regulations, and policies associated these items.

- Review of compliance with administrative aspects and regulatory submissions related to coal ash management-specific regulations, including the Coal Combustion Residuals Rule found in 40 CFR Part 257, Subpart D.

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More specific items which were addressed in the audits to comply with the general Audit scope are described below.

A-2 SPECIFIC COMPLIANCE WITH OTHER PROVISIONS OF THE PLEA AGREEMENTS

The following items related to specific items in the plea agreements were reviewed as part of the Audit:

1. Determine whether Defendants have opened, expanded, or reopened any coal ash or coal ash wastewater impoundment and, if so, verify that they are lined and do not allow unpermitted discharges of coal ash or coal ash wastewater to waters of the United States.

2. Review citations/notices of violation/notices of deficiency related to violations of federal, state, or local law to assure that they have been properly relayed to the court and, as appropriate under the plea agreements, determine their materiality.

3. Note any observations made during the audit that cause concern regarding the assets and/or security available to the Defendants to meet the obligations imposed by the court's judgment.

A-3 GENERAL ENVIRONMENTAL COMPLIANCE SUBJECT AREAS

The following items related to general environmental compliance were reviewed as part of the Audit:

1. Assess all waste streams from Duke Energy facilities with coal ash impoundments. Review Duke Energy's processes, procedures, and practices, as well as compliance with those processes, procedures, and practices, for:

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a. identifying waste streams (especially, but not limited to, waste streams with discharge points into bodies of water);
b. identifying and communicating any modifications or changes, or potential modifications or changes, to waste streams;
c. ensuring proper handling/disposal of waste streams;
d. identifying, preventing, and mitigating any risks or hazards that could affect waste streams and/or the disposal of waste streams; and,
e. ensuring proper permitting for waste streams.

For Item 1.d., the Audit Team evaluated such risk/hazard issues where there were compliance findings associated with waste streams.

2. Review and evaluate documentation of:

a. maintenance and repair of structures and equipment related to coal ash disposal;
b. modification of the coal ash impoundments and related pollution prevention equipment and structures;
c. failures, leaks, damage, disrepair, and other problems;
d. communication of the information described in a-c within the organization; and,
e. efforts to correct failures, leaks, damage, disrepair, and other problems.

3. Assess the employees responsible for inspection, maintenance, and repair of coal ash basins and related structures and equipment. The assessment included an assessment of the workloads of such employees to assure that Duke Energy's facilities are adequately staffed. These assessments were made where the Audit Team determined that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

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4. Review the results and recommendations of any other audits (internal or external/state-mandated) and assess Duke Energy's implementation of those recommendations.

5. Review and assess Duke Energy's processes, procedures, and practices for identifying, communicating, and addressing problems and potential problems at its coal ash basins (leaks, unpermitted discharges, etc.).

6. Review and assess Duke Energy's policies, procedures, practices, and equipment for handling emergency releases from its coal ash basins and evaluate the personnel with duties in such situations.

7. Verify that Duke Energy is complying with its NPDES wastewater and stormwater permits, as well as other relevant environmental permits. This would include verifying Duke Energy's timely submission of permit applications, permit renewal applications, and responses to requests for additional information from the relevant regulatory authority.

8. Review and assess any actions or measures Duke Energy has undertaken to assure accountability and prevent recurrences when problems and/or failures occur (e.g., disciplinary actions, re-training, revision to policies and procedures, etc.). This review was conducted where the Audit Team determined that employee/contractor actions were likely a primary or contributing cause to a compliance finding.

9. Review and assess compliance with the following environmental regulations, as applicable to the management of coal ash:

a. Wastewater Discharges	40 CFR 122; R61-9.122
b. Stormwater Discharges	40 CFR 122.26; R61-9.122.26

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c.	Groundwater Quality Standards	SC R. 61-58, 61-68, 61-69
d.	Hazardous Waste Management	R61-79.260, R61-79.261
e.	Oil Pollution Prevention	40 CFR Part 112
f.	Dam Safety	R. 72-1 to 72-9
g.	Air Pollution (Title V)	R. 61-62.70, and
h.	Solid Waste Landfills and Structural Fills	R. 61-107.19
i.	Hazardous Chemical Reporting (Tier II)	40 CFR Part 370.

Reviews also included an analysis of overall compliance and the status and security of the asset. Subsequent reviews of individual facilities will evaluate the movement towards compliance.

A-4 LIST OF PERMITS AND PROGRAMS DEEMED TO BE EITHER DIRECTLY OR INDIRECTLY IN SUPPORT OF ASH MANAGEMENT

During the Audit, the Audit Team reviewed a variety of written programs developed and implemented by Duke Energy and facility staff. State-issued permits and supporting documentation relative to environmental programs and geotechnical aspects of ash basin management were also requested and reviewed.

Requested documents, pertinent to management of ash in basins, landfills, ponds, etc., were outlined in the pre-Audit questionnaire for the facility and included, but were not limited to:

1. The Compliance Register developed for eTRAC for the facility.

2. The Duke Energy Operations Manual for the facility.

3. A site plan, site map, or aerial photo which shows the entire facility and key features of the facility, including NPDES outfalls associated environmental monitoring locations, storage tanks, etc.

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4. Most recent two (2) years of maintenance, monitoring, and inspection records for each coal ash/CCR basin (just the physical inspections, not the groundwater records).

5. A "Phase 1 and Phase 2" summary of ash basin conditions prepared by an outside consultant.

6. Duke Energy's permitting plans for addressing ash impoundments and landfills at the facility.

7. Applicable pages from the Duke Energy basin-by-basin coal ash/CCR project tracking document for the facility.

8. Original basin/landfill/coal ash management unit construction records.

9. Documentation of changes to these units.

10. Coal ash unit construction permit application and approval.

11. State-issued permits and application materials for permits associated with coal ash/CCR management (including, e.g., dam permits).

12. Any currently effective state order, consent order, or similar state directive that addresses coal ash/CCR management at the facility.

13. Records required to be maintained in the facility's operating record under the federal CCR regulation and/or any state CCR regulatory program.

14. Records of off-site ash shipments from May 2015 forward.

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15. Stormwater permit application and approval for all outfalls.

16. Industrial wastewater (NPDES/POTW) permit application and approval for all outfalls/discharges.

17. Industrial stormwater permit, sampling and monitoring records, and any corrective action plans (last two (2) years).

18. Stormwater Pollution Prevention Plan(s).

19. Landfill operating permit(s) with maintenance and monitoring requirements.

20. Landfill leak detection and groundwater monitoring records from the last two (2) years along with any workplans that describe the rationale for the monitoring system at the facility.

21. Air permits and applications for coal ash units and ancillary operations.

22. Testing and monitoring records completed to comply with air permits.

23. Any notices of violation associated with the coal ash/CCR management activities received over the last two (2) years.

24. Spill Prevention Control and Countermeasure Plan.

25. Community Right-to-Know:
    a. Lists of hazardous chemicals and/or MSDSs submitted;
    b. Tier I or II reports; and
    c. Form R (toxic release inventory) reports.

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26. Copies of communications with employees and the public regarding availability of toll-free hotline and electronic mail inbox for reporting suspected environmental violations.

27. Management Systems:
    a. List of responsible party(ies) for each environmental activity.
    b. All environmental-related training records.
    c. All environmental policies and procedures.
    d. Organization chart.
    e. Site diagram identifying storage areas, tanks, etc.

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ATTACHMENT B

WS Lee CCR Groundwater Sampling

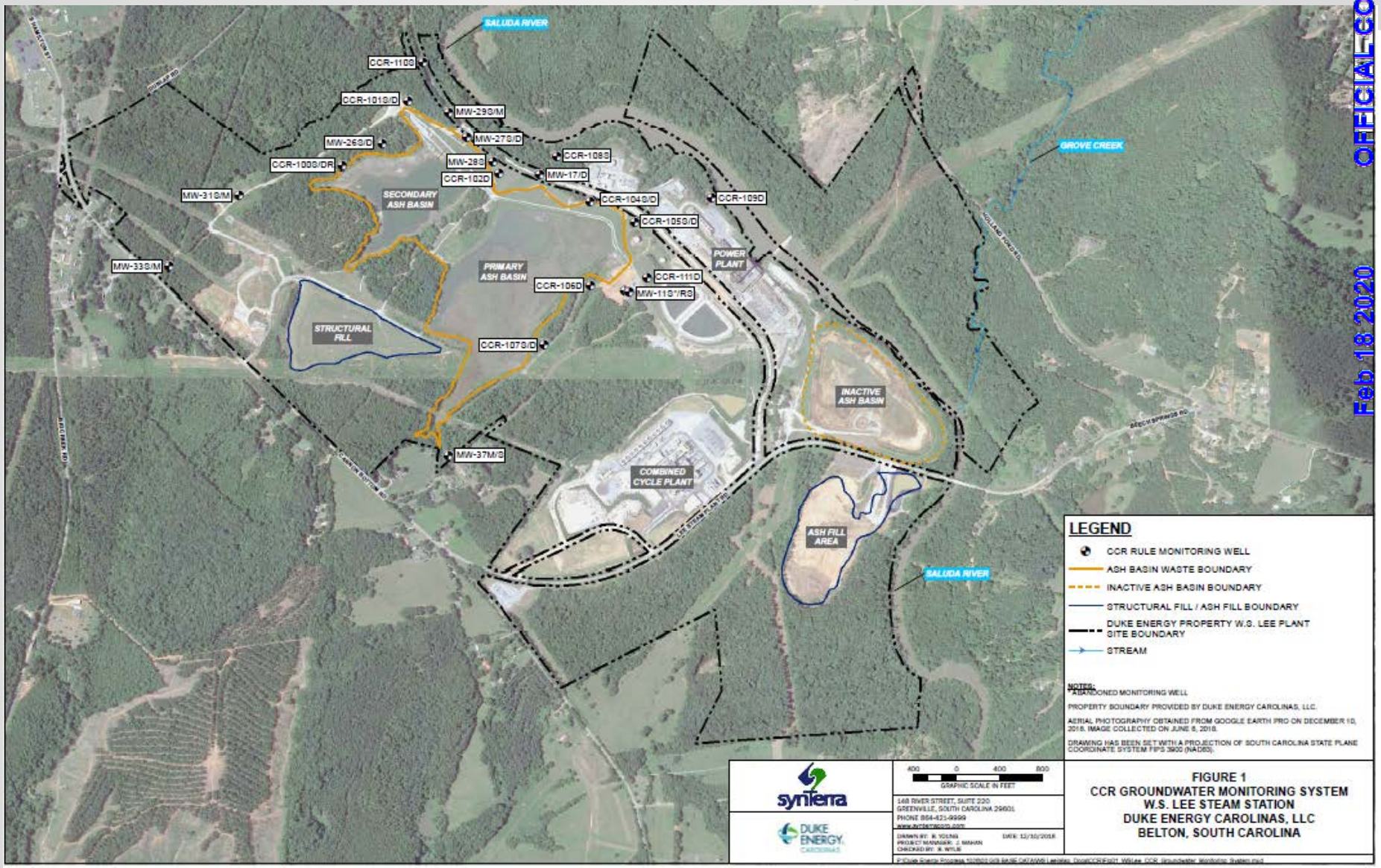

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TABLE 7A
COMPARISON OF GROUNDWATER PROTECTION STANDARDS
PRIMARY AND SECONDARY ASH BASIN - SURFICIAL
WS LEE STEAM STATION
DUKE ENERGY CAROLINAS, LLC, BELTON, SC

		Appendix III Parameters CCR Rule 257.95 (d)(1)							Appendix IV Parameters CCR Rule 257.95 (d)(1)													
Analytical Parameter		Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Total Radium
Reporting Units		ug/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
Comparison Criteria		50*	10.7*	4.9*	0.1*	5.6 - 6.9*	2.7*	129*	6+	10+	2000+	4+	5+	100+	6^	4+	15^	40^	2+	100^	50+	2+	5+
Sample ID	Sample Collection Date	Analytical Results							Analytical Results													
MW-17	05/31/2018	**1640**	**13.5 B2**	4.1	0.078 j	5.8	**46**	100	<1	<1	16	<1	<1	1.38	<1	0.078 j	<1	2.579 j	<0.05	<1	<1	<0.2	0.389
CCR-100S	05/30/2018	<50	0.955	1.9	<0.1	5.6	**15**	29	<1	<1	50	<1	<1	<1	**7.93**	<0.1	<1	<5	<0.05	0.269 j	<1	0.094 j	0.512
CCR-104S	05/31/2018	**2090**	**22 B2**	4.2	<0.1	5.6	**110**	**160**	<1	<1	33	<1	<1	0.787 j	1.52	<0.1	<1	<5	<0.05	0.157 j	<1	0.092 j	0.722
CCR-105S	05/31/2018	**317**	**74.7 B2**	3.3	<0.5	**4.2**	**320**	**390**	<1	0.437 j	20	**4.36**	0.351 j	1.31	**102**	<0.5	0.835 j	17	<0.05	<1	<1	0.658	1.258
CCR-107S	05/31/2018	**159**	**21.1 B2**	4.1	<0.2	**5.5**	**100**	**180**	<1	<1	3.512 j	<1	<1	3.7	<1	<0.2	<1	1.931 j	<0.05	0.205 j	<1	<0.2	0.851
MW-26S	05/29/2018	**201**	0.089	3.5	<0.1	**4.9**	**29**	33	<1	<1	125	0.392 j	<1	0.975 j	**12.5**	<0.1	<1	4.235 j	0.035 j	<1	<1	0.24	1.3008
MW-27S	05/30/2018	**173**	9.53	3.6	**0.12**	6.0	**9.8**	73	<1	<1	41	<1	<1	<1	0.361 j	0.12	<1	<5	<0.05	0.297 j	<1	<0.2	2.073
MW-28S	05/30/2018	**242**	6.5	4.3	<0.1	5.6	**13**	42	0.751 j	<1	22	<1	<1	<1	2.16	<0.1	<1	<5	<0.05	0.161 j	<1	<0.2	0.526
MW-29S	05/30/2018	**206**	5.57	3.4	<0.1	**5.4**	**25**	65	<1	<1	11	<1	<1	2.35	<1	<0.1	<1	<5	<0.05	0.467 j	<1	<0.2	0.3562

Prepared by: HHS Checked by: WJW

Notes:

175 - Bold, blue highlighted value indicates concentration detected at a statistically significant level greater than the comparison criteria for Appendix III constituents.

302 - Bold, orange highlighted value indicates concentration detected at a statistically significant level greater than the comparison criteria for Appendix IV constituents.

^ - Comparison criteria represents values noted in USEPA'S Amendments to the National Minimum Criteria (Phase One, Part One), Disposal of Coal Combustion Residuals from Electric Utilities; effective August 29, 2018.

* - Comparison criteria represents background concentration value developed in January 2018.

+ - Comparison criteria represents the USEPA Maximum Contaminant Level (MCL).

< - Concentration not detected at or above the adjusted reporting limit.

B2 - Target analyte was detected in blank(s) at a concentration greater than 1/2 the reporting limit but less than the reporting limit. Analyte concentration in sample is valid and may be used for compliance purposes.

Background wells include: MW-31S, MW-33S, and MW-37S

CCR-101S was not sampled during the May 2018 event due to insufficient water

j - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

mg/L - milligrams per liter

pCi/L - picocuries per liter

Radium (Total) - the sum of radium-226 + radium-228

S.U. - Standard Unit

U – Analyte was analyzed for, but not detected above the MDC.

ug/L - micrograms per liter

TABLE 7B
COMPARISON OF GROUNDWATER PROTECTION STANDARDS
PRIMARY AND SECONDARY ASH BASIN - DEEP
WS LEE STEAM STATION
DUKE ENERGY CAROLINAS, LLC, BELTON, SC

		Appendix III Parameters CCR Rule 257.95 (d)(1)							Appendix IV Parameters CCR Rule 257.95 (d)(1)														
Analytical Parameter		Boron	Calcium	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Total Radium
Reporting Units		ug/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
Comparison Criteria		50*	24.9*	3.9*	0.48*	6.6 - 7.7*	15*	130*	6+	10+	2000+	4+	5+	100+	6^	4+	15^	40^	2+	100^	50+	2+	5+
Sample ID	Sample Collection Date	Analytical Results							Analytical Results														
CCR-100DR	05/30/2018	<50	14.3	1.4	**0.82**	7.7	2.4	66	<1	0.585 j	2.187 j	<1	<1	<1	<1	0.82	<1	4.059 j	<0.05	6.03	<1	<0.2	0.581
CCR-101D	05/30/2018	42.888 j	11.9	2.9	0.092 j	**6.4**	**16**	86	<1	<1	51	<1	<1	<1	<1	0.092 j	<1	19	<0.05	1.05	<1	<0.2	0.566
CCR-102D	06/01/2018	**1190**	**51.3 B2**	3.9	0.042 j	6.9	2.6	**250**	<1	0.669 j	35	<1	<1	<1	0.943 j	0.042 j	1.12	21	<0.05	8.67	<1	<0.2	1.527
CCR-104D	05/31/2018	**589**	**63.1 B2**	**4.4**	<0.5	**6.4**	**240**	**410**	<1	<1	41	<1	<1	1.28	0.531 j	<0.5	<1	**63**	<0.05	0.575 j	<1	<0.2	3.77
CCR-105D	05/31/2018	**351**	**84.2 B2**	3.2	<0.5	**5.2**	**330**	**420**	<1	0.567 j	48	0.64 j	<1	0.663 j	**55**	<0.5	<1	5	<0.05	0.298 j	<1	0.332	2.71
CCR-106D	05/31/2018	**117**	3.01 B2	0.79	0.11	**4.9**	**21**	45	<1	<1	2.104 j	<1	<1	0.344 j	3.34	0.11	<1	10	<0.05	0.44 j	<1	0.151 j	1.636
CCR-107D	05/31/2018	**119**	22.4 B2	**4.3**	<0.2	**5.6**	**99**	**170**	<1	<1	17	<1	<1	2.09	0.763 j	<0.2	<1	2.934 j	<0.05	0.105 j	<1	0.096 j	2.711
MW-11S	05/31/2018	<50	2.65 B2	**4.1**	<0.1	**5**	1.7	<25	<1	<1	46	<1	<1	1.27	1.59	<0.1	<1	2.901 j	<0.05	<1	<1	0.12 j	1.259
MW-17D	05/31/2018	**1810**	21.5 B2	**4.3**	0.059 j	**6.2**	**55**	130	<1	<1	65	<1	<1	0.464 j	<1	0.059 j	<1	9	<0.05	0.202 j	<1	0.126 j	2.357
MW-26D	05/29/2018	<50	3.83	2.8	<0.1	**5.6**	1.4	29	<1	<1	19	<1	<1	1.72	<1	<0.1	<1	<5	<0.05	0.188 j	<1	<0.2	4.162
MW-27D	05/30/2018	**178**	10.3	3.6	0.13	**6.1**	9.6	64	<1	<1	44	<1	<1	<1	0.42 j	0.13	<1	<5	<0.05	0.321 j	<1	<0.2	0.683
MW-29M	05/30/2018	<50	**27.6**	3	0.1	7.1	14	**140**	**11.9**	1.78	26	<1	<1	<1	<1	0.1	<1	32	<0.05	7.6	<1	<0.2	0.2818

Prepared by: HHS Checked by: WJW

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pCi/L - picocuries per liter

Radium (Total) - the sum of radium-226 + radium-228

S.U. - Standard Unit

ug/L - micrograms per liter

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