Dominion Energy South Carolina, Inc.
220 Operation Way, Cayce SC 29033

July 3, 2024

Mr. Randy Thompson
Water Facilities Permitting Division
South Carolina Department of Environmental Services
2600 Bull Street
Columbia, South Carolina 29201

RE: Dominion Energy - Wateree Station
Revised BATW Initial Certification Statement
NPDES Permit No. SC0002038
Eastover, S.C.

Dear Mr. Thompson,

As requested, Dominion Energy South Carolina, Inc. (DESC) is submitting additional information to the DESC-Wateree Station's Initial Certification Statement (ICS) for discharge of bottom ash purge water that is being submitted via the SCDHEC e-portal. This report contains supplemental information to support Wateree's request for a bottom ash transport water system blowdown allowance of 32,000 gallons per day on a 30-day rolling average. This volume is less than 10% of the primary wetted volume allowed in the 2020 steam electric effluent limitations guidelines (ELGs). This purge allowance will support full electric generation and allow for necessary maintenance of equipment to ensure generation reliability.

If you have any questions, please contact Mark Ferguson at (803) 331-5298 or by email at mark.ferguson@dominionenergy.com.

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 fine and imprisonment for knowing violations.

Sincerely,

Darrell R. Shier
Manager, Environmental Services

enclosure

ebc: Richard Salley/E. Brown
J. Robinson
M. Quattlebaum/M. Hindman/W. Coker/C. Pearson
D. Shier/ M. Ferguson/file

Stantec

Supplemental Information to the Wateree Initial Certification Statement for Bottom Ash Transport Water

Dominion South Carolina

Report Date: June 26, 2024

Prepared for:

Dominion Energy

Prepared by:

Stantec Consulting Services Inc.

Dominion Energy Certification Statement

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 fine and imprisonment for knowing violations.

Approved By R J S III
(signature)

Richard Salley, Manager Power Generation Site – Wateree Steam Plant

Date 6-27-24

PE Certification Statement

I certify that I am a licensed Professional Engineer with sufficient knowledge of and familiarity with the facility and the regulatory requirements.

Approved By _____
(signature)

Approved By Adam Sutherland
(Print name)

Company Stantec Consulting Services Inc.

Date June 26, 2024

SOUTH CAROLINA
STANTEC
CONSULTING
SERVICES INC
No. 2310
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 39276
ADAM CARL SUTHERLAND
6/26/2024

Table of Contents

LIST OF APPENDICES

Abbreviations

BAT	Best Available Technology Economically Achievable
BATW	Bottom Ash Transport Water
DCS	Distributed Control System
DESC	Dominion Energy South Carolina
DHEC	South Carolina Department of Health and Environmental Control
EPA	United States Environmental Protection Agency
ELGs	Effluent Limitations Guidelines
FGD	Flue Gas Desulfurization
ICS	Initial Certification Statement
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
rMDS	Remote Mechanical Drag System
SFC	Submerged Flight Conveyor

1.0 PURPOSE

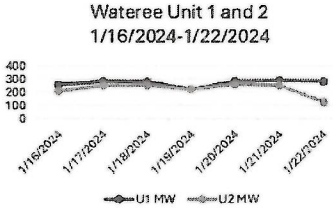
This is supplemental information to the Initial Certification Statement (ICS) submitted to the South Carolina Department of Health and Environmental Compliance (DHEC) on October 22, 2021. Previous supplemental information was also transmitted on April 14, 2022. The ICS was submitted in compliance with the United States Environmental Protection Agency's (EPA) Steam Electric Power Generation 2020 effluent limitations guidelines (ELGs) for bottom ash transport water (BATW), under 40 CFR 423.19(c).

Wateree's original ICS outlined several changes that were planned and implemented at Wateree to reduce the volume of BATW water managed and discharged. The allowable discharges will be limited at an established purge discharge location at the remote mechanical drag system (rMDS) for bottom ash dewatering. This discharge location is identified as 01D in the NPDES permit.

Wateree is requesting that the allowable purge volume be established as 32,000 gallons per day on a 30-day rolling average for this permit cycle as allowed by the ELGs. This value is less than the allowable 10% blowdown allowance in the 2020 ELGs. The basis for this request is as follows:

DESC Wateree completed installation of the flow monitoring equipment in the fall of 2023. DESC Wateree experienced a period of high electric generation in January 2024. The average purge flow during this high generation period was 23,500 gallons per day. DESC then compared Unit 1 and 2 generation records between 2011 to the present time, looking for thirty-day periods where the combined Units 1 and 2 generation exceeded the generation capacity factor in this January 2024 period. See Figure 1. As there is a potential that Units 1 and 2 will operate at high generation levels as they historically have, this 23,500-gallon rolling average is requested as part of the total BATW blowdown allowance.

Dates	1/16/2024 – 1/22/2024
Total Generation in MW, Wateree 1 and 2	83,433 MW-HR
Average Combined Daily MW Generation	11,919 MW-HR
Capacity Factor	72.6%
Avg BATW Purge Flow	23,518 GPD



Dates	1/1/2018 – 1/31/2018
Total Generation in MW, Wateree 1 and 2	384,100 MW HR
Average Combined Daily MW Generation	12,390 MW-HR
Capacity Factor	75.4%
Avg BATW Purge Flow	Meter Not Installed, Data Not Available

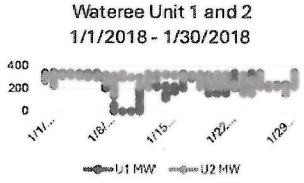


Figure 1. Comparison of High Generation Periods in 2024 and 2018

In addition to this operational level of purge flows, submerged flight conveyor (SFC) maintenance draining can also occur. DESC requests that DHEC should allow the total volume of the two SFCs in their maintenance blowdown allowance portion of the total blowdown. These SFCs operate together in normal operation, and they historically have been drained together for maintenance because of their tandem operation. DESC Wateree is requesting the maintenance part of the blowdown allowance be established at 8,200 gallons per day on a 30-day rolling average basis. Combining these two reasons, Wateree requests a total of 32,000 gallons per day on a 30-day rolling average basis.

Other information is provided herein. This includes some actual flow data from the BATW purge location, along with a discussion of limited two-unit operations experienced during this period, and additional information about drought conditions experienced in 2023.

2.0 REGULATORY REQUIREMENTS

2.1 BOTTOM ASH TRANSPORT WATER EFFLUENT LIMITATIONS GUIDELINES AND SYSTEM DESCRIPTION REVIEW

EPA promulgated revisions to the steam electric power generating sector ELGs in 2020. The 2020 best available technology economically achievable (BAT) for sites that will continue to operate beyond December 31, 2028, and discharge BATW was determined to be a high-recycle system with a limited quantity of permitted BATW discharge or purge. EPA defines BATW as any wastewater that is used to convey bottom ash, or economizer ash (when collected as bottom ash) from the ash collection or storage equipment, or boiler, and has direct contact with the ash; this definition also includes flows that are introduced into or commingled with BATW. Transport water does not include low volume, short duration discharges of wastewater from minor leaks (e.g., leaks from valve packing, pipe flanges, or piping), minor maintenance events (e.g., replacement of valves or pipe sections), FGD paste equipment cleaning water, or bottom ash purge water. The 2020 ELGs establish an allowable 30-day rolling average BATW purge of up to ten percent of the primary active wetted system volume. This volume of allowable system purge is to be determined on a case-by-case basis by the permitting authority.

The BATW operation at Wateree is comprised of two systems: (1) the equipment at the powerhouse and (2) the equipment at the rMDS that dewaters the bottom ash. Water is used to transport bottom ash from the powerhouse to the rMDS. The type of rMDS that are used at Wateree are submerged flight conveyors (SFCs). These operations were described in the previously submitted ICS.

3.0 ADDITIONAL BOTTOM ASH TRANSPORT WATER SYSTEM INFORMATION

3.1 BACKGROUND INFORMATION

Based on the 2020 ELGs, discharges of up to 10% of the primary wetted BATW volume may occur on a 30-day rolling average, as determined by the permitting authority. The total BATW primary wetted volume has been conservatively calculated at Wateree to be approximately 341,400 gallons. This calculation includes SFCs, piping/trenches to the SFCs from the powerhouse, return piping/trenches from the powerhouse, sump volumes, and wetted boiler surfaces, but excludes redundant equipment. Due to the required operational regime (both SFCs operating in series to control water quality), the volume of both SFCs is included in the primary wetted volume calculation.

Based on the total system volume, a 10% allowable discharge is 34,140 gallons per day on a 30-day rolling average. As stated above, DESC is requesting a blowdown allowance of 32,000 gallons per day on a 30-day rolling average. The ICS submitted in October 2021 detailed potential discharge factors, estimated volumes, and frequency. The ICS also included information related to the potential discharges from the BATW loop due to storm events, which have the potential for significant input into the BATW system.

3.2 HISTORICAL STORM EVENT INFORMATION

Storm events may create a need to discharge from the BATW loop due to the potential for significant input into the BATW system. A stormwater evaluation was conducted at Wateree in July 2021. The evaluation included the volume derived from a 10-year, 24-hour storm event of 5.3 inches of 65,000 as reported in the original ICS. "Regular" precipitation events not meeting the standard of the 10-year, 24-hour event may contribute flow to the BATW loop. EPA defines those flows commingling with BATW as needing management as BATW.

3.3 DROUGHT CONDITIONS IN 2023

In September 2023, a flow meter was installed to measure BATW purge discharges from Wateree Units 1 and 2. The BATW purge flow information from two-unit operations is very limited. Based on data, included as Attachment A, the purge data from when both units were operating approached 34,969 gallons in one day (January 18, 2024). This flow included stormwater.

Upon evaluation of the daily purge flows that were measured in the fall of 2023, it appeared that rainfall amounts were low for this monitoring period so further analysis was conducted. According to the information provided in the drought.gov website, Richland County appeared to have been in a moderate to severe drought in 2023. This is represented in Figure 2 which represents a screenshot from the webpage for that period. (See Historical Data and Conditions | Drought.gov.)

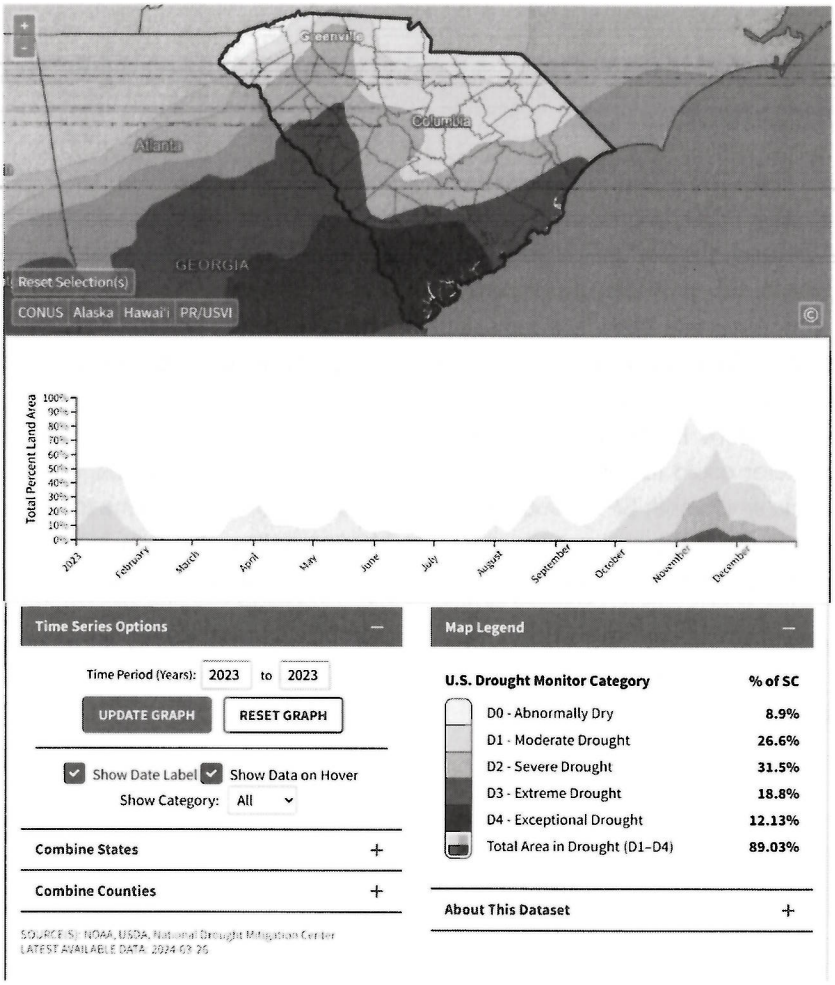


Figure 2. Drought Conditions in South Carolina in calendar year 2023.

Normal total precipitation from another government website from the period of 1991-2020 was 48.11 inches. (The latest published data were from 2020; see South Carolina State Climatology Office (sc.gov)). Rainfall records for Richland County where Wateree is located were evaluated for the same period of time that the BATW purge flow data included in Appendix A. The total measured rainfall at Wateree for that period was compared to a prorated value for normal rainfall (not accounting for any seasonal variability). The prorated rainfall value for the period that BATW flows in the fall of 2023 were measured was expected to be 18.3 inches. The actual measured flow at Wateree was 12.4 inches, or a 32% shortfall compared to the normal rainfall prorated for that period. This potentially resulted in underreporting of BATW purge flows at Wateree.

A further factor is that the overall seasonal pattern observed in the 2023 drought graph showed more pronounced drought conditions in the fourth calendar quarter of 2023. Consideration of 2023 dry conditions should be factored into the allowance for BATW blowdown.

3.4 TWO-UNIT GENERATION CAPACITY NEEDS AND SPECIAL MAINTENANCE ISSUES

The limited amount of BATW purge data provided in Appendix A shows that the site has been diligent in only purging the system when necessary, i.e., there are many days of zero purge flow. Facing potential reductions of BATW purge flow to much less than 10% of the primary active wetted volume is troubling because of the limited amount of two-unit generation flow data available. This potential purge restriction is also of particular concern since there are no datapoints for the hottest period of the year when capacity factors would be higher. Capacity factors are the calculation of the electric generation produced compared to the units' potential generation. As an example, assume a flow for one day during dry conditions with a capacity factor of 70 percent. If the purge flow were 35,000 gallons at that capacity factor, an extrapolation to a 90% capacity factor could result in a potential need to purge 45,000 gallons. There also have been instances in the past in which both SFCs would have to be drained at the same time to perform maintenance which would also raise the combined purge volume to 246,000 gallons for both SFCs. Past purge values are not necessarily indicative of future need, especially given the limitations of these recorded data.

Generation reliability and electric grid stability are critical components of US infrastructure. Restricting BATW blowdown discharges below 10% could limit Wateree's ability to generate power on the hottest (or coldest) days of the year.

APPENDIX A

Date	Inches of Rain Total	Daily Total MWs Station	Total daily flow to ponds (Gallons)
09/21/2023	-	6,627.61	9,200
09/22/2023	-	9,405.66	714
09/23/2023	-	10,184.90	667
09/24/2023	-	9,716.08	-
09/25/2023	-	11,189.88	610
09/26/2023	-	10,841.97	-
09/27/2023	-	9,448.07	7,993
09/28/2023	-	9,660.67	8,554
09/29/2023	-	9,662.19	-
09/30/2023	-	9,660.55	-
10/01/2023	-	9,665.78	-
10/02/2023	-	9,774.73	619
10/03/2023	-	11,337.97	-
10/04/2023	-	10,693.00	993
10/05/2023	-	10,738.62	-
10/06/2023	-	10,704.16	8,095
10/07/2023	-	10,290.75	-
10/08/2023	-	5,858.63	11,650
10/09/2023	-	5,135.06	-
10/10/2023	-	5,931.74	9,294
10/11/2023	-	5,621.61	2,326
10/12/2023	0.08	5,839.01	1,374
10/13/2023	2.01	4,960.04	18,792
10/14/2023	0.04	5,779.82	-
10/15/2023	0.12	5,365.15	-
10/16/2023	-	4,836.23	-
10/17/2023	-	5,971.26	-
10/18/2023	-	4,834.66	-
10/19/2023	-	4,832.43	-
10/20/2023	-	4,832.65	11,685
10/21/2023	0.24	4,839.03	10,058
10/22/2023	0.04	4,838.10	-
10/23/2023	-	4,835.96	-
10/24/2023	-	5,672.84	-
10/25/2023	-	5,291.97	-
10/26/2023	-	6,132.70	-
10/27/2023	-	4,835.83	-
10/28/2023	-	5,465.29	-
10/29/2023	-	5,226.16	-
10/30/2023	-	5,485.30	-
10/31/2023	-	6,722.43	-
11/01/2023	-	6,099.42	-
11/02/2023	-	6,096.23	-

Date	Inches of Rain Total	Daily Total MWs Station	Total daily flow to ponds (Gallons)
11/03/2023	-	7,101.51	8,579
11/04/2023	-	6,786.58	-
11/05/2023	-	5,571.91	8,503
11/06/2023	-	5,665.11	-
11/07/2023	-	5,467.59	-
11/08/2023	-	5,063.35	-
11/09/2023	-	4,875.59	-
11/10/2023	-	3,327.44	11,812
11/11/2023	-	5,376.90	-
11/12/2023	0.67	5,588.69	929
11/13/2023	0.20	3,257.76	-
11/14/2023	-	5,059.32	12,184
11/15/2023	-	4,831.36	-
11/16/2023	-	4,881.47	-
11/17/2023	-	5,340.84	-
11/18/2023	-	5,952.40	-
11/19/2023	-	4,836.78	1,159
11/20/2023	-	4,834.68	24,042
11/21/2023	-	4,832.65	-
11/22/2023	0.47	4,832.52	-
11/23/2023	1.06	4,830.71	-
11/24/2023	-	5,750.35	-
11/25/2023	-	5,503.71	-
11/26/2023	-	2,310.54	-
11/27/2023	0.12	6,423.55	-
11/28/2023	-	8,751.15	15,188
11/29/2023	-	5,154.53	-
11/30/2023	-	6,145.97	-
12/01/2023	-	5,752.15	25,621
12/02/2023	-	4,945.34	-
12/03/2023	-	5,442.74	8,298
12/04/2023	-	5,390.87	-
12/05/2023	-	5,215.93	16,251
12/06/2023	-	4,979.98	8,615
12/07/2023	-	4,834.33	-
12/08/2023	-	4,835.66	19,476
12/09/2023	-	5,563.59	10,097
12/10/2023	-	6,816.26	659
12/11/2023	0.71	5,943.61	9,684
12/12/2023	0.12	6,189.09	9,995
12/13/2023	-	5,817.72	12,423
12/14/2023	-	5,026.23	-
12/15/2023	-	5,298.85	16,127

Date	Inches of Rain Total	Daily Total MWs Station	Total daily flow to ponds (Gallons)
12/16/2023	-	5,160.66	10,805
12/17/2023	-	6,054.48	-
12/18/2023	2.64	6,710.63	10,466
12/19/2023	-	5,916.17	20,211
12/20/2023	-	4,833.63	12,297
12/21/2023	-	4,835.67	9,414
12/22/2023	-	4,829.69	11,289
12/23/2023	-	4,829.61	-
12/24/2023	-	4,833.63	-
12/25/2023	-	4,838.00	-
12/26/2023	0.59	4,807.93	-
12/27/2023	0.51	5,208.36	9,937
12/28/2023	0.04	5,536.76	654
12/29/2023	-	4,833.03	11,120
12/30/2023	-	4,834.20	-
12/31/2023	-	6,001.77	-
01/01/2024	-	10,676.21	-
1/2/2024	-	6,319.24	-
1/3/2024	-	11,249.60	-
1/4/2024	-	11,670.36	10,039
1/5/2024	-	5,043.33	9,825
1/6/2024	-	6,101.04	9,497
1/7/2024	0.67	7,664.00	9,342
1/8/2024	-	5,703.37	-
1/9/2024	1.26	6,315.48	31,562
1/10/2024	0.08	6,234.38	9,453
1/11/2024	-	6,336.06	9,576
1/12/2024	0.35	8,651.00	-
1/13/2024	-	9,281.80	9,615
1/14/2024	-	9,468.67	19,768
1/15/2024	-	11,170.36	-
1/16/2024	-	12,823.93	21,692
1/17/2024	-	12,756.28	18,486
1/18/2024	-	10,751.69	34,969
1/19/2024	-	13,056.77	28,332
1/20/2024	-	13,042.79	20,153
1/21/2024	-	9,831.34	19,698
1/22/2024	-	5,385.19	21,297
1/23/2024	-	5,213.21	-
1/24/2024	-	5,047.43	6,667
1/25/2024	-	-	-
1/26/2024	-	-	9,751
1/27/2024	0.12	-	9,250

Date	Inches of Rain Total	Daily Total MWs Station	Total daily flow to ponds (Gallons)
1/28/2024	-	-	-
1/29/2024	-	-	-
1/30/2024	-	-	861
1/31/2024	0.08	-	-
2/1/2024		-	7,532
2/2/2024		-	-
2/3/2024		-	-
2/4/2024		-	-
2/5/2024	0.20	-	10,989
2/6/2024	-	1,162.00	-