FACT SHEET
AND
PERMIT RATIONALE

South Carolina Public Service Authority (Santee Cooper)
Winyah Generating Station
NPDES Permit No. SC0022471

Permitting Engineer: Byron M Amick December 13, 2023

Facility Rating: ☒ Major ☐ Minor

☐ Issuance (New) ☒ Reissuance ☐ Modification ☐ Minor Modification

If any part of this application is for a new facility or expansion of an existing facility or increase in permitted limits, an antidegradation review may be required per the requirements of R.61-68.D. If required, the antidegradation review will be included as part of the permit application.

Site Address: 661 Steam Plant Drive, Georgetown, SC 29440
Mailing Address: PO Box 2946101, Mail Code A203, Moncks Corner, SC 29461
County: Georgetown
Watershed: Basin 03 (Catawba-Santee River Basin)
Watershed: Basin 04 (Pee Dee Basin)

Facility Description (include SIC code): This facility combusts coal to produce steam and generate electricity in four generating units and has two (2) discharge points.
SIC Code: 4911: Electric Services
NAICS Code: 221112; Fossil Fuel Electric Power Generation

Receiving Waters and Classification by outfall: 001- Turkey Creek to Pennyroyal Creek to Sampit River (SB - saltwaters), 002- North Santee River (SA - saltwaters)

Is any discharge to Impaired Waters? Yes (see State 303(d) list for impaired waters)
If Yes, list the monitoring station number(s) and parameter(s) causing impairment: **Outfall 001 on Turkey Creek to Pennyroyal Creek to the Sampit River** - MD-075 and MD-077, DO and PD-628 mercury (fish consumption); The Sampit River in Georgetown County is listed as impaired for Mercury in the 2020 South Carolina Fish Consumption Advisory and Turkey Creek as an unclassified tributary to the Sampit River is considered as having the same impairment. **Outfall 002 on the North Santee River** - ST-005, mercury (fish consumption); the North Santee River is listed as impaired for Mercury in the 2020 South Carolina Fish Consumption Advisory.

Information for this permit is based primarily on NPDES Permit Application: 2C dated 1/29/2021, other application submittal includes 2C dated January 28, 2011.

Is any discharge to a waterbody or for a parameter listed in an approved TMDL? No
If Yes, list the parameter(s) for which the TMDL is written and the waterbody segments impacted:

Note: This discharge is in a section of the receiving water that could support both freshwater and saltwater organisms depending on salinity, tidal conditions, or stream flow. For this reason, the most restrictive condition will be applied.

Coordination with DHEC's Shellfish Sanitation Section for SFH or SA/SB waters for existing and classified uses has been conducted.

Does any discharge have the potential to affect a threatened or endangered species? Yes
If Yes, list the species and the waterbody in which the species resides: Atlantic and Shortnose Sturgeon, both the Sampit River and the North Santee River.

New Steam and Electric - Effluent Limit Guidelines (ELG)

On September 30, 2015 EPA issued a final rule (published in the Federal Register on November 3, 2015) amending the ELG for the steam electric power generating industrial category. The new ELG Rule became effective on January 4, 2016 and addressed limitations for FGD wastewater, fly ash transport water, bottom ash transport water, gasification wastewater, flue gas mercury control wastewater, and combustion residual leachate. The ELG is implemented by NPDES permits. On April 12, 2017, the EPA Administrator announced his decision to reconsider the ELG rule. On April 25, 2017, EPA postponed certain compliance dates in the ELG. The postponement is for an indefinite period of time - until the legal challenges to the rule are resolved. In September 2017, EPA finalized a rule that postponed from November 1, 2018 to November 1, 2020 the Best Available Technology (BAT) earliest compliance date for FGD wastewater as well as bottom ash transport water. On April 12, 2019, the U.S. Court of Appeals for the Fifth Circuit vacated the portions of the ELG regulating combustion residual leachate and legacy wastewater. EPA has stated they plan "to address this vacatur in a subsequent action," (November 22, 2019 Federal Register, p. 64625) but have not yet done so. In addition, on August 31, 2020 EPA finalized revised ELG limitations for FGD wastewater and bottom ash transport water, and these revisions were published in the October 13, 2020 Federal Register.

Therefore, the end result of these actions is that the ELG is no longer effective in the manner in which it was issued in 2015. With regard to the Winyah Generating Station, bottom ash transport water and FGD wastewater will be regulated in accordance with the 2020 revisions to the ELG. However, as mentioned above, the ELG standards for combustion residual leachate, legacy bottom ash transport water, and legacy FGD wastewater are vacated. The landfill leachate will be used in the FGD system and any wastewater generated will be treated to comply with the FGD Wastewater ELG standards before mixing with other wastewaters.

In accordance with 40 CFR 423.19(f)(1), the permittee has submitted a schedule which demonstrates December 31, 2028 is the earliest date by which the station could achieve permanent cessation of coal combustion.

After Santee Cooper submitted this schedule, EPA announced the federal government's intention to rewrite the rule by release of a signed prepublication Federal Register notice on July 26, 2021. No specific indication of the government's direction was given but the EPA has repeatedly urged permittees to continue to pursue compliance with effective rules from 2015 and 2020. A new draft rule was published in the Federal Register on March 29, 2023; the date of a final rule is unknown.

Outfalls are discussed in Section I of this rationale with a general description of the discharge, treatment system, stream flows and other pertinent information about each outfall.

EPA review of the draft permit is required if any box below is checked (Mark all that apply)

☐ Permits with discharges which may affect the waters of another State (Coordination with the other State is also required)

List State and name of waterbody(ies) that reach affected state: none

☒ Major permits

☒ Permits with any discharge subject to any of the primary industrial categories (see R.61-9.122, Appendix A)

☒ Permits with any discharge of process wastewater with an average flow exceeding 0.5 MGD

☐ Permits which incorporate pollutant trading

☐ Priority permits

☐ Modification(s) to any permit listed above or a mod that changes a permit to put it into one of the above categories (where it previously was not)

List of Attachments to this Rationale:

Attachment 1	Permit Application
Attachment 2	Water Quality Spreadsheets
Attachment 3	Map of Drinking Water Intake/Source Water Protection Area Relative to Discharge
Attachment 4	Effluent Guidelines
Attachment 5	Wasteload Allocation

I. PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

Facility Description

South Carolina Public Service Authority (Santee Cooper)/Winyah Generating Station is a coal-fired steam electric generating facility, which is located at 661 Steam Plant Drive, Georgetown, South Carolina. The facility has four (4) generating units. Unit 1 began operation in 1975 and has a net winter capacity of 280 megawatts. Units 2, 3, and 4 began operations in 1977, 1980 and 1981, respectively and each have a net winter capacity of 290 megawatts.

All wastewater commingles in the cooling pond before final discharge through one of the two outfalls. The large cooling pond capacity is approximately 1136 acre-feet or 370 million gallons at normal pond operation level. Discharges from the site flow into this pond along with the plant's intake water. The cooling pond serves as both the makeup source of all process water and receptor of all wastewaters generated at the site. Intake water is drawn from the North Santee River and Wadmacon Creek and flows into the cooling pond to be used as process water. A discharge canal enters the pond on the west side. The various wastewaters from plant processes have been removed from the ash ponds for treatment prior to discharge through the discharge canal into the cooling pond. A few plant discharges also flow into the intake canal which carries water from the cooling pond to Units 1&2, where the effluent is either drawn into the units or flows back into the cooling pond.

The sanitary wastewater is segregated from the process wastewater for discharge to the City of Georgetown Wastewater Treatment Plant. Permit #20604-DW was issued Dec.12, 1995 for the sanitary tie-in to the city. Once the tie-in was complete the biological treatment system at the facility was closed.

In 2017 the facility received construction permits 20151-IW and 20162-IW to construct overall CCR/ELG wastewater treatment system changes which are complete and in operation. All wastewater flows to the ash and slurry ponds have stopped, piping to reroute low volume wastewater (LVW) and coal pile runoff (CPRO) from the ash ponds was installed, construction of new LVW treatment system was completed.

This facility is covered by 40 CFR Part 423 - Steam Electric Power Generating Point Source Category. Since all four units were built and operational prior to 1982, the 1982 New Source Performance Standards (NSPS) §423.15 do not apply. Internal outfalls will be utilized to ensure guidelines are met for some specific wastewater sources.

Outfall 001

Description of outfall, receiving water and wastewater treatment system: This outfall consists of all the wastestreams described in the "Facility Description" section of this rationale. This discharge is from the large Cooling/Make-up Pond to Turkey Creek. Historically, the discharge has occurred only during periods of heavy rainfall, extended periods of cold weather, low plant capacity utilization, and/or when there is a need to blowdown pond conductivity or use proportional discharge to Turkey Creek or any combination thereof. The quantity and rate of discharge are that which are necessary to maintain an optimum level in the cooling pond. The discharge would enter Turkey Creek, which flows to the Sampit River, where the river is classified as a SB stream. In recent years, discharges have been exclusively due to extreme weather events. Due to this location being in tidal waters where freshwater and saltwater mix the criteria for both water types will be used to evaluate permit limitations. For the period from 1/1/2015 to the present, there have been two discharges through this outfall, in October 2015 and September 2018. Due to the lack of discharge data specifically for this outfall, the 2C and DMR data from outfall 002 will be used as it is representative of the outfall should it be utilized.

This facility is covered by 40 CFR Part 423 - Steam Electric Power Generating Point Source Category. Since all four units were built and operational before 1982, New Source Performance Standards (NSPS) §423.15 do not apply. All parameters required by §423.12 and §423.16 will be applied at internal outfalls from the treatment system for the specific wastewater source, except for pH, TSS and O&G. EPA memos from 1985 and 1986 state that these three parameter limitations, in co-treatment facilities, may be applied at the final outfall.

Operator requirements: Based on the permitted LVW treatment systems and the Pollution Control Act (PCA), the treatment system is classified as Group I-Physical/Chemical. The Environmental Certification Board Rules require that a Grade D-Physical/Chemical operator be assigned to operate this facility. Inspections of the facility will be required on a daily basis per Regulation 61-9.122.41(e).

Operator requirements: Based on the proposed FGD treatment system and the Pollution Control Act (PCA), this separate treatment system is classified as Group IV-Physical/Chemical. The Environmental Certification Board Rules require that a Grade A-Physical/Chemical operator be assigned to operate this facility. Inspections of the facility will be required on a daily basis per Regulation 61-9.122.41(e).

Information for this outfall is based on NPDES Permit Application: revised/updated 2C dated 1/28/2021

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from 1/1/2015 - 6/30/2020 has been used to evaluate permit limitations.

Previous permit limits are based on the permit (or modification) effective date of March 1, 2008.

This outfall does not have the potential to affect an existing or proposed surface water drinking water source or any state-approved source water protection area (SWPA). Additional information on source water protection is provided in sections III.B and G of this rationale.

All waterbody data is provided on the attached Water Quality Spreadsheets. This data includes 7Q10, annual average flow, dilution factors, hardness, TSS and other information as explained in this rationale.

Additional information as necessary to explain the values used will be provided below.

A. Flow

1. Previous permit limits:
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: daily
   Sample Type: instantaneous
2. NPDES Application: (No. of analyses: No Flow)
3. DMR Data: Oct. 2015: monthly average-6.59 MGD; daily maximum-15.92 MGD
   Sept. 2018: monthly average-0.55 MGD; daily maximum-0.86 MGD
4. Actual long term average flow (from DMR): N/A
5. Conclusion: Any discharge to this outfall will continue to be monitored as in the previous permit. Due to the intermittent nature of this outfall, the number of discharge events during a monthly monitoring period and the duration of any discharge will be monitored to determine the potential impact of the event on the receiving stream.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: daily
   Sample Type: instantaneous
   Number of discharge events observed during the month
   Duration of the discharge event measured in hours

B. Temperature

1. Previous permit limits:
   Monthly Average: MR°F
   Daily Maximum: 93°F
   Sampling Frequency: continuous
   Sample Type: recorder
   Daily Maximum: 5°F rise
   Sampling Frequency: daily
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   Summer (No. of analyses: continuous):
   Maximum Daily Discharge: 36.1°C (96.98°F)
   Maximum Monthly Discharge: 36.1°C (96.98°F)
   Long-Term Average Daily Discharge: 34.1°C (93.38°F)
   Winter (No. of analyses: continuous):
   Maximum Daily Discharge: 25.5°C (77.9°F)
   Maximum Monthly Discharge: 19.4°C (66.92°F)
   Long-Term Average Daily Discharge: 18.6°C (65.48°F)
3. DMR Data: Oct. 2015: monthly average-73°F; daily maximum-80°F; instream temperature rise of 3°F
   Sept. 2018: monthly average-92°F; daily maximum-99°F; instream temperature rise of 3°F

4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section E.12.b states, "The weekly average water temperature of all Shellfish Harvesting, Class SA and Class SB waters shall not exceed 4°F (2.2°C) above natural conditions during the fall, winter or spring, and shall not exceed 1.5°F (0.8°C) above natural conditions during the summer as a result of the discharge of heated liquids unless a different site-specific temperature standard as provided for in C.12. has been established, a mixing zone as provided for in C.10 has been established, or a Section 316(a) determination under the Federal Clean Water Act has been completed."
5. Conclusion: As noted in the Outfall 001 description, discharges through this outfall have historically only occurred during major storm/flooding events. Because the standard is expressed as a weekly average temperature rise above background, the Department believes that the existing daily maximum temperature limits will maintain the instream weekly average standard on those rare occasions that this outfall is utilized. The upstream data will now also be reported with the DMR. It has come to the Departments attention that the facility no longer has continuous temperature monitoring on the effluent to outfall 001. Therefore, the temperature limit will be as follows:

    Upstream Temperature:
        Monthly Average: MR, ºF
        Daily Maximum: MR, ºF (Instantaneous Maximum)
        Sampling Frequency: daily
        Sample Type: grab
    Effluent Temperature:
        Monthly Average: MR, ºF
        Daily Maximum: 93ºF (Instantaneous Maximum)
        Sampling Frequency: daily
        Sample Type: grab
    Temperature Difference: (rise above background)
        Monthly Average: MR, ºF
        Daily Maximum: 5ºF (Instantaneous Maximum)
        Sampling Frequency: daily
        Sample Type: calculation

C. <u>Dissolved Oxygen (DO)</u>

1. Previous permit limits: not limited
2. NPDES Application: (reporting not required)
3. DMR Data: No Data
4. Water Quality Modeling Recommendation (Wasteload Allocation): no recommendation provided
5. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: This discharge is to Turkey Creek, a tributary of Sampit River, which is a listed Class **SB (tidal saltwater)** stream. Therefore, the instream standard for DO in this stream is "Not less than 4.0 mg/L".
6. Other Information: The Sampit River is listed as impaired for Dissolved Oxygen
7. Conclusion: A limit was initially proposed due to the impairment of dissolved oxygen on the Sampit River. After consulting with Water Quality Modeling section (Wasteload Allocation), it was determined, "SC0022471 outfall 001 is located on a small creek which goes into a larger water body that has a DO impairment. Since the DO impairment is so far downstream of the outfall in a very large water body, we don't see the outfall as a concern for the DO impairment". Therefore, no DO limit will be established.

D. pH

1. Previous permit limits: Minimum-6.5 standard units; Maximum-8.5 standard units.
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: minimum: 24; maximum: 23):
   minimum: 7.2 standard units
   maximum: 8.2 standard units
3. DMR Data: Oct. 2015: minimum of 7.6 su and maximum of 7.6 su
   Sept. 2018: minimum of 7.6 su and maximum of 8.0 su
4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: This discharge is to Turkey Creek in Georgetown County, which is an unclassified tributary of the Sampit River, the Regulation states in section C.8; "Where surface waters are not classified by name (unlisted) in R.61-69, Classified Waters, the water quality standards of the class of the stream to which they are tributary shall apply, disregarding any site specific numeric criteria for the named waterbody." The Sampit River is a listed Class **SB (saltwaters)** stream for that portion of the river from saltwater intrusion to Winyah Bay. Therefore, the instream standard for pH for this stream is "Shall not vary more than one-half of a pH unit above or below that of effluent-free waters in the same geological area having a similar total salinity, alkalinity and temperature, but not lower than 6.5 or above 8.5.".
5. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12 Best Practicable Control Technology Currently Available (BPT)
   (b)(1) "The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0."
6. PQL: N/A (SM4500H B)
7. Conclusion: In accordance with the EPA Memorandum dated March 21, 1986, pH limits may be applied after co-treatment at the final Outfall. The final outfall to waters of the state will continue to have pH limitations based on the water quality standard.
   Between 6.5 and 8.5 standard units
   Sampling Frequency: 1/two weeks
   Sample Type: grab

E. Total Suspended Solids (TSS)

1. Previous permit limits:
   Monthly Average: 19.5 mg/l
   Daily Maximum: 59.9 mg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 46):
   Maximum Daily Discharge: 17.3 mg/l
   Maximum Monthly Discharge: 12.95 mg/l
   Long-Term Average Daily Discharge: 7.03 mg/l
3. DMR Data: Oct. 2015: monthly average-8.0 mg/l; daily maximum-8.0 mg/l
   Sept. 2018: monthly average-9.3 mg/l; daily maximum-11.7 mg/l

4. Effluent Limitation Guidelines and best professional judgment limitations:
In accordance with the EPA Memorandum dated August 22, 1985 (Hanmer Memo), facilities that commingle dry-weather flows and wet-weather flows should have flow weighted total suspended solids (TSS) and oil and grease (O&G) limitations applied at the final outfall.

The following effluent limitation guidelines or case-by-case best professional judgment limitations for TSS are applied on a flow-weighted basis at this outfall.
40 CFR 423-Steam Electric Power Generating Point-Source Category

a. § 423.12(b)(9): Coal Pile Runoff (BPT)

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	--	50

b. § 423.12(b)(11) and § 423.15(a)(3): FGD Wastewater (BPT and NSPS) from internal outfall 02E.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	30	100

c. § 423.12(b)(3): Low Volume Wastes (BPT)

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	30	100

d. Cooling Tower Blowdown is based on the NPDES General Permit which authorizes Utility Water Discharges effective October 1, 2021, it is the Departments determination that this source will comply with the TSS limits established in Permit SCG250000 Part IX.A.2 for recirculated non-contact cooling water.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	40	40

e. Other Stormwater and Miscellaneous Waters are not expected to be contaminated and therefore are considered clear water. It is generally accepted that TSS concentrations below 20 mg/l appear clear and levels over 40 mg/l may begin to appear cloudy.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	20	40

f. Bottom Ash Purge Waters if discharged would occur only during maintenance shutdowns. The relatively small flow contribution from this activity would be present at most once per year. Based on the small amount compared to the overall discharge and the intermittent nature of the activity, the Department will not consider this contribution in the flow-weighted monthly average and daily maximum calculation. Its inclusion would make the TSS less stringent by less than (<) 0.01 mg/l.

The following flows are assumed for the various wastestreams.

Coal Pile Runoff - 2.0 MGD
FGD wastewater - 0.234 MGD
Low Volume Wastes - 118.27 MGD
Cooling Tower Blowdown - 0.72 MGD
Other Stormwater and Miscellaneous Waters - 7.5 MGD
Bottom Ash Purge Water - 0.345 MGD

Therefore, the flow-weighted monthly average and daily maximum TSS limits can be calculated as follows:

Monthly Average:

$$\frac{(2.0\ \text{MGD} \times 25\ \text{mg/l}) + (0.234\ \text{MGD} \times 30\ \text{mg/l}) + (118.27\ \text{MGD} \times 30\ \text{mg/l}) + (0.72\ \text{MGD} \times 40\ \text{mg/l}) + (7.5\ \text{MGD} \times 20\ \text{mg/l})}{2.0\ \text{MGD} + 0.234\ \text{MGD} + 118.27\ \text{MGD} + 0.72\ \text{MGD} + 7.5\ \text{MGD}} = 29.4\ \text{mg/l}$$

Daily Maximum:

$$\frac{(2.0\ \text{MGD} \times 50\ \text{mg/l}) + (0.234\ \text{MGD} \times 100\ \text{mg/l}) + (118.27\ \text{MGD} \times 100\ \text{mg/l}) + (0.720\ \text{MGD} \times 40\ \text{mg/l}) + (7.5\ \text{MGD} \times 40\ \text{mg/l})}{2.0\ \text{MGD} + 0.234\ \text{MGD} + 118.27\ \text{MGD} + 0.72\ \text{MGD} + 7.5\ \text{MGD}} = 95.4\ \text{mg/l}$$

5. PQL: 1.0 mg/l (Method SM2540D)
6. Conclusion: In accordance with the EPA Hanmer Memorandum dated August 22, 1985, total suspended solids (TSS) and oil and grease (O&G) limits may have flow weighted concentration limitations applied after co-treatment at the final Outfall. The recent treatment system changes have altered the flows from each contributing source, plus the algae bloom in the cooling pond has added an unanticipated TSS source that was beyond the facility's control. The Effluent Guideline limits still apply using the new flow-weight calculation derived above. Therefore, the limits will be:
   Monthly Average: 29.4 mg/l
   Daily Maximum: 95.4 mg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab

F. <u>Oil and Grease</u>

1. Current permit limits:
   Monthly Average: 8 mg/l
   Daily Maximum: 11 mg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 26):
   Maximum Daily Discharge: <5.00 mg/l
   Maximum Monthly Discharge: <5.00 mg/l
   Long-Term Average Daily Discharge: <5.00 mg/l
3. DMR Data: Oct. 2015: monthly average-0 mg/l; daily maximum-0 mg/l
   Sept. 2018: monthly average-0 mg/l; daily maximum-0 mg/l
4. Effluent Limitation Guidelines and best professional judgment limitations:
   In accordance with the EPA Memorandum dated August 22, 1985 (Hanmer Memo), facilities that commingle dry-weather flows and wet-weather flows should have flow weighted total suspended solids (TSS) and oil and grease (O&G) limitations applied at the final outfall.

   The following effluent limitation guidelines or case-by-case best professional judgment limitations for Oil and Grease are applied on a flow-weighted basis at this outfall.
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   a. § 423.12(b)(9): <u>Coal Pile Runoff</u> (BPT): no guideline; limit will be zero (0) for the calculation to comply with R.61-68.E.5. which states that surface waters at all times, regardless of flow, shall be free from floating debris, oil, grease, scum, and other floating material.

b. § 423.12(b)(11) and § 423.15(a)(3): FGD Wastewater (BPT and NSPS) from internal outfall 02E.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	15	20

c. § 423.12(b)(3): Low Volume Wastes (BPT)

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	15	20

d. Cooling Tower Blowdown is based on the NPDES General Permit which authorizes Utility Water Discharges effective October 1, 2021, it is the Departments determination that this source will comply with the limits established in Permit SCG250000 Part IX.A.2 for recirculated non-contact cooling water. There is no established limit, therefore the limit will be zero (0) for the calculation to comply with R.61-68.E.5. which states that surface waters at all times, regardless of flow, shall be free from floating debris, oil, grease, scum, and other floating material.

e. Other Stormwater and Miscellaneous Waters are not expected to be contaminated and therefore are considered clear water. There is no established limit, therefore the limit will be zero (0) for the calculation to comply with R.61-68.E.5. which states that surface waters at all times, regardless of flow, shall be free from floating debris, oil, grease, scum, and other floating material.

f. Bottom Ash Purge Waters if discharged would occur only during maintenance shutdowns. The relatively small flow contribution from this activity would be present at most once per year. Based on the small amount compared to the overall discharge and the intermittent nature of the activity, the Department will not consider this contribution in the flow-weighted monthly average and daily maximum calculation. Its inclusion would make the TSS less stringent by less than (<) 0.01 mg/l.

The following flows are assumed for the various wastestreams.

Coal Pile Runoff - 2.0 MGD
FGD wastewater - 0.234 MGD
Low Volume Wastes - 118.27 MGD
Cooling Tower Blowdown - 0.72 MGD
Other Stormwater and Miscellaneous Waters - 7.5 MGD
Bottom Ash Purge Water - 0.345 MGD

Therefore, the flow-weighted monthly average and daily maximum TSS limits can be calculated as follows:

Monthly Average:

$$\frac{(2.0\ \text{MGD} \times 0\ \text{mg/l}) + (0.234\ \text{MGD} \times 15\ \text{mg/l}) + (118.27\ \text{MGD} \times 15\ \text{mg/l}) + (0.72\ \text{MGD} \times 0\ \text{mg/l}) + (7.5\ \text{MGD} \times 0\ \text{mg/l})}{2.0\ \text{MGD} + 0.234\ \text{MGD} + 118.27\ \text{MGD} + 0.72\ \text{MGD} + 7.5\ \text{MGD}} = 13.8\ \text{mg/l}$$

Daily Maximum:

$$\frac{(2.0\ \text{MGD} \times 0\ \text{mg/l}) + (0.234\ \text{MGD} \times 20\ \text{mg/l}) + (118.27\ \text{MGD} \times 20\ \text{mg/l}) + (0.720\ \text{MGD} \times 0\ \text{mg/l}) + (7.5\ \text{MGD} \times 0\ \text{mg/l})}{2.0\ \text{MGD} + 0.234\ \text{MGD} + 118.27\ \text{MGD} + 0.72\ \text{MGD} + 7.5\ \text{MGD}} = 18.4\ \text{mg/l}$$

5. PQL: 5 mg/l (Method 1664A)

6. Conclusion: In accordance with the EPA Memorandum dated August 22, 1985, total suspended solids (TSS) and oil and grease (O&G) limits may have flow weighted concentration limitations applied after co-treatment at the final Outfall. The guidelines do not require Oil and Grease (as HEM), as such the 'as HEM' designation will be removed. The current permit limits have proven to be effective and achievable, therefore the current limits will remain.
   Monthly Average: 8 mg/l
   Daily Maximum: 11 mg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab

G. <u>Arsenic, total</u>

1. Previous permit limits:
   Monthly Average: 0.73 µg/l
   Daily Maximum: 1.06 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 25):
   Maximum Daily Discharge: 26 µg/l
   Maximum Monthly Discharge: 24 µg/l
   Long-Term Average Daily Discharge: 10.5 µg/l
3. DMR Data: Oct. 2015: monthly average-17.0 µg/l; daily maximum-17.0 µg/l
   Sept. 2018: monthly average-35.4 µg/l; daily maximum-38.4 µg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1. (aquatic life - saltwater)
   Monthly Average: 0.04276 mg/l (42.8 µg/l)
   Daily Maximum: 0.08195 mg/l (82.0 µg/l)
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
   (for this evaluation the Maximum Monthly Discharge from the 2C was taken to be representative of the potential discharge and the Daily Maximum from the DMR will be representative of the maximum concentration from an actual discharge)
6. PQL: 5.0 µg/l
7. Conclusion: The previous permit limits were based on Human Health "Water & Organism" and "Organism Only" standards in the 2004 edition of Regulation 61-68, Water Classifications & Standard. In the 2008 reauthorization of the Water Quality Criteria (Regulation 61-68) the two human health standards mentioned were removed. Currently the criteria for both are equal to the MCL. The data indicates that there is no reasonable potential to cause or contribute to an instream violation of the remaining standard, but ongoing closure activities to CCR units present a risk of suspending currently bound arsenic in the effluent. Therefore, the limit will be changed to monitor and report.
   Monthly Average: MR, µg/l
   Daily Maximum: MR, µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab

H. <u>Copper, total</u>

1. Previous permit limits:
   Monthly Average: 3.7 µg/l
   Daily Maximum: 5.8 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 1):
   Maximum Daily Discharge: <10.0 µg/l
   Maximum Monthly Discharge: NA
   Long-Term Average Daily Discharge: NA
3. DMR Data: Oct. 2015: monthly average-0 µg/l; daily maximum-0 µg/l
   Sept. 2018: monthly average-3 µg/l; daily maximum-3 µg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1. (aquatic life - saltwater)
   Monthly Average: 0.004394 mg/l (4.4 µg/l)
   Daily Maximum: 0.006889 mg/l (6.9 µg/l)
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes
6. PQL: 10 µg/l
7. Conclusion: While the reported values are less than the approved PQL, the value reported on the DMR is 3 µg/l. Using the actual data reported on the DMR, the data indicates that there is reasonable potential to cause or contribute to an instream violation of the standard. Therefore, the limit will be changed to the current water quality criteria.
   Monthly Average: 4.4 µg/l
   Daily Maximum: 6.9 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab

I. <u>Manganese, total</u>

1. Previous permit limits:
   Monthly Average: 100 µg/l
   Daily Maximum: 146 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 1):
   Maximum Daily Discharge: 406 µg/l
   Maximum Monthly Discharge: NA
   Long-Term Average Daily Discharge: NA
3. DMR Data: Oct. 2015: monthly average-490 µg/l; daily maximum-490 µg/l
   Sept. 2018: monthly average-270 µg/l; daily maximum-303 µg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1.
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
6. PQL: 10 µg/l

7. Conclusion: The previous permit limits were based on Human Health "Water & Organism" and "Organism Only" standards in the 2004 edition of Regulation 61-68, Water Classifications & Standard. In the 2008 reauthorization of the Water Quality Criteria (Regulation 61-68) the two human health standards mentioned were removed. The data indicates that there is no reasonable potential to cause or contribute to an instream violation of the current standard. Based on current standards the monitoring requirement will be removed from the permit.

J. <u>Thallium, total</u>

1. Previous permit limits:
   Monthly Average: 6.3 µg/l
   Daily Maximum: 9.2 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 1):
   Maximum Daily Discharge: <0.500 µg/l
   Maximum Monthly Discharge: NA
   Long-Term Average Daily Discharge: NA
3. DMR Data: Oct. 2015: monthly average-0 µg/l; daily maximum-0 µg/l
   Sept. 2018: monthly average-0 µg/l; daily maximum-0 µg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1. (human health - organism only)
   Monthly Average: 0.0005582 mg/l (0.6 µg/l)
   Daily Maximum: 0.0008150 mg/l (0.8 µg/l)
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
6. PQL: 0.5 µg/l
7. Conclusion: The data indicates that there is no reasonable potential to cause or contribute to an instream violation of the remaining standard. Therefore, the limit will be changed to monitor and report.
   Monthly Average: MR, µg/l
   Daily Maximum: MR, µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab

K. <u>Nickel, total</u>

1. Previous permit limits:
   Monthly Average: 8.3 µg/l
   Daily Maximum: 75.0 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 1):
   Maximum Daily Discharge: <10.0 µg/l
   Maximum Monthly Discharge: NA
   Long-Term Average Daily Discharge: NA

3. DMR Data: Oct. 2015: monthly average-12 µg/l; daily maximum-12 µg/l
   Sept. 2018: monthly average-5 µg/l; daily maximum-6 µg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1. (aquatic life - saltwater)
   Monthly Average: 0.009858 mg/l (9.9 µg/l)
   Daily Maximum: 0.08908 mg/l (89.1 µg/l)
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes
6. PQL: 10 µg/l
7. Conclusion: While the reported values are less than the approved PQL, the value reported on the DMR is 5 µg/l and 6 µg/l. Using the actual data reported on the DMR, the data indicates that there is reasonable potential to cause or contribute to an instream violation of the standard. Therefore, the limit will be changed to the current water quality criteria.
   Monthly Average: 9.9 µg/l
   Daily Maximum: 89.1 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab

L. <u>Selenium, total</u>

1. Previous permit limits:
   Monthly Average: 71 µg/l
   Daily Maximum: 290 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 1):
   Maximum Daily Discharge: 9.58 µg/l
   Maximum Monthly Discharge: NA
   Long-Term Average Daily Discharge: NA
3. DMR Data: Oct. 2015: monthly average-10 µg/l; daily maximum-10 µg/l
   Sept. 2018: monthly average-23 µg/l; daily maximum-15 µg/l
4. Water Quality Criteria: See Spreadsheet in Appendix 1. (aquatic life - freshwater)
   Monthly Average: 0.005938 mg/l (5.9 µg/l)
   Daily Maximum: 0.02375 mg/l (23.8 µg/l)
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes
6. PQL: 5.0 µg/l
7. Conclusion: The data indicates that there is reasonable potential to cause or contribute to an instream violation of the standard. Therefore, the limit will be changed to the following:
   Monthly Average: 5.9 µg/l
   Daily Maximum: 23.8 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab

M. Mercury, total

1. Previous permit limits: not limited
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 4):
   Maximum Daily Discharge: 0.02220 µg/l
   Maximum Monthly Discharge: 0.02220 µg/l
   Long-Term Average Daily Discharge: 0.01084 µg/l
3. Additional Monitoring Data: (Provided August 23, 2021; quarterly data 1/1/2016 - 6/30/2021)
   (No. of analyses: 22):
   Maximum Daily Discharge: 0.02650 µg/l
   Maximum Monthly Discharge: 0.02650 µg/l
   Long-Term Average Daily Discharge: 0.00796 µg/l
4. DMR Data: monitoring not required
5. Water Quality Criteria: See Spreadsheet in Appendix 1. (human health - organism only)
   Monthly Average: 0.000051 mg/l (51 ng/l)
   Daily Maximum: 0.00007446 mg/l (74.5 ng/l)
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
7. PQL: 0.0005 µg/l (0.5 ng/l)
8. Conclusion: In order to protect the Sampit River, due to the impairment for mercury (see Page 1 of this rationale) conditions will be placed in the permit. Per SC Regulation 61-68.E.18. the receiving stream is listed as impaired for mercury and there is a quantifiable level of mercury in the discharge, therefore mercury monitoring, assessment and minimization is required. Using procedures established to determine limits for impaired waters, the data indicates that there is no reasonable potential to cause or contribute to an instream violation of the standard. Therefore, a requirement to develop and implement a mercury minimization plan and an effluent monitoring requirement will be established. The limit will be included as follows:
   Monthly Average: MR, ng/l
   Daily Maximum: MR, ng/l
   Sampling Frequency: 1/quarter
   Sample Type: grab

N. Total Residual Chlorine (TRC)

1. Previous permit limits:
   Monthly Average: 7.5 µg/l
   Daily Maximum: 13.0 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
   (No. of analyses: 1):
   Maximum Daily Discharge: 0.09 mg/l (90 µg/l)
   Maximum Monthly Discharge: NA
   Long-Term Average Daily Discharge: NA
3. DMR Data: Oct. 2015: monthly average-0 µg/l; daily maximum-0 µg/l
   Sept. 2018: monthly average-0 µg/l; daily maximum-0 µg/l

4. Water Quality Criteria: See Spreadsheet in Appendix 1. (aquatic life -saltwater)
   Monthly Average: 0.008908 mg/l (8.9 µg/l)
   Daily Maximum: 0.01544 mg/l (15.4 µg/l)
5. PQL: 0.05 mg/l (50 µg/l)
6. Conclusion: The data indicates that there is reasonable potential to cause or contribute to an instream violation of the standard. Therefore, the limit will be changed to the following:
   Monthly Average: 8.9 µg/l
   Daily Maximum: 15.4 µg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab

O. Other Parameters

All other parameters reported on the 2C show no reasonable potential to cause or contribute to a water quality violation. Therefore, no additional limits will be placed on this outfall.

P. Whole Effluent Toxicity (WET)

1. Previous permit limits:
   Chronic whole effluent toxicity testing using *Ceriodaphnia dubia* at a CTC = 100% using the dilution series 0% (control), 50%, 60%, 71%, and 84%
   Quarterly Average: 25% effect (total, reproduction, & mortality)
   Maximum: 40% effect (total, reproduction, & mortality)
   Sampling Frequency: 3/quarter
   Sample Type: grab
2. DMR Data: One discharge through this outfall was reported in September 2018, discharge was not of sufficient duration to collect a valid chronic toxicity test.
3. Mixing Zone and Zone of Initial Dilution (ZID) Information:
   The stream at the point of discharge is too small to obtain a usable mixing zone, therefore a test concentration of 100% will continue to be applied to this outfall.
4. Reasonable potential evaluation: No data available to run a reasonable potential evaluation.
5. Conclusion: Because this Outfall is rarely used for effluent discharge and when it was used the discharge was not of sufficient duration to obtain a valid chronic toxicity test, the WET limit will be changed to an acute pass/fail test. The same dilution series as previously required will be used in order to calculate the LC50 for the discharge when one occurs. The following permit requirements are based on an evaluation of the treatment provided, the variability of pollutants in the discharge, the nature and characteristics of the discharge, and the available dilution in accordance with R.61-9.122.44(d)(1).

   Acute whole effluent toxicity testing shall be performed using *Ceriodaphnia dubia* at an ATC = 100% using the dilution series 0% (control), 50%, 60%, 71%, and 84%.

   Monthly average* = --
   Daily Maximum = 0 (Report “0” if test passes or “1” if test fails)
   Sampling Frequency: 1/month
   Sample Type: grab

   * Please note that monthly average is being used per the requirements of R.61-9.122.45.d. This may be different than was included in previous permits issued to this facility.

Outfall 002

Description of outfall, receiving water and wastewater treatment system: This outfall consists of all the wastestreams described in the "Facility Description" section of this rationale. This discharge is from the large Cooling/Make-up Pond to the North Santee River. The outfall is the primary final discharge point for the plant effluent and is continuous. The discharge enters the North Santee River at the US 17 Bridge, where the river is classified as a SA stream. Due to this location being in tidal waters where freshwater and saltwater mix the criteria for both water types will be used to evaluate permit limitations.

All parameters required by 40 CFR Part 423 - Steam Electric Power Generating Point Source Category will be applied at internal outfalls from the treatment system for the specific wastewater source, except for pH, TSS and O&G. EPA memos from 1985 and 1986 state that these three parameter limitations, in co-treatment facilities, may be applied at the final outfall.

Operator requirements: Based on the permitted LVW treatment systems and the Pollution Control Act (PCA), the treatment system is classified as Group I-Physical/Chemical. The Environmental Certification Board Rules require that a Grade D-Physical/Chemical operator be assigned to operate this facility. Inspections of the facility will be required on a daily basis per Regulation 61-9.122.41(e).

Operator requirements: Based on the proposed FGD treatment system and the Pollution Control Act (PCA), this separate treatment system is classified as Group IV-Physical/Chemical. The Environmental Certification Board Rules require that a Grade A-Physical/Chemical operator be assigned to operate this facility. Inspections of the facility will be required on a daily basis per Regulation 61-9.122.41(e).

Information for this outfall is based on NPDES Permit Application: 2C dated 1/28/2011

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from 1/1/2015 - 6/30/2020 has been used to evaluate permit limitations.

Previous permit limits are based on the permit (or modification) effective date of March 1, 2008.

This outfall does not have the potential to affect an existing or proposed surface water drinking water source or any state-approved source water protection area (SWPA). Additional information on source water protection is provided in sections III.B and G of this rationale.

All waterbody data is provided on the attached Water Quality Spreadsheets. This data includes 7Q10, annual average flow, dilution factors, hardness, TSS and other information as explained in this rationale. Additional information as necessary to explain the values used will be provided below.

A. Flow

1. Previous permit limits:
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: daily
   Sample Type: continuous

2. NPDES Application: (No. of analyses: ~730)
   Long Term Average Value: 2.18 MGD
   Maximum 30-day Value: 3.79 MGD
   Maximum Daily Value: 4.03 MGD
3. DMR Data: The highest flow was reported in 03/2015 as 4.28 MGD
4. Actual long term average flow (from DMR: Jan. 2015 to June 2020): 3.11 MGD
5. Conclusion: Effluent flow monitoring will continue as previously permitted.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: daily
   Sample Type: continuous

B. <u>Temperature</u>

1. Previous permit limits:
   Monthly Average: MRºF
   Daily Maximum: 98ºF (summer - June, July and August)
   Daily Maximum: 91ºF (fall & spring - March, April, May, September, October and November)
   Daily Maximum: 86ºF (winter - December, January and February)
   Sampling Frequency: continuous
   Sample Type: recorder
2. NPDES Application:
   Summer (No. of analyses: continuous):
   Maximum Daily Discharge: 36.1ºC (96.98ºF)
   Maximum Monthly Discharge: 36.1ºC (96.98ºF)
   Long-Term Average Daily Discharge: 34.1ºC (93.38ºF)
   Winter (No. of analyses: continuous):
   Maximum Daily Discharge: 25.5ºC (77.9ºF)
   Maximum Monthly Discharge: 19.4ºC (66.92ºF)
   Long-Term Average Daily Discharge: 18.6ºC (65.48ºF)
3. DMR Data: The highest effluent value was reported in 06/2016 as 97°F.
4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section E.12.b states, "The weekly average water temperature of all Shellfish Harvesting, Class SA and Class SB waters shall not exceed 4°F (2.2°C) above natural conditions during the fall, winter or spring, and shall not exceed 1.5°F (0.8°C) above natural conditions during the summer as a result of the discharge of heated liquids unless a different site-specific temperature standard as provided for in C.12. has been established, a mixing zone as provided for in C.10 has been established, or a Section 316(a) determination under the Federal Clean Water Act has been completed."
5. Conclusion: Previous permit limits have been based on a thermal mixing zone as provided for in *S.C. Reg. 61-68 Section C.10,* based on data provided on June 6, 2000. A new mixing zone report using the CORMIX Model dated January 13, 2021 has been submitted. The facility has requested changes to the current temperature mixing zone. Under the current temperature limits there are times during the summer, spring and fall that the facility must curtail pumping effluent to meet the limit, which causes temperature and conductivity buildup within the cooling/discharge pond and decreases the plant's overall power output and performance. Using the receiving streams width as a standard to determine the size of the acceptable mixing zone, the instream temperature standard should be obtained within 215 ft of the discharge diffuser. The models indicate that the requested summer and spring/fall

discharge temperature will meet the instream standard within 182 ft and 24 ft, respectively. After a review with the Department's Aquatic Biology Section, it was determined that the requested changes to the thermal mixing zone is approved with a requirement to conduct a thermal mixing zone boundary verification study with temperature monitoring seasonally with multiple flows. Therefore the temperature limit will be as follows:

Monthly Average: MRºF
Daily Maximum: 115ºF (summer - June, July and August)
Daily Maximum: 105ºF (fall & spring - March, April, May, September, October and November)
Daily Maximum: 86ºF (winter - December, January and February)
Sampling Frequency: daily
Sample Type: continuous

C. <u>Dissolved Oxygen (DO)</u>

1. Previous permit limits: not limited
2. NPDES Application: (reporting not required)
3. DMR Data: No Data
4. Water Quality Modeling Recommendation (Wasteload Allocation): no recommendation provided
5. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: This discharge is to the North Santee River, which is a listed Class **SA (tidal saltwater)** stream. Therefore, the instream standard for DO in this stream is "Daily average not less than 5.0 mg/1 with a low of 4.0 mg/1".
6. Other Information: Unlike Outfall 001, this receiving stream is not listed as impaired for DO.
7. Conclusion: Initially it was proposed to monitor and report to collect data. After consulting with Water Quality Modeling section (Wasteload Allocation), it was determined, "SC0022471 outfall 002 has a very high dilution ratio. We are not concerned at this point.". Therefore, no DO monitoring will be established.

D. <u>pH</u>

1. Previous permit limits: Minimum-6.0 standard units; Maximum-8.5 standard units.
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (No. of analyses: 47)
   minimum: 7.2 standard units
   maximum: 8.2 standard units
3. DMR Data: The highest value was reported in 5/17 and 6/17 as 8.3 standard units. The lowest value was reported in 10/15 and 12/15 as 6.7 standard units.
4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: This discharge is to the North Santee River in Georgetown County, which is a listed Class **SA (saltwaters)** stream in R.61-69. Therefore, the instream standard for pH for this stream is "Shall not vary more than one-half of a pH unit above or below that of effluent-free waters in the same geological area having a similar total salinity, alkalinity and temperature, but not lower than 6.5 or above 8.5.".
5. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12 Best Practicable Control Technology Currently Available (BPT)
   (b)(1) "The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0."

6. PQL: N/A (SM4500H B)
7. Conclusion: In accordance with the EPA Memorandum dated March 21, 1986, pH limits may be applied after co-treatment at the final Outfall. Due to the large dilution factor provided by the North Santee River (76:1 dilution), the Department has determined that the upper and lower range pH limit of the effluent guideline would not cause the receiving stream to vary more than one-half of a pH unit above or below that of effluent-free waters and would therefore comply with the SC Water Standards. Due to the large discharge flow, pH should be monitored daily with a continuous device the same as flow and temperature at this outfall, the facility will be given a three-year compliance schedule to install the monitoring device. The final outfall to waters of the state will have pH limitations, as follows:
   Between 6.0 and 9.0 standard units
   Sampling Frequency: daily
   Sample Type: continuous
   Length of longest excursion not to exceed 60 minutes
   Percent of total time exceeding pH limit: 1%

E. <u>Total Suspended Solids (TSS)</u>

1. Previous permit limits:
   Monthly Average: 19.5 mg/l
   Daily Maximum: 59.9 mg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (No. of analyses: 46)
   Long-Term Average Daily Discharge: 7.03 mg/l
   Maximum Monthly Discharge: 12.95 mg/l
   Maximum Daily Discharge: 17.3 mg/l
3. DMR Data: The highest value was reported in 4/15 as 26.8 mg/l.
4. Effluent Limitation Guidelines and best professional judgment limitations:
   In accordance with the EPA Memorandum dated August 22, 1985 (Hanmer Memo), facilities that commingle dry-weather flows and wet-weather flows should have flow weighted total suspended solids (TSS) and oil and grease (O&G) limitations applied at the final outfall.

   The following effluent limitation guidelines or case-by-case best professional judgment limitations for TSS are applied on a flow-weighted basis at this outfall.
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   a. § 423.12(b)(9): <u>Coal Pile Runoff</u> (BPT)

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	--	50

   b. § 423.12(b)(11) and § 423.15(a)(3): <u>FGD Wastewater</u> (BPT and NSPS) from internal outfall 02E.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	30	100

   c. § 423.12(b)(3): <u>Low Volume Wastes</u> (BPT)

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	30	100

d. Cooling Tower Blowdown is based on the NPDES General Permit which authorizes Utility Water Discharges effective October 1, 2021, it is the Departments determination that this source will comply with the TSS limits established in Permit SCG250000 Part IX.A.2 for recirculated non-contact cooling water.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	40	40

e. Other Stormwater and Miscellaneous Waters are not expected to be contaminated and therefore are considered clear water. It is generally accepted that TSS concentrations below 20 mg/l appear clear and levels over 40 mg/l may begin to appear cloudy.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	20	40

f. Bottom Ash Purge Waters if discharged would occur only during maintenance shutdowns. The relatively small flow contribution from this activity would be present at most once per year. Based on the small amount compared to the overall discharge and the intermittent nature of the activity, the Department will not consider this contribution in the flow-weighted monthly average and daily maximum calculation. Its inclusion would make the TSS less stringent by less than (<) 0.01 mg/l.

The following flows are assumed for the various wastestreams.

Coal Pile Runoff - 2.0 MGD
FGD wastewater - 0.234 MGD
Low Volume Wastes - 118.27 MGD
Cooling Tower Blowdown - 0.72 MGD
Other Stormwater and Miscellaneous Waters - 7.5 MGD
Bottom Ash Purge Water - 0.345 MGD

Therefore, the flow-weighted monthly average and daily maximum TSS limits can be calculated as follows:

Monthly Average:

$$\frac{(2.0\ \text{MGD} \times 25\ \text{mg/l}) + (0.234\ \text{MGD} \times 30\ \text{mg/l}) + (118.27\ \text{MGD} \times 30\ \text{mg/l}) + (0.72\ \text{MGD} \times 40\ \text{mg/l}) + (7.5\ \text{MGD} \times 20\ \text{mg/l})}{2.0\ \text{MGD} + 0.234\ \text{MGD} + 118.27\ \text{MGD} + 0.72\ \text{MGD} + 7.5\ \text{MGD}} = 29.4\ \text{mg/l}$$

Daily Maximum:

$$\frac{(2.0\ \text{MGD} \times 50\ \text{mg/l}) + (0.234\ \text{MGD} \times 100\ \text{mg/l}) + (118.27\ \text{MGD} \times 100\ \text{mg/l}) + (0.720\ \text{MGD} \times 40\ \text{mg/l}) + (7.5\ \text{MGD} \times 40\ \text{mg/l})}{2.0\ \text{MGD} + 0.234\ \text{MGD} + 118.27\ \text{MGD} + 0.72\ \text{MGD} + 7.5\ \text{MGD}} = 95.4\ \text{mg/l}$$

5. PQL: 1.0 mg/l (Method SM2540D)
6. Conclusion: In accordance with the EPA Hanmer Memorandum dated August 22, 1985, total suspended solids (TSS) and oil and grease (O&G) limits may have flow weighted concentration limitations applied after co-treatment at the final Outfall. The recent treatment system changes have altered the flows from each contributing source, plus the algae bloom in the cooling pond has added an unanticipated TSS source that was beyond the facility's control. The Effluent Guideline limits still apply using the new flow-weight calculation derived above. Therefore, the limits will be:
   Monthly Average: 29.4 mg/l
   Daily Maximum: 95.4 mg/l
   Sampling Frequency: 2/month
   Sample Type: grab

F. Oil and Grease

1. Current permit limits:
   Monthly Average: 8 mg/l
   Daily Maximum: 11 mg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (No. of analyses: 26)
   Long-Term Average Daily Discharge: <5.00 mg/l
   Maximum Monthly Discharge: <5.00 mg/l
   Maximum Daily Discharge: <5.00 mg/l
3. DMR Data: The highest value was reported in 1/15, 3/15 and 5/15 as 2 mg/l.
4. Effluent Limitation Guidelines and best professional judgment limitations:
   In accordance with the EPA Memorandum dated August 22, 1985 (Hanmer Memo), facilities that commingle dry-weather flows and wet-weather flows should have flow weighted total suspended solids (TSS) and oil and grease (O&G) limitations applied at the final outfall.

   The following effluent limitation guidelines or case-by-case best professional judgment limitations for Oil and Grease are applied on a flow-weighted basis at this outfall.
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   a. § 423.12(b)(9): Coal Pile Runoff (BPT): no guideline; limit will be zero (0) for the calculation to comply with R.61-68.E.5. which states that surface waters at all times, regardless of flow, shall be free from floating debris, oil, grease, scum, and other floating material.
   b. § 423.12(b)(11) and § 423.15(a)(3): FGD Wastewater (BPT and NSPS) from internal outfall 02E.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	15	20

   c. § 423.12(b)(3): Low Volume Wastes (BPT)

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	15	20

   d. Cooling Tower Blowdown is based on the NPDES General Permit which authorizes Utility Water Discharges effective October 1, 2021, it is the Departments determination that this source will comply with the limits established in Permit SCG250000 Part IX.A.2 for recirculated non-contact cooling water. There is no established limit, therefore the limit will be zero (0) for the calculation to comply with R.61-68.E.5. which states that surface waters at all times, regardless of flow, shall be free from floating debris, oil, grease, scum, and other floating material.
   e. Other Stormwater and Miscellaneous Waters are not expected to be contaminated and therefore are considered clear water. There is no established limit, therefore the limit will be zero (0) for the calculation to comply with R.61-68.E.5. which states that surface waters at all times, regardless of flow, shall be free from floating debris, oil, grease, scum, and other floating material.
   f. Bottom Ash Purge Waters if discharged would occur only during maintenance shutdowns. The relatively small flow contribution from this activity would be present at most once per year. Based on the small amount compared to the overall discharge and the intermittent nature of the activity, the Department will not consider this contribution in the flow-weighted monthly average and daily maximum calculation. Its inclusion would make the TSS less stringent by less than (<) 0.01 mg/l.

The following flows are assumed for the various wastestreams.

Coal Pile Runoff - 2.0 MGD
FGD wastewater - 0.234 MGD
Low Volume Wastes - 118.27 MGD
Cooling Tower Blowdown - 0.72 MGD
Other Stormwater and Miscellaneous Waters - 7.5 MGD
Bottom Ash Purge Water - 0.345 MGD

Therefore, the flow-weighted monthly average and daily maximum TSS limits can be calculated as follows:

Monthly Average:

$$\frac{(2.0\ \text{MGD} \times 0\ \text{mg/l}) + (0.234\ \text{MGD} \times 15\ \text{mg/l}) + (118.27\ \text{MGD} \times 15\ \text{mg/l}) + (0.72\ \text{MGD} \times 0\ \text{mg/l}) + (7.5\ \text{MGD} \times 0\ \text{mg/l})}{2.0\ \text{MGD} + 0.234\ \text{MGD} + 118.27\ \text{MGD} + 0.72\ \text{MGD} + 7.5\ \text{MGD}} = 13.8\ \text{mg/l}$$

Daily Maximum:

$$\frac{(2.0\ \text{MGD} \times 0\ \text{mg/l}) + (0.234\ \text{MGD} \times 20\ \text{mg/l}) + (118.27\ \text{MGD} \times 20\ \text{mg/l}) + (0.720\ \text{MGD} \times 0\ \text{mg/l}) + (7.5\ \text{MGD} \times 0\ \text{mg/l})}{2.0\ \text{MGD} + 0.234\ \text{MGD} + 118.27\ \text{MGD} + 0.72\ \text{MGD} + 7.5\ \text{MGD}} = 18.4\ \text{mg/l}$$

5. PQL: 5 mg/l (Method 1664A)
6. Conclusion: In accordance with the EPA Memorandum dated August 22, 1985, total suspended solids (TSS) and oil and grease (O&G) limits may have flow weighted concentration limitations applied after co-treatment at the final Outfall. The guidelines do not require Oil and Grease (as HEM), as such the 'as HEM' designation will be removed. The current permit limits have proven to be effective and achievable, therefore the current limits will remain.
   Monthly Average: 8 mg/l
   Daily Maximum: 11 mg/l
   Sampling Frequency: 2/month
   Sample Type: grab

G. <u>Arsenic, total</u>

1. Previous permit limits:
   Monthly Average: 0.662 mg/l
   Daily Maximum: 0.966 mg/l
   Sampling Frequency: 1/two weeks
   Sample Type: grab
2. NPDES Application: (No. of analyses: 25)
   Long-Term Average Daily Discharge: 10.5 µg/l
   Maximum Monthly Discharge: 24 µg/l
   Maximum Daily Discharge: 26 µg/l
3. DMR Data: The highest value was reported in 8/15 as 0.13 mg/l (130 µg/l).
4. Water Quality Criteria: See Spreadsheet in Appendix 1.
   Monthly Average: 2.76 mg/l (2760 µg/l)
   Daily Maximum: 5.29 mg/l (5290 µg/l)
5. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
6. PQL: 5.0 µg/l

7. Conclusion: The data indicates that there is no reasonable potential to cause or contribute to an instream violation of the standard, but ongoing closure activities to CCR units present a risk of suspending currently bound arsenic in the effluent. Therefore, the limit will be changed to monitor and report.
    Monthly Average: MR, µg/l
    Daily Maximum: MR, µg/l
    Sampling Frequency: 1/two weeks
    Sample Type: grab

H. <u>Mercury, total</u>

1. Previous permit limits: not limited
2. NPDES Application: (Outfall 002 data, EPA Form 2C update January 2021)
    (No. of analyses: 4):
        Maximum Daily Discharge: 0.02220 µg/l
        Maximum Monthly Discharge: 0.02220 µg/l
        Long-Term Average Daily Discharge: 0.01084 µg/l
3. Additional Monitoring Data: (Provided August 23, 2021; quarterly data 1/1/2016 - 6/30/2021)
    (No. of analyses: 22):
        Maximum Daily Discharge: 0.02650 µg/l
        Maximum Monthly Discharge: 0.02650 µg/l
        Long-Term Average Daily Discharge: 0.00796 µg/l
4. DMR Data: monitoring not required
5. Water Quality Criteria: See Spreadsheet in Appendix 1.
    Monthly Average: 0.000051 mg/l (51 ng/l)
    Daily Maximum: 0.00007446 mg/l (74.5 ng/l)
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
7. PQL: 0.0005 µg/l (0.5 pg/l)
8. Conclusion: Per SC Regulation 61-68.E.18. the receiving stream is listed as impaired for mercury and there is a quantifiable level of mercury in the discharge, therefore mercury monitoring, assessment and minimization is required. Using procedures established to determine limits for impaired waters, the data indicates that there is no reasonable potential to cause or contribute to an instream violation of the standard. Therefore, a requirement to develop and implement a mercury minimization plan and an effluent monitoring requirement will be established. The limit will be included as follows:
    Monthly Average: MR, ng/l
    Daily Maximum: MR, ng/l
    Sampling Frequency: 1/month
    Sample Type: grab

I. <u>Other Parameters</u>

All other parameters reported on the 2C show no reasonable potential to cause or contribute to a water quality violation. Therefore, no additional limits will be placed on this outfall.

P. Whole Effluent Toxicity (WET)

1. Previous permit limits:
   Chronic whole effluent toxicity testing using *Ceriodaphnia dubia* at a CTC = 4.7% using the dilution series 0% (control), 1%, 10%, 32%, and 100%
   Quarterly Average: 25% effect (total, reproduction, & mortality)
   Maximum: 40% effect (total, reproduction, & mortality)
   Sampling Frequency: 3/quarter
   Sample Type: 24-hour composite
2. DMR Data: All chronic tests at CTC = 4.7% have passed. The largest percent effect was observed in 11/2015 as an 11% total effect. The most restrictive IC25 is reported in 4/2015 as 7.9%.
3. Mixing Zone Information:
   The average width of the stream at the point of discharge is 691 ft (210 m) (w in the equation below).
   The maximum allowed mixing zone dimensions are determined as follows using stream width:
   Chronic mixing zone
   Width: ½ w = 105 m
   Length: 2w = 421 m
   The following dilutions can be determined at the boundary conditions given above.
   Chronic concentrations
   Width: 2.96% (Summer)
   Length: approx. 1.5% (Summer)
4. Reasonable potential evaluation: Using the IC25's reported with the DMR, a reasonable potential (RP) evaluation was run using the mixing zone concentration of 4.7%. The reasonable potential was calculated with a RWC of 0.59. Since RWC is less than 1, there is no reasonable potential. See Attachment (with spreadsheets).
5. Conclusion: Based on the DMR results, the Department concludes that there is no reasonable potential for the discharge to cause or contribute to a violation of the water quality standards. For Major facilities with complex waste streams, it is believed that toxicity testing should continue in order to collect data in order to properly evaluate toxicity at each permit cycle. Therefore, it is proposed to reduce the monitoring frequency to once per quarter.

   The permittee has recommended changing the CTC to 3%. With the new CORMIX model representing new information to define the mixing one, the Department agrees with the request.

   A geometric series is used to determine the dilution series. A low value of 1% and a high value of 100% are being used as bounds for the dilution testing series. The CTC for this test will be 3% and will replace the concentration closest to it from the geometric series. Therefore, the limitations are:

   Monthly Average = 25%
   Daily Maximum = 40%
   Chronic whole effluent toxicity testing shall be performed at a CTC = 3% using the dilution series 0%, 1%, 3% (CTC), 10%, 32%, 100%
   Sampling Frequency: 1/quarter
   Sample Type: 24-hr composite

Whole Effluent Toxicity (WET) Requirements - Acute

1. Previous permit requirements: Acute toxicity was not monitored independent of the chronic test.
2. DMR Data: All LC50 data collected was reported at 100%, meaning acute toxicity was not shown to exist at 100% effluent.
3. Mixing Zone and Zone of Initial Dilution (ZID) Information:
   The stream at the point of discharge is 210 m wide (w in the equation below). The mixing zone and ZID dimensions are determined as follows using stream width:
   Acute ZID
   Width: 1/10 w = 21 m
   Length: 1/3 w = 67 m
   The following dilutions can be determined at the boundary conditions given above.
   Acute concentrations
   Width: 5.0%
   Length: 3.5%
4. Conclusion: Using the LC50 data for reasonable potential it was determined that there is no reasonable potential for the discharge to cause or contribute to an acute toxicity violation. The multi-concentration test used for chronic toxicity will continue to collect LC50 data. The LC50 data can be used to evaluate acute toxicity in the future for permit renewals or modifications. Since the analysis shows there is no reasonable potential for concentrations up to 100% effluent, and the LC50 data will continue to be reported as part of the chronic toxicity limitation, acute toxicity requirements will not be added to this permit.

Outfall 02A

Description of outfall, receiving water and wastewater treatment system: This is an internal outfall which consists of the Units 3&4 cooling tower blowdown. Previously this effluent was used as FGD make-up water with an alternate discharge to the Cooling/Make-up Pond. This effluent flow is now being routed to the West Low Volume Wastewater Pond for treatment prior to discharge to the Cooling/Make-up Pond. Therefore monitoring for compliance with the internal outfall limitations will now be conducted within the Units 3&4 cooling tower basin or prior to entering the West Low Volume Wastewater Pond. As described in the information for Outfalls 001 and 002 the Cooling/Make-up Pond is the final treatment unit prior to discharge to a water of the State.

A. Flow

1. Previous permit limits: not included
2. NPDES Application: (January 2011)
   Maximum Daily Value: 1.05 MGD
3. NPDES Application: (January 2021 - Water Balance Flow diagram)
   Maximum Daily Value: 0.72 MGD
4. DMR Data: no data
5. Conclusion: Due to changes in the wastewater flow path to the new West Low Volume Wastewater Treatment Pond, flow monitoring will be reestablished.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 2/month
   Sample Type: estimate

B. pH

1. Previous permit limits: not included
2. NPDES Application: (January 2011)
   Maximum Daily Value: 7.4 standard units
3. NPDES Application: (January 2021)
   Maximum Daily Value: not reported
4. DMR Data: no data (monitoring not required)
5. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Standard applied at the final outfall.
6. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12 Best Practicable Control Technology Currently Available (BPT)
   (b)(1) "The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0."
7. PQL: N/A (SM4500H B)
8. Conclusion: In accordance with the EPA Memorandum dated March 21, 1986, pH limits may be applied after co-treatment at the final Outfall. Therefore, no pH limit will be applied at this internal monitoring location.

C. Free Available Chlorine (FAC)

1. Previous permit limits:
   Monthly average: 0.2 mg/l
   Daily Maximum: 0.5 mg/l
   Sampling Frequency: 2/month
   Sample Type: grab
2. NPDES Application: (January 2011)
   Maximum Daily Value: 0.25 mg/l (TRC)
3. DMR Data: The highest value was reported in 6/16 as 0.2 mg/l monthly ave and 0.3 daily max.
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   a. Best Practicable Control Technology Currently Available (BPT) Standards 423.12(b)(7) &
   Best Available Technology Economically Achievable (BAT) Standards 423.13(d)(1):
   cooling tower blowdown shall not exceed the following:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Free Available Chlorine (FAC)	0.2	0.5

   b. Best Practicable Control Technology Currently Available (BPT) Standards 423.12(b)(8) &
   Best Available Technology Economically Achievable (BAT) Standards 423.13(d)(2):
   Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time…
   c. Best Practicable Control Technology Currently Available (BPT) Standards 423.12(b)(12) &
   Best Available Technology Economically Achievable (BAT) Standards 423.13(m):
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass-based limitations specified …. Concentration limitations shall be those concentrations specified.

5. Conclusion: The guidelines established by 40 CFR Part 423 are technology-based guidelines therefore the limitations established by the guideline are to be met after leaving the cooling towers, but prior to mixing with any other waters. Sampling will be conducted within the Units 3&4 cooling tower basin or prior to entering the West Low Volume Wastewater Pond. The limitations will be as follows:
   Monthly Average: 0.2 mg/l
   Daily Maximum: 0.5 mg/l
   Sampling Frequency: 2/month
   Sample Type: grab

D. <u>126 Priority Pollutants</u>

1. Previous permit limits: Part V.A.2 "The permittee shall annually, through monitoring or engineering calculations certify that the 126 priority pollutants are present at no detectable amount in the cooling tower blowdown discharge as a result of the addition of cooling tower maintenance chemicals."
2. NPDES Application: (January 2011): not reported
3. DMR Data: no data (monitoring not required)
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   a. Best Available Technology Economically Achievable (BAT) Standards 423.13(d)(1):
      cooling tower blowdown shall not exceed the following:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
The 126 priority pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except: Chromium and Zinc	([1])	([1])

([1]) No detectable amount

   b. Best Available Technology Economically Achievable (BAT) Standards 423.13(d)(3):
      At the permitting authority's discretion, instead of the monitoring specified in 40 CFR 122.11(b) compliance with the limitations for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.
5. Conclusion: For the 126 priority pollutants, the permittee shall demonstrate that the pollutants are not present in detectable amounts annually. To demonstrate compliance the permittee will either take grab samples of each pollutant or provide a mass balance calculation to demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136.

E. <u>Chromium, total</u>

1. Previous permit limits: not included
2. NPDES Application: (January 2011): not reported
3. DMR Data: no data (monitoring not required)
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   a. Best Available Technology Economically Achievable (BAT) Standards 423.13(d)(1):
      cooling tower blowdown shall not exceed the following:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Chromium, total	0.2	0.2

5. Conclusion: In the 2000 permitting cycle the permittee agreed that no chromium or zinc based maintenance chemicals shall be added to the cooling tower. There has been no request to add these chemicals back into the system, therefore no limit for chromium will be placed at this internal outfall. A prohibition statement regarding the use of chromium will remain in the permit.

F. <u>Zinc, total</u>

1. Previous permit limits: not included
2. NPDES Application: (January 2011): not reported
3. DMR Data: no data (monitoring not required)
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   a. Best Available Technology Economically Achievable (BAT) Standards 423.13(d)(1):
      cooling tower blowdown shall not exceed the following:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Zinc, total	1.0	1.0

5. Conclusion: In the 2000 permitting cycle the permittee agreed that no chromium or zinc based maintenance chemicals shall be added to the cooling tower. There has been no request to add these chemicals back into the system, therefore no limit for zinc will be placed at this internal outfall. A prohibition statement regarding the use of chromium will remain in the permit.

<u>Outfall 02B, 02C and 02D</u>

These Outfall serial numbers were previously used in this permit and all were eliminated in 2008.

<u>Outfall 02E</u>

Description of outfall, receiving water and wastewater treatment system: This is an internal outfall which consists of FGD Wastewater from the FGD Systems for Units 1, 2, 3 and 4. The FGD System receives water from the intake canal, cooling tower blower blowdown (U3 and U4), the Gypsum Dewatering system and Coal Fired Units 1&2 and 3&4 for use in the system. Combustion Residual Leachate (CRL), which comes from the Landfill Leachate Collection system, enters the gypsum dewatering return water line where it is sent back to the FGD for use in the system. All water sent to the FGD System will be regulated as FGD wastewater upon discharge. The wastewater generated by the FGD Systems is sent to the FGD Fines Thickener where the blowdown is sent to the FGD Wastewater Treatment System for treatment. Outfall 02E will be monitored for compliance following the FGD Wastewater Treatment System but prior to mixing in the Discharge Canal which will discharge to the Station Cooling Pond prior to final discharge (Outfall 001 or 002).

New FGD systems were installed, or existing ones were upgraded as follows: Unit 1 in April 2007, Unit 2 in May 2007, Unit 3 in June 2012, and Unit 4 in April 2007, which makes the FGD wastewater discharge subject to regulation under 40 CFR 423-Steam Electric Power Generating Point Source Category. This discharge represents a new source as defined by R.61-9.122.2. Therefore, the references and limitations reflect New Source Performance Standards (NSPS) as required by 40 CFR 423.15(a)(3) and Best Available Technology (BAT) 423.13(g) (as referenced by 423.15(a)).

The facility has requested the generally applicable limitations with parallel compliance pathways for cessation of coal combustion and the VIP limits in 423.13(g)(3)(i). A Notice of Planned Participation (NOPP) for the cessation of coal combustion subcategory was submitted to the Department on October 8, 2021, as required

by the 2020 ELG rule, allowing also for transfer to the VIP subcategory following submittal of a transfer NOPP by December 31, 2025. Therefore, should the facility choose the generally applicable limitations, these limits will become effective December 31, 2025; if they chose the more-stringent cessation of coal combustion or VIP limitations, the limits will become effective on December 31, 2028 in accordance with the 2020 ELG rule.

Outfall 02E – generally applicable FGD Wastewater Treatment System option

The facility has provided a schedule to comply with the requirements of the 2020 ELG rule by December 31, 2025.

A. Flow

1. Previous permit limits: NA
2. NPDES Application: (April 2023 - Water Balance Flow diagram)
   Maximum Daily Value: 0.234 MGD
3. DMR Data: NA
4. Conclusion: Flow monitoring and reporting will be required.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/month
   Sample Type: estimate

B. pH

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Standard applied at the final outfall.
5. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12 Best Practicable Control Technology Currently Available (BPT)
   (b)(1) "The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0."
6. PQL: N/A (SM4500H B)
7. Conclusion: In accordance with the EPA Memorandum dated March 21, 1986, pH limits may be applied after co-treatment at the final Outfall. Therefore, no pH limit will be applied at this internal monitoring location.

C. Total Suspended Solids (TSS)

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT)
   Quantity of pollutants discharged in FGD wastewater

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	30	100

§ 423.12(b)(12) (BPT)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified … Concentration limitations shall be those concentrations specified in this section.

§ 423.13(g)(1)(ii) (BAT)

For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the … concentration listed for TSS in §423.12(b)(11).

5. PQL: 1.0 mg/l (Method SM2540D)
6. Conclusion: In accordance with the EPA Memorandum dated August 22, 1985, total suspended solids (TSS) and oil and grease (O&G) limits may have flow weighted concentration limitations applied after co-treatment at the final Outfall. This limit is equivalent to the low volume waste limitations and is included as one of the sources in the flow-weighted calculation for the TSS limits on the final outfall 002. Since the limit is applied at the final outfall no limit will be established on this internal outfall.

D. <u>Oil and Grease</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Oil and Grease	15	20

   § 423.12(b)(12) (BPT)

   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified … Concentration limitations shall be those concentrations specified in this section.

   § 423.13(g)(1)(ii) (BAT)

   For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the … concentration listed for TSS in §423.12(b)(11).
5. PQL: 5 mg/l (Method 1664A)
6. Conclusion: Therefore, in accordance with the EPA Memorandum dated August 22, 1985, total suspended solids (TSS) and oil and grease (O&G) limits may have flow weighted concentration limitations applied after co-treatment at the final Outfall. Since the limit is applied at the final outfall no limit will be established on this internal outfall.

E. <u>Nitrite and Nitrate, Total as N</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA

4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT), and 423.15(a)(3) (NSPS)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(1)(i) (BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Nitrate/Nitrite as N	3	4

   § 423.13(m)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.
5. PQL: 20 µg/l
6. Conclusion: Beginning December 31, 2025 the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(1)(i). Therefore, the limit will be as follows:
   Monthly Average: 3 mg/l
   Daily Maximum: 4 mg/l
   Sampling Frequency: 1/month
   Sample Type: grab

F. <u>Arsenic, total</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT), and 423.15(a)(3) (NSPS)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(1)(i) (BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (µg/l)	Daily Maximum (µg/l)
Arsenic, total	8	18

   § 423.13(m)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.
5. PQL: 5.0 µg/l
6. Conclusion: Beginning December 31, 2025 the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(1)(i). Therefore, the limit will be as follows:
   Monthly Average: 8 µg/l
   Daily Maximum: 18 µg/l
   Sampling Frequency: 1/month
   Sample Type: grab

G. Selenium, total

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT), and 423.15(a)(3) (NSPS)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(1)(i) (BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (µg/l)	Daily Maximum (µg/l)
Selenium, total	29	70

   § 423.13(m)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.
5. PQL: 5.0 µg/l
6. Conclusion: Beginning December 31, 2025 the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(1)(i). Therefore, the limit will be as follows:
   Monthly Average: 29 µg/l
   Daily Maximum: 70 µg/l
   Sampling Frequency: 1/month
   Sample Type: grab

H. Mercury, total

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT), and 423.15(a)(3) (NSPS)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(1)(i) (BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (ng/l)	Daily Maximum (ng/l)
Mercury, total	34	103

   § 423.13(m)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.
5. PQL: 0.0005 µg/l (0.5 ng/l)

6. Conclusion: Beginning December 31, 2025 the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(1)(i). Therefore, the limit will be as follows:
   Monthly Average: 34 ng/l
   Daily Maximum: 103 ng/l
   Sampling Frequency: 1/month
   Sample Type: grab

Outfall 02E – permanent cessation of coal combustion option

Santee Cooper 2020 Integrated Resource Plan (IRP) was to cease coal combustion at Winyah at the end of 2028. Santee Cooper has filed a new 2023 IRP on May 15, 2023 with the recommendation to extend the retirement date of Winyah through 2030. Santee Cooper is moving forward with ELG plans for flexibility to support system demands and mitigate schedule risk by pursuing the implementation of BAT technology by the end of 2025 as its primary compliance pathway. Santee Cooper has requested both the retirement and VIP subcategories to remain as alternative, parallel processes in the NPDES permit

If the facility takes the permanent cessation of coal combustion option and the dates are acceptable per the ELGs, then Outfall 02E will be removed from the permit at the appropriate time.

Outfall 02E - Voluntary Incentive Program (VIP) option

The facility has requested the option to comply with the VIP limits in 423.13(g)(3)(i). Submitting the Notice of Planned Participation (NOPP) for the cessation of combustion subcategory on October 13, 2021, as required by the 2020 ELG rule, allows for the option to transfer to the VIP subcategory by submittal of a transfer NOPP on or before December 31, 2025. Therefore, should the facility choose to use this option the more stringent VIP limitations will become effective in accordance with the 2020 ELG rule by December 31, 2028.

A. Flow

1. Previous permit limits: NA
2. NPDES Application: (April 2023 - Water Balance Flow diagram)
   Maximum Daily Value: 0.234 MGD
3. DMR Data: NA
4. Conclusion: Flow monitoring and reporting will be required.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/month
   Sample Type: estimate

B. pH

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Standard applied at the final outfall.
5. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12 Best Practicable Control Technology Currently Available (BPT)
   (b)(1) "The pH of all discharges, except once through cooling water, shall be within the range of 6.0–9.0."

6. PQL: N/A (SM4500H B)
7. Conclusion: In accordance with the EPA Memorandum dated March 21, 1986, pH limits may be applied after co-treatment at the final Outfall. Therefore, no pH limit will be applied at this internal monitoring location.

C. <u>Total Suspended Solids (TSS)</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Total Suspended Solids (TSS)	30	100

   § 423.12(b)(12) (BPT)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified … Concentration limitations shall be those concentrations specified in this section.
   § 423.13(g)(1)(ii) (BAT)
   For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the … concentration listed for TSS in §423.12(b)(11).
5. PQL: 1.0 mg/l (Method SM2540D)
6. Conclusion: In accordance with the EPA Memorandum dated August 22, 1985, total suspended solids (TSS) and oil and grease (O&G) limits may have flow weighted concentration limitations applied after co-treatment at the final Outfall. This limit is equivalent to the low volume waste limitations and is included as one of the sources in the flow-weighted calculation for the TSS limits on the final outfall. Since the limit is applied at the final outfall no limit will be established on this internal outfall.

D. <u>Oil and Grease</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT), and 423.15(a)(3) (NSPS)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Oil and Grease	15	20

   § 423.12(b)(12) (BPT)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified … Concentration limitations shall be those concentrations specified in this section.

§ 423.13(g)(1)(ii) (BAT)

For FGD wastewater generated before the date determined by the permitting authority, as specified in paragraph (g)(1)(i), the quantity of pollutants discharged in FGD wastewater shall not exceed the … concentration listed for TSS in §423.12(b)(11).

5. PQL: 5 mg/l (Method 1664A)
6. Conclusion: Therefore, in accordance with the EPA Memorandum dated August 22, 1985, total suspended solids (TSS) and oil and grease (O&G) limits may have flow weighted concentration limitations applied after co-treatment at the final Outfall. Since the limit is applied at the final outfall no limit will be established on this internal outfall.

E. <u>Nitrite and Nitrate, Total as N</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(3)(i) (VIP - BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Nitrate/Nitrite as N	1.2	2.0

   § 423.13(m)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.
5. PQL: 20 µg/l
6. Conclusion: Beginning December 31, 2028, the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(3)(i). Therefore, the limit will be as follows:
   Monthly Average: 1.2 mg/l
   Daily Maximum: 2.0 mg/l
   Sampling Frequency: 1/month
   Sample Type: grab

F. <u>Arsenic, total</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.15(a) (NSPS)
   Any new source as of November 19, 1982, subject to paragraph (a) of this section, must achieve the following new source performance standards, in addition to the limitations in §423.13 of this part, established on November 3, 2015. In the case of conflict, the more stringent requirements apply:

§ 423.12(b)(11) (BPT), and 423.15(a)(3) (NSPS)

Quantity of pollutants discharged in FGD wastewater: Parameter not listed

§ 423.13(g)(3)(i) (VIP - BAT)

Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (µg/l)	Daily Maximum (µg/l)
Arsenic, total	NA	5

§ 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.

5. PQL: 5.0 µg/l
6. Conclusion: Beginning December 31, 2028, the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(3)(i). Therefore, the limit will be as follows:
   Monthly Average: MR µg/l
   Daily Maximum: 5 µg/l
   Sampling Frequency: 1/month
   Sample Type: grab

G. <u>Selenium, total</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(3)(i) (VIP - BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (µg/l)	Daily Maximum (µg/l)
Selenium, total	NA	10

§ 423.13(m)

At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.

5. PQL: 5.0 µg/l
6. Conclusion: Beginning December 31, 2028, the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(1)(i). Therefore, the limit will be as follows:
   Monthly Average: MR µg/l
   Daily Maximum: 10 µg/l
   Sampling Frequency: 1/month
   Sample Type: grab

H. Total Dissolved Solids (TDS)

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(3)(i) (VIP - BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
TDS	149	306

   § 423.13(m)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.
5. Conclusion: Beginning December 31, 2028, the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(1)(i). Therefore, the limit will be as follows:
   Monthly Average: 149 mg/l
   Daily Maximum: 306 mg/l
   Sampling Frequency: 1/month
   Sample Type: grab

I. Bromide

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(3)(i) (VIP - BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/l)
Bromide	NA	0.2

   § 423.13(m)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.
5. PQL: 2000 µg/l or 2 mg/l

6. Conclusion: Beginning December 31, 2028, the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(1)(i). Therefore, the limit will be as follows:
   Monthly Average: MR mg/l
   Daily Maximum: 0.2 mg/l
   Sampling Frequency: 1/month
   Sample Type: grab

J. <u>Mercury, total</u>

1. Previous permit limits: NA
2. NPDES Application: NA
3. DMR Data: NA
4. Effluent Limitations Guidelines:
   40 CFR 423-Steam Electric Power Generating Point-Source Category
   § 423.12(b)(11) (BPT)
   Quantity of pollutants discharged in FGD wastewater: Parameter not listed
   § 423.13(g)(3)(i) (VIP - BAT)
   Quantity of pollutants discharged in FGD wastewater:

Parameter	Monthly Average (ng/l)	Daily Maximum (ng/l)
Mercury, total	10	23

   § 423.13(m)
   At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in paragraphs (b) through (l) of this section. Concentration limitations shall be those concentrations specified in this section.
5. PQL: 0.0005 µg/l (0.5 ng/l)
6. Conclusion: Beginning December 31, 2028, the internal discharge for the FGD wastewater will be limited in accordance §423.13(g)(1)(i). Therefore, the limit will be as follows:
   Monthly Average: 10 ng/l
   Daily Maximum: 23 ng/l
   Sampling Frequency: 1/month
   Sample Type: grab

<u>Bottom Ash Transport Water (BATW)</u>

In Spring 2020, Santee Cooper installed and has operated remote submerged chain conveyor systems (RSCCs) as part of the plant's bottom ash handling system. These RSCCs recycle BATW to the unit and do not discharge. These systems are designed to produce bottom ash that is sufficiently dewatered to pass the paint filter test, which is then stacked out onto a concrete pad to be hauled away to a landfill or for beneficial reuse. As a result, discharge of BATW has been eliminated.

Santee Cooper initial Integrated Resource Plan (IRP) was to cease coal combustion at Winyah at the end of 2028. Santee Cooper has filed a new 2023 IRP on May 15, 2023 with the recommendation to extend the retirement date of Winyah through 2030. Santee Cooper is moving forward with ELG plans for flexibility to support system demands and mitigate schedule risk by pursuing the implementation of BAT technology by the end of 2025 as its primary compliance pathway. Santee Cooper has requested both the retirement and VIP subcategories to remain as alternative, parallel processes in the NPDES permit.

In the event of retirement before 2028, 40 CFR 423.12 (b)(4) applies, however 40 CFR 423 (k)(1) and (2) applies in the event of BAT or VIP.

Outfall 02F
Bottom Ash Purge Water

As mentioned above, in 2020 the facility installed and began operation of a remote submerged chain conveyor systems (RSCCs) as part of the plant's bottom ash handling system. Prior to the conversion, the facility wet sluiced bottom ash to the ash ponds.

The bottom ash transport water and bottom ash purge water discharges are subject to regulation under 40 CFR 423-Steam Electric Power Generating Point Source Category. The references and limitations in this permit reflect Best Available Technology (BAT) under 423.13(k) and best professional judgment. With the installation of the RSCC systems, the discharge of pollutants in bottom ash transport water is prohibited under 423.13(k)(1)(i), except for those discharges that meet the requirements of one of the options under 423.13(k)(2). The permittee has chosen to comply with the high recycle rate system option under 423.13(k)(2)(i). Discharges under 423.13(k)(2)(i) are defined as "bottom ash purge water" (423.11(cc)). In accordance with 423.11(p), bottom ash transport water does not include bottom ash purge water.

The facility has requested to keep the option to discharge bottom ash purge water if needed. Therefore, in accordance with 423.13(k)(1)(i), the compliance date by which the facility must comply with the 423.13(k)(1)(i) requirements must be as soon as possible and is determined by the Department based on information provided by the permittee and must fall within the range of October 13, 2021 to December 31, 2025 in accordance with 423.13(k)(1)(i). 40 CFR 423.11(t) specifies the factors that the Department may consider in establishing the compliance date. Since the properly operating system is already in place, compliance with these requirements will immediate upon permit issuance.

As required by 423.13(k)(2)i), the volume of discharge of bottom ash purge water, based on the 30-day rolling average, must not exceed 10% of the primary active wetted bottom ash system volume, or a lower amount as determined by the Department. After review of the Initial Certification Statement required by 40 CFR 423.19(c) and submitted on November 9, 2023, the Department has determined that a 30-day rolling average discharge flow of the maximum allowable volume of 10% of the primary active wetted bottom ash system, or 160,595 gallons, is not needed at this facility based on the scenario calculations and frequencies. A 30-day rolling average discharge flow limit of zero is appropriate under normal operating conditions. According to the Initial Certification Statement submitted by the facility, maintenance on the overflow tank/bottom ash service water tank could generate up to 227,471 gallons and each bottom ash hopper blowdown could generate 29,920 gallons (two (2) hoppers for a total of 59,840 gallons). Considering the worst-case scenario where both bottom ash hoppers blowdown and tank maintenance activities are performed during the same 30-day period plus 20% to account for practical variations from the estimates, additional volumes for cleaning/maintenance activities and flow meter error a potential total volume of 344,773 gallons is obtained. The 30-day rolling average discharge is therefore calculated as one thirtieth of this amount or 11,492 gallons. The Department has determined that the allowable 30-day rolling average of bottom ash purge water discharge flow volume shall vary based on the blowdown and maintenance during the 30-day period for which the rolling average is calculated.

Because the hopper blowdown has potential to occur once a year and the tank maintenance may occur twice per permit term (5-years), the facility does not plan on installing permanent flow meters. With this discharge occurring rarely, if at all, the site will utilize temporary flow meters to satisfy the regulatory requirement to measure the volume.

In addition to the effluent limitation guideline requirements of 423.13(k), the permit also applies case-by-case numeric effluent discharge limitations for total suspended solids and oil and grease to the bottom ash purge water discharges. These limitations are based on best professional judgment. This is consistent with the October 13, 2020 Federal Register which states, "...EPA concluded that BAT limitations for any wastewater that is purged from a high recycle rate system and then discharged, should be established by the NPDES permitting authority on a case-by-case basis using BPJ." (p. 64672) The case-by-case numeric effluent discharge limitations for total suspended solids and oil and grease are being addressed at the final outfalls using the flow-weighted approach of the combined waste formula.

A. Flow

1. Previous permit limits: N/A
2. NPDES Application: N/A
3. DMR Data: N/A
4. Actual long term average flow (from DMR and/or application): N/A
5. Conclusion: This discharge, when it occurs, will be a planned maintenance event and the facility will utilize temporary flow meters. Flow monitoring is necessary to calculate compliance with the 30-day Rolling average. Flow shall be monitored and reported as follows:
   Monthly Average: MR, GPD
   Daily Maximum: MR, GPD
   Sampling Frequency: daily
   Sample Type: continuous

B. 30-day Rolling Average Flow

1. Previous permit limits: N/A
2. NPDES Application: N/A
3. DMR Data: N/A
4. Actual long term average flow (from DMR and/or application): N/A
5. Conclusion: The 30-day rolling average flow shall be monitored and reported as follows:
   Monthly Average: --
   Daily Maximum: 11,492 GPD
   Sampling Frequency: daily
   Sample Type: calculation

As discussed above, the 30-day rolling average is limited to 11,492 gpd or a lower amount depending on the circumstances and as determined by Part V.E.15 of the permit.

C. Number of Exceedances

1. Previous permit limits: N/A
2. NPDES Application: N/A

3. DMR Data: N/A
4. Actual long term average flow (from DMR and/or application): N/A
5. Conclusion: Flow shall be monitored and reported as follows:
   Monthly Average: --
   Daily Maximum: 0 exceedances for the month
   Sampling Frequency: daily
   Sample Type: calculation

D. <u>Total Suspended Solids (TSS)</u>

1. Previous permit limits: N/A
2. NPDES Application: N/A
3. DMR Data: N/A
4. Water Quality Data: Water quality is addressed at the final outfalls 001 and 002.
5. Effluent Limitation Guidelines or Best Professional Judgment (BPJ) limitations:
   Based on best professional judgment, the Department believes that the BPT requirements of 40 CFR 423.12(b)(4) for bottom ash transport water and 423.12(b)(11) for bottom ash purge water are appropriate BAT limitations in this case, considering the temporary nature of the bottom ash transport water discharge and the limited volume of the bottom ash purge water discharge. These limitations are as follows:
   Daily Maximum: 100 mg/l
   Monthly Average: 30 mg/l
6. Other information:
7. PQL: 1000 µg/l
8. Conclusion: Technology-based TSS limits for this internal outfall and other wastewaters are being addressed at the final outfalls 001 and 002 using the flow-weighted approach of the combined waste formula.

E. <u>Oil and Grease</u>

1. Previous Permit Limits: N/A
2. NPDES Application: N/A
3. DMR Data: N/A
4. Water Quality Data: Water quality is addressed at the final outfalls 001 and 002.
5. Effluent limitation guidelines or Best Professional Judgment limitations:
   Based on best professional judgment, the Department believes that the BPT requirements of 40 CFR 423.12(b)(4) for bottom ash transport water and 423.12(b)(11) for bottom ash purge water are appropriate BAT limitations in this case, considering the temporary nature of the bottom ash transport water discharge and the limited volume of the bottom ash purge water discharge. These limitations are as follows:
   Daily Maximum: 20 mg/l
   Monthly Average: 15 mg/l
6. Other information:
7. PQL: 5 mg/l
8. Conclusion: Technology-based oil and grease limits for this internal outfall and other wastewaters are being addressed at the final outfalls 001 and 002. using the flow-weighted approach of the combined waste formula.

F. pH

1. Previous Permit Limits: N/A
2. NPDES Application: N/A
3. DMR Data: N/A
4. Water Quality Data: Water quality is addressed at the final outfalls 001 and 002.
5. Effluent limitation guidelines or Best Professional Judgment limitations:
   Based on BPT 40 CFR 423.12(b)(1):
   The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.
   Because the pH guideline is for all discharges, compliance with the pH guideline will be evaluated at the final outfalls 001 and 002.
6. Other information:
7. PQL: Not applicable
8. Conclusion: pH limitations are not necessary at this outfall because pH is addressed at the final outfalls 001 and 002.

Industrial Stormwater Requirements

The permit requires the permittee to maintain good housekeeping procedures to reduce pollutants in stormwater that are discharged through Outfalls 001 or 002. Other industrial stormwater discharges from the site are covered by the NPDES General Permit for Storm Water Discharges Associated with Industrial Activities (SCR003832)

Chemical Metal Cleaning Wastes

Chemical Metal Cleaning Wastes was previously monitored for compliance with permit limitations at outfall 04A. This waste is now collected in frac tanks and disposed offsite according to RCRA requirements. The outfall for this source was removed October 1, 2000.

Cooling Water Additives

The following chemicals (all aqueous products) are added to the cooling water to properly maintain the cooling towers.

Current Preferred	Alternatives:
	Inhibitor AZ8104
Bleach (Sodium Hypochlorite) (12-15%)	Gengard GN7004
CL 4132 Corrosion Inhibitor	Depositrol BL5400
CL1355 Anti-Scaling	Depositrol PY 5203
	Inhibitor ECP 8130

316b Cooling Water Intake Requirements

Winyah Generating Station operates a closed-cycle cooling system. The cooling water is used to supply circulating water through four individual condensers, including bearing oil coolers and air exhaust coolers. Unit 1 is designed for a total cooling flow rate of 216000 gallons per minute with two circulating pumps rated at 108000 gallons per minute each. Units 2, 3 and 4 have a total design cooling flow rate of 125000 gallons per minute each. These units each have two circulating water pumps rated at 62500 gallons per minute.

Winyah Generating Station Units 1 and 2 cooling water system consists of an approximate 400 acre sized closed-loop cooling pond – which collects stormwater and other wastewaters from the entire site - and an eight-cell cooling tower. This cooling tower is an induced draft crossflow tower with PVC splash type fill. The tower is located approximately 250 yards east from the plant and built with its axis perpendicular to the cooling pond return canal. This cooling tower is considered a helper tower that draws hot water directly from the cooling pond inlet (discharge canal) and discharges cold water to the cooling pond outlet (intake canal) just prior to the plant internal intakes. Eight individual cells are grouped together and discharge into a common basin that supplies cold water to the cooling pond return canal. The cooling tower/cooling pond supplies circulating water to the condenser, oil coolers, and air exhauster coolers for units 1 and 2. This tower basin does not require make-up water. The cooling pond operational level is maintained by discharging through Outfalls 001 or 002. Any additional make-up water to the cooling pond is controlled by the Wadmacon intake pumps through the clearwell overflow on an as-needed basis.

Winyah Generating Station Unit 3 and Unit 4 are each separately equipped with an eight-cell concrete cooling tower. These cooling towers are an induced draft crossflow tower with PVC splash type fill. The towers are located approximately 220 yards from the plant and built with its axis parallel to the west ash pond dike. Each Tower has eight individual 36 by 65-foot cells that are grouped together. Each cell discharges into a common basin that supplies suction to two circulating water pumps. Each cooling tower supplies water to the condenser, oil coolers, and air exhauster coolers and has a common return line. The cooling tower make-up water is added to the basin and the blowdown flow is taken from the circulating water pump discharge. Units 3 and 4 cooling tower blowdowns are discharged into the west low volume wastewater pond, which in turn discharges into the cooling pond.

Winyah operates two surface water intakes to provide supply water to the station. The station currently withdraws water from the Wadmacon Creek with a pump design rate of approximately 9.36 MGD and a maximum of approximately 11.52 MGD. The original water supply was provided by a surface water intake constructed approximately 8.5 miles south on the North Santee River in 1975. A second surface water intake structure was built in 1981 on the Wadmacon River approximately 8.7 miles southwest of the Winyah station. The North Santee intake is physically located at latitude 33^0 12′ 35″ and longitude 79^0 22′ 58″ and has a design intake capacity to withdrawal a maximum rate of 75000 gallons per minute. The Wadmacon intake is physically located at latitude 33^0 15′ 29″ and longitude 79^0 28′ 57″ with a design intake capacity to withdrawal a maximum rate of 12500 gallons per minute. Both intakes are supplied with traveling screens Model 45-A that were manufactured by the FMC Corporation. The North Santee traveling screen size opening is 3/8-inch square and the Wadmacon has a 3/16-inch by 3/4-inch screen size opening.

The North Santee River intake has two 5000 gpm pumps with a total approximate flow rate of 6500 gpm when both pumps are operating. The Wadmacon intake has two 6500 gpm pumps with a total approximate flow rate of 8000 gpm when both pumps are operating. Winyah does not currently use the North Santee intake for cooling pond make-up water. The cooling pond wastewater is discharged through NPDES outfall 002 using the

North Santee intake piping. The wastewater by-passes the intake and discharges into the North Santee River through a diffuser next to the intake. Winyah surface water withdrawal is mainly supplied by the Wadmacon intake and discharged into the clearwell located next to the cooling pond. The clearwell provides service water, boiler make-up, FGD make-up, cooling tower and cooling pond make-up water. The clearwell has three cooling tower make-up water pumps, four pretreatment pumps and two gypsum dewatering pumps. The cooling pond has several service water pumps including primary fire pump and one secondary fire pump. These service water pumps are located at Units 1 and 2 cooling pond internal intake canal structure.

Table 1: Surface Water Intake System

	Water Source	Design Flow Rate (GPM)	Total Flow Rate (GPM)
North Santee Intake Pump A	N. Santee	5000	6500 (est.)
North Santee Intake Pump B	N. Santee	5000	
Wadmacon Intake Pump A	Wadmacon	6500	8000 (est.)
Wadmacon Intake Pump B	Wadmacon	6500	

Table 2: Cooling Water System

	Water Source	Design Flow Rate (GPM)	Total Flow Rate (GPM)
Cooling Tower Make-up Pump A	Clearwell	5000	
Cooling Tower Make-up Pump B	Clearwell	5000	
Cooling Tower Make-up Pump C	Clearwell	5000	
Unit 1 Circ Water Pump A	Cooling Pond	108000	216000
Unit 1 Circ Water Pump B	Cooling Pond	108000	
Unit 2 Circ Water Pump A	Cooling Pond	62500	125000
Unit 2 Circ Water Pump B	Cooling Pond	62500	
Unit 3 Circ Water Pump A	Tower Basin	62500	125000
Unit 3 Circ Water Pump B	Tower Basin	62500	
Unit 4 Circ Water Pump A	Tower Basin	62500	125000
Unit 4 Circ Water Pump B	Tower Basin	62500	

Section 316(b) of the CWA requires that the location, design, construction, and capacity of a CWIS reflect the best technology available for minimizing environmental impact. In 1975 and 1981, a determination was made for each intake, in accordance with Section 316(b) of the Clean Water Act, that the location, design, construction, and capacity of the CWIS reflected the best technology available at that time for minimizing adverse environmental impact. On October 14, 2014, new regulations, called the Existing Facilities Rule, became effective for cooling water intake structures at existing NPDES facilities. The regulations were published in the Federal Register on Aug. 15, 2014 (79 FR 48424). The regulations are listed in 40 CFR 125.90-99 (Subpart J) and 122.21(r).

The CWIS at the Winyah Generating Station is subject to these new regulations. For permits that were applied for before the effective date, as in this case, the rule allows at 40 CFR 125.98(b)(6) that the permit may include conditions to ensure the Department will have all the necessary information under 40 CFR 122.21(r) to establish impingement mortality and entrainment best technology available (BTA) requirements under 40 CFR 125.94(c) and (d) for the subsequent permit. The Department must establish interim BTA requirements in the permit on a site-specific basis using best professional judgment.

Therefore, the permit includes a compliance schedule that requires the permittee to submit the information required by 40 CFR 122.21(r) and 125.95(f). In addition, the compliance schedule requires the permittee to submit for Department approval a plan to conduct a baseline entrainment. Based on this information, the Department will make a BTA determination in the next permit renewal in accordance with the regulations. Until such time as the Department makes a final best technology available (BTA) determination for the cooling water intake structure, the permittee shall comply with the interim BTA requirements of rotating and cleaning the intake screens weekly (Monday-Friday) from January-September and daily during the fall (October-December) and the manual function check will be performed weekly during intake withdrawal operation. This is not required when the system is inoperable due to maintenance requirements.

Intake screen backwash: The intake screens are washed using intake water and the backwash water is recirculated into the Wadmacon or North Santee. The debris from the cleaned screens is collected in the trash racks and properly disposed. Part V.E.8 allows this discharge.

Groundwater Monitoring Requirements

The Department's Groundwater Permitting and Agricultural Permitting Section reviewed the permit renewal application and recommends that the facility monitor and report each of the niner (9) groundwater monitoring wells (WAP-1, WAP-2, WAP-3R, WAP-4, WAP-5, WAP-8, WAP-9, WAP-10 and WAP-11) semi-annually for the following parameters:

Water Table Elevation (within 0.01 feet) (relative to mean sea level)
Depth to the Water Table (within 0.01 feet) (relative to land surface)
Field pH (standard units)
Field Specific Conductance (umhos/cm)
Field Turbidity (NTU)
Total Dissolved Solids (TDS) (mg/l)
Arsenic (mg/l)
Cadmium (mg/l)
Chromium (mg/l)
Selenium (mg/l)

The historical data for the monitoring wells designated WAP-6 and WAP-7 has been reviewed and the request from Mr. Jesse Cannon of Santee Cooper in his October 26, 2023 email correspondence that these wells be removed from the renewed NPDES Permit is considered approved. The monitoring wells installed to monitor the landfill are appropriate for monitoring groundwater conditions in this area.

Threatened and Endangered Species Information

There are three species that live in the North Santee River and/or the Sampit River, which are listed by both the federal and state authorities as legally Endangered.

The **Shortnose and Atlantic Sturgeon** are known to occupy the same habitat. Atlantic and shortnose sturgeon have conservation status rankings of G3 and S3 (NatureServe 2014), meaning that populations of both species are "vulnerable", both globally and in South Carolina. In general, populations of both species along the entire Atlantic Coast are reduced from historical levels for at least the past half-century (Atlantic States Marine Fisheries Commission (ASMFC) 1990; ASMFC 1998; National Marine Fisheries Service (NMFS) 1998). The Atlantic Sturgeon South Atlantic Distinct Population Segment (DPS) was listed as endangered under the Endangered Species Act (ESA) in 2012. The shortnose sturgeon has been listed as "endangered" under the ESA since 1967 and the American Fisheries Society deemed it "threatened" in 1989.
In previous discussions with the South Carolina Department of Natural Resources (SC-DNR) concerning the shortnose sturgeon, it was noted that shortnose sturgeon, particularly juveniles, are sensitive to low dissolved oxygen levels. Aside from DO, there is no information showing that the shortnose sturgeon is more sensitive than the established criteria used to evaluate the permit limitations. Therefore based on known information this permit is protective of the shortnose sturgeon.

Also the **West Indian Manatee** migrates through the North Santee River and the Winyah Bay area on a seasonal basis. The West Indian Manatee has a conservation status ranking of G2 and S1S2 (NatureServe 2014), meaning that the population is "imperiled" or "critically imperiled", both globally and in South Carolina. Manatee staying in these areas longer than is healthy for their natural migration patterns has become a reoccurring concern.

Manatees are protected under the Marine Mammal Protection Act, which prohibits the take (i.e., harass, hunt, capture, or kill) of all marine mammals. Manatees are found in marine, estuarine, and freshwater environments. The West Indian manatee, Trichechus manatus, includes two distinct subspecies, the Florida manatee (Trichechus manatus latirostris) and the Antillean manatee (Trichechus manatus manatus). Because manatees cannot survive long in cold water (water temperature below 60°F), thermal discharges have become a danger for the manatee. Should they stay in a warm water discharge too long, the surrounding waters may become too cold for them to move on to their winter feeding grounds in Florida.

The rare use of outfall 001 to Turkey Creek before flowing to Pennyroyal Creek then to the Sampit River, is unlikely to entice manatee to stay near this outfall. Outfall 002 is a continuous discharge of between 2 to 4 MGD and has requested to change the thermal mixing zone which would increase the permitted temperature at the point of discharge. This thermal discharge was discussed with the United States Fish and Wildlife Service (USFWS) which has stated that to date the USFWS is not aware of manatees at this site, however, it is suspected that there are other warm water sites out there that they may be using. The USFWS does know that a limited number of manatees are using the Santee River. It is suggested that the facility monitor for manatee use in the fall and notify the USFWS if they see manatees using the outfall. If that is the case, then a plan to get the manatees to move along may be necessary.

Within a 5-mile radius of each outfall there are additional species, which have both a global/state ranking and a legal status, either Federal or State. These species do not live in the receiving stream. The species are:

Species	Ranking	Legal Status
Frosted Flatwoods Salamander	G2, S1	LT - Threatened, Federal SE - Endangered, State
Red-cockaded Woodpecker	G3, S2	LE - Endangered, Federal SE - Endangered, State
Bald Eagle	G5, S3B, S3N	Bald & Golden Eagle Protection Act, Federal ST - Threatened, State
Carolina Gopher Frog	G3, S1	At-Risk Species, Federal SE - Endangered, State
Least Tern	G4, S2	ST - Threatened, State
Swallow-tailed Kite	G5, S1S2	SE - Endangered, State
Rafinesque's Big-eared Bat	G3G4, S2	SE - Endangered, State
Northern Long-eared Bat	G1G2, S1	LT - Threatened, Federal
Wood Stork	G4, S2	LT - Threatened, Federal SE - Endangered, State
Spotted Turtle	G5, S3	At-Risk Species, Federal ST - Threatened, State
Northern Dwarf Siren	G5, S2	ST - Threatened, State

Global rankings:

Basic Ranks

GX - **Presumed Extinct** (species) - Not located despite intensive searches and virtually no likelihood of rediscovery.
Eliminated (ecological communities) - Eliminated throughout its range, with no restoration potential due to extinction of dominant or characteristic species.

G1 - **Critically Imperiled** - At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 - **Imperiled** - At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3 - **Vulnerable** - At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 - **Apparently Secure** - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 - **Secure** - Common; widespread and abundant.

G? - Status unknown

Variant Ranks

G#G# - **Range Rank** - A numeric range rank (e.g., G2G3) is used to indicate the range of uncertainty in the status of a species or community. Ranges cannot skip more than one rank (e.g., GU should be used rather than G1G4).

GU - **Unrankable** - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. Whenever possible, the most likely rank is assigned and the question mark qualifier is added (e.g., G2?) to express uncertainty, or a range rank (e.g., G2G3) is used to delineate the limits (range) of uncertainty.

Rank Qualiifiers

? - **Inexact Numeric Rank -** Denotes inexact numeric rank (e.g., G2?)

Q - **Questionable taxonomy that may reduce conservation priority -** Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The “Q” modifier is only used at a global level and not at a national or subnational level.

C - **Captive or Cultivated Only** - At present extant only in captivity or cultivation, or as a reintroduced population not yet established.

T#- **Infraspecific Taxon** (trinomial)—The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above for global conservation status ranks. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T-rank cannot imply the subspecies or variety is more abundant than the species as a whole-for example, a G1T2 cannot occur. A vertebrate animal population, such as those listed as distinct population segments under under the U.S. Endangered Species Act, may be considered an infraspecific taxon and assigned a T-rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.

State or Subnational rankings:

Basic Ranks

SX - **Presumed Extirpated**—Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SH - **Possibly Extirpated** (Historical)—Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

S1 - **Critically Imperiled** - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 - **Imperiled** - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 - **Vulnerable** - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 - **Apparently Secure** - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 - **Secure** - Common; widespread and abundant in the nation or state/province.

SU - **Unrankable** - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

S#S# - **Range Rank** - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU should be used rather than S1S4).

Not Provided - Species is known to occur in this nation or state/province. Contact the relevant natural heritage program for assigned conservation status.

Breeding Status Qualifiers

B - **Breeding** - Conservation status refers to the breeding population of the species in the nation or state/province.

N - **Nonbreeding** - Conservation status refers to the non-breeding population of the species in the nation or state/province.

M - **Migrant** - Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the nation or state/province.

Other Qualifiers

? - **Inexact Numeric Rank -** Denotes inexact or uncertain numeric rank. (The ? qualifies the character immediately preceding it in the S-rank.)

There do not appear to be any limitations that could be placed in this permit that would have any impact on any of the species listed above.

II. GENERAL INFORMATION

A. The effluent from this facility may be subject to the requirements of any of the following regulations: R.61-9.125, 129, 133, and 403; 40 CFR Part 136; Subchapter N (40 CFR Parts 400 through 402 and 404 through 471); R.61-9.503, R.61-9.504 and R.61-9.505.

B. Authority: This permit is written in accordance with applicable laws and regulations including, but not limited to, Regulation 61-9, Regulation 61-68, Pollution Control Act and Clean Water Act.

C. Under R.61-9.124.8 (Fact Sheet), a fact sheet shall be prepared for every draft permit for a major NPDES facility or activity, for every Class I sludge management facility, for every NPDES draft permit that incorporates a variance or requires an explanation under section 124.56(b), and for every draft permit which the Department finds is the subject of wide-spread public interest or raises major issues. The Rationale will be included as an attachment to the Fact Sheet prepared under this regulation.

D. The conclusions noted in the Rationale establish proposed effluent limitations and permit requirements addressed in R.61-9.122.43 (Establishing Permit Conditions), R.61-9.122.44 (Establishing Limitations, Standards and other permit conditions) and other appropriate sections of R.61-9.

III. BACKGROUND AND PROCEDURES FOR PERMIT LIMIT DEVELOPMENT

A. The receiving waterbody 7Q10, annual average flow or other critical flow condition at the discharge point, and 7Q10, annual average flow, or other critical flow condition for source water protection are determined by the SCDHEC's Wasteload Allocation Section. The 7Q10, Annual Average Flow or other critical flow conditions are based on information published or verified by the USGS, an estimate extrapolation from published or verified USGS data or from data provided by the permittee. These flows may be adjusted by the Wasteload Allocation Section to account for existing water withdrawals that impact the flow. The 7Q10 (or 30Q5 if provided by the applicant), annual average flow at the discharge point, or other critical flow condition or 7Q10 (or 30Q5 if provided by the applicant), annual average flow or other critical flow condition for source water protection for a proposed or existing surface water drinking water intake will be used to determine dilution factors, as appropriate, in accordance with R.61-68.C.4.a & 4.b for aquatic life, human health, and organoleptic effects respectively.

B. Water and organism consumption and drinking water MCL criteria will be evaluated for protection of human health when calculating dilution factors. "The Department may, after Notice of Intent included in a notice of a proposed NPDES permit in accordance with Regulation 61-9.124.10, determine that drinking water MCLs or W/O shall not apply to discharges to those waterbodies where there is: no potential to affect an existing or proposed drinking water source and no state-approved source water protection area." For permitting purposes, "a proposed drinking water source is one for which a complete permit application, including plans and specifications for the intake, is on file with the Department at the time of consideration of an NPDES permit application for a discharge that will affect or has the potential to affect the drinking water source" (R.61-68.E.14.c(5)).

   The Department will implement this protection in NPDES permits using the source water protection program already developed for the drinking water program. A source water protection program was developed originally in 1999 to define the source water protection areas for each drinking water intake. The program was designed to identify source water protection areas (SWPAs) to aid drinking water systems in identifying sources of potential contamination that could affect their intakes. In September 2009, this program was modified to redefine the SWPAs as smaller, more manageable areas. The revised document developed in September 2009 is entitled "South Carolina Drinking Water Source Assessment and Protection Program." For the purposes of NPDES permitting, the SWPA referred to in Regulation 61-68.E.14.c(5) is the Primary Protection Area defined in the revised assessment and protection document. More information regarding the use of these protection areas is provided later in this rationale with the discussion of the procedure for establishing permit limits in Section G.2.

C. Application of numeric criteria to protect human health: If separate numeric criteria are given for organism consumption, water and organism consumption (W/O), and drinking water Maximum Contaminant Levels (MCLs), they shall be applied as appropriate. The most stringent of the criteria shall be applied to protect the existing and classified uses of the waters of the State. See R.61-68.E.14.b(1).

D. Numeric criteria have been established in R.61-68 based on organoleptic data (prevention of undesirable taste and odor). For those substances which have aquatic life and/or human health numeric criteria and organoleptic numeric criteria, the most stringent of the three shall be used for derivation of permit effluent limitations. See R.61-68.E.13.

E. Sampling Frequency: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit (R.61-9.122.41). Typically, requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge but in no case less than once a year (R.61-9.122.44)

F. Compliance Schedules:

1. A person issued an NPDES permit by the Department who is not in compliance with applicable effluent standards and limitations, or other requirements contained therein at the time the permit is issued, shall be required to achieve compliance within a period of time as set forth by the Department, with effluent standards and limitations, with water quality standards, or with specific requirements or conditions set by the Department. The Department shall require compliance with terms and conditions of the permit in the shortest reasonable period of time as determined thereby or within a time schedule for compliance which shall be specified in the issued permit.

2. If a time schedule for compliance specified in an NPDES permit which is established by the Department, exceeds nine (9) months, the time schedule shall provide for interim dates of achievement for compliance with certain applicable terms and conditions of the permit. (R.61-9.122.47)

G. Procedure for establishing effluent limitations:

1. Effluent limits (mass and concentration) for Five day Biochemical Oxygen Demand (BOD_5), Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO), Total Ammonia Nitrogen (as N), and Nutrients are established by the Wasteload Allocation (WLA) Section, with consideration given to technology-based limitations.

a. Five day Biochemical Oxygen Demand BOD_5, Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO):

Effluent limits for conventional oxygen demanding constituents (BOD_5, UOD and DO) are established to protect in-stream water quality and uses, while utilizing a portion of the assimilative capacity of the receiving water. The ability of a water body to assimilate oxygen-demanding substances is a function of its physical and chemical characteristics above and below the discharge point. Various mathematical techniques, called models, have been developed to estimate this capacity. The Department follows the procedures as outlined in the "State/EPA Region IV Agreement on the Development of Wasteload Allocations/Total Maximum Daily Loads and NPDES Permit Limitations" dated October 30, 1991 (as updated) for determining the assimilative capacity of a given water body. Mathematical models such as QUAL2E and QUAL2E-UNCAS are used in accordance with "Enhanced Stream Water Quality Models QUAL2E and QUAL2E-UNCAS: Documentation and Users Manual" (EPA/600/3-87/007; dated May 1987) as updated. BOD_5 and UOD values determined from modeling results will be used in permitting as monthly average derived limits (C_{wla}). Daily maximum derived limits will be determined by multiplying the monthly average value by two.

For facilities subject to effluent guidelines limitations or other technology-based limitations, BOD_5 will also be evaluated in accordance with the applicable industrial categorical guidelines. These parameters will be identified in Part III of this rationale when they are applicable to the permit.

b. Total Ammonia Nitrogen (as N):

Ammonia limitations based on oxygen demand will be determined from modeling information as described above. These values will be used as monthly average derived limits and a daily maximum will be determined by multiplying the monthly average derived limit by two. These values will be compared with the ammonia water quality criteria for protection of aquatic life from Regulation 61-68 and any categorical limitations. The more stringent of the limitations will be imposed. Calculations for aquatic life criteria and other wasteload recommendations will be shown in Part I of this rationale when ammonia is a pollutant of concern.

c. Discharges of Nutrients:

In order to protect and maintain lakes and other waters of the State, consideration is given to the control of nutrients reaching the waters of the State. Therefore, in accordance with regulation R.61-68.E.11**,** the Department controls the nutrients as prescribed below. Nutrient limitations will be determined from the best available information and/or modeling performed by the Wasteload Allocation Section to meet these water quality standards.

i. Discharges of nutrients from all sources, including point and nonpoint, to waters of the State shall be prohibited or limited if the discharge would result in or if the waters experience growths of microscopic or macroscopic vegetation such that the water quality standards would be violated, or the existing or classified uses of the waters would be impaired. Loading of nutrients shall be addressed on an individual basis as necessary to ensure compliance with the narrative and numeric criteria.

ii. Numeric nutrient criteria for lakes are based on an ecoregional approach which takes into account the geographic location of the lakes within the State and are listed below. These numeric criteria are applicable to lakes of 40 acres or more. Lakes of less than 40 acres will continue to be protected by the narrative criteria.

1. for the Blue Ridge Mountains ecoregion of the State, total phosphorus shall not exceed 0.02 mg/l, chlorophyll *a* shall not exceed 10 ug/l, and total nitrogen shall not exceed 0.35 mg/l

2. for the Piedmont and Southeastern Plains ecoregions of the State, total phosphorus shall not exceed 0.06 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l

3. for the Middle Atlantic Coastal Plains ecoregion of the State, total phosphorus shall not exceed 0.09 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.

iii. In evaluating the effects of nutrients upon the quality of lakes and other waters of the State, the Department may consider, but not be limited to, such factors as the hydrology and morphometry of the waterbody, the existing and projected trophic state, characteristics of the loadings, and other control mechanisms in order to protect the existing and classified uses of the waters.

iv. The Department shall take appropriate action, to include, but not limited to: establishing numeric effluent limitations in permits, establishing Total Maximum Daily Loads, establishing waste load allocations, and establishing load allocations for nutrients to ensure that the lakes attain and maintain the above narrative and numeric criteria and other applicable water quality standards.

v. The criteria specific to lakes shall be applicable to all portions of the lake. For this purpose, the Department shall define the applicable area to be that area covered when measured at full pool elevation.

2. Effluent concentration limits (C_{efflim}) for parameters other than the parameters listed in G.1.a-c above are established using the following procedures:

Q_{7Q10} 7Q10 or other critical flow condition of the receiving water at the discharge point in mgd. (may require adjustment for withdrawals)

AAF_d Average Annual Flow (AAF) or other critical flow condition of the receiving water at the discharge point in mgd. (may require adjustment for withdrawals)

Q_{7Q10i} 7Q10 or other critical flow condition of the receiving water at the SWP Area boundary in mgd.

AAF_i Average Annual Flow (AAF) or other critical flow condition of the receiving water at the SWP Area boundary in mgd.

Q_d Long term average discharge flow in mgd.

a. Determine dilution factors, where not provided by modeling:
The following information is to be used (where applicable) for establishing effluent concentration limits:

DF_1: This dilution factor is based on 7Q10 or other critical flow condition of the receiving water at the discharge point (Q_{7Q10}). This dilution factor is used to determine the derived limits for protection of the following aquatic life and human health concerns for the reasons indicated:

i. Aquatic Life (see R.61-68.C.4.a(1)). Protection of aquatic life on a short-term basis is needed at the point where aquatic organisms become exposed to the discharge.

ii. Human Health – Organism Consumption for parameters identified as non-carcinogens per R.61-68.C.4.b(1). Protection for human health on a short-term basis for consumption of aquatic organisms is needed at the point the aquatic organisms become exposed to the discharge.

$$DF_1 = \left(\frac{Q_{7Q10} + Q_d}{Q_d} \right)$$

DF_2: This dilution factor is based on the Average Annual Flow of the receiving water at the discharge point (AAF_d). This dilution factor is used to determine the derived limits for protection of the following human health and organoleptic concerns for the reasons indicated:

i. Human Health – Organism Consumption for parameters identified as carcinogens per R.61-68.C.4.b(1). Protection for human health on a long-term basis to prevent cancer due to consumption of aquatic organisms is needed at the point the aquatic organisms become exposed to the discharge.

ii. Organoleptic effects per R.61-68.C.4.b(1). Protection for taste and odor issues related to the discharge is needed at the point where the discharge enters the receiving water.

$$DF_2 = \left(\frac{AAF_d + Q_d}{Q_d} \right)$$

DF_3: This dilution factor is based on the 7Q10 or other critical flow condition (Q_{7Q10i}) for protection of a proposed or existing surface water drinking water intake that the discharge has the potential to affect. This dilution factor is used to determine the derived limits for protection of the following human health concerns for the reasons indicated:

i. Human Health – Water and Organism (W/O) Consumption for parameters identified as non-carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for short-term health effects when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody and consuming aquatic organisms from the same waterbody is provided by this criterion, but drinking the water withdrawn from the waterbody may require a higher level of protection in terms of applicable dilution than consumption of organisms.

ii. Human Health - Drinking Water Maximum Contaminant Level (MCL) for parameters identified as non-carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for short-term health effects when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody after conventional treatment per R.61-68.G is provided by this criterion.

$$DF_3 = \left(\frac{Q_{7Q10i} + Q_d}{Q_d} \right)$$

DF_4: This dilution factor is based on the Average Annual Flow or other critical flow condition (*AAF_i*) for protection of a proposed or existing surface water drinking water intake that the discharge has the potential to affect. This dilution factor is used to determine the derived limits for protection of the following human health concerns for the reasons indicated:

i. Human Health–Water and Organism Consumption for parameters identified as carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for long-term health effects due to cancer when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody and consuming aquatic organisms from the same waterbody is provided by this criterion, but drinking the water withdrawn from the waterbody may require a higher level of protection in terms of applicable dilution than consumption of organisms.

ii. Human Health - Drinking Water Maximum Contaminant Level (MCL) for parameters identified as carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for long-term health effects due to cancer when the discharge has the potential to affect a surface water drinking water intake. Protection of human health relative to drinking the water from the waterbody after conventional treatment per R.61-68.G is provided by this criterion.

$$DF_4 = \left(\frac{AAF_i + Q_d}{Q_d} \right)$$

For both *DF_3* and *DF_4*, to satisfy the mixing zone requirements of R.61-68.C.10(a) for both W/O and MCL criteria, the Department will use the following flows to determine dilution:

1. The following applies to discharges and intakes in flowing rivers:

   a. Where the discharge is within the SWPA (15 river miles) of the intake, the flow at the 15-river mile boundary of the tributary with the largest applicable critical flow will be used.

   b. Where the discharge is outside the SWPA (15 river miles) of the intake, the applicable critical flow at the intake will be used.

2. When the discharge is either in the tributary to a lake or in a lake and the intake is in the same lake that does not behave as a run-of- river impoundment*, the flow is determined using the sum of the applicable critical flows of all tributaries entering the lake.

3. The following applies when both the discharge and the intake are in a lake arm that behaves as a run-of-river impoundment*:

   a. Where the discharge is within the SWPA (15-mile buffer which may include both lake and river miles) of the intake, the flow at the 15-mile boundary of the tributary with the largest applicable critical flow will be used.

b. Where the discharge is outside the SWPA (15-mile buffer which may include both lake and river miles) of the intake, the applicable critical flow at the intake will be used.

4. Where the discharge is in the arm of a lake and the intake is in the upper reach of another arm of the lake, no protection of W/O or MCL criteria is needed because the discharge does not have the potential to affect the intake,

5. If the discharge has the potential to affect multiple intakes, the SWPA of the intake closest to the discharge will be protected. However, the permittee may be required to provide notification to all potentially affected intakes.

6. When the discharge is in a tidally influenced waterbody, the flow may be determined on a case-by-case basis and the 7Q10 and AAF for source water protection will be specified [and may not use the 15-mile buffer listed above]. The determination of the source water protection area will be made using available data and taking into consideration tidal conditions.

* Run-of-river impoundment is defined as a lake or reservoir (or arm of a lake or reservoir) that is narrow and/or shallow offering little dilution or delay in contaminant flow toward an intake.

b. Determine derived limits using the following procedures:

WQS_{al} Receiving water Standard (based on an established criteria or other published data per R.61-68) for protection of Aquatic Life; may be a CCC or CMC as defined below

WQS_{org} Receiving water Standard (based on an established criteria or other published data per R.61-68) for protection of Human Health – Organism Consumption

WQS_{wo} Receiving water Standard (based on an established criteria or other published data per R.61-68), for protection of Human Health – Water & Organism Consumption. Applicable only if any portion of the mixing zone for this discharge is in a state-approved source water protection area for a proposed or existing water intake downstream of the discharge point.

WQS_{mcl} Receiving water Standard (based on an established criteria or other published data per R.61-68), for Drinking Water MCL (Maximum Contaminant Level). Applicable only if any portion of the mixing zone for this discharge is in a state-approved source water protection area for a proposed or existing water intake downstream of the discharge point.

WQS_{ol}: Receiving water Standard (based on an established criteria or other published data per R.61-68), based on Organoleptic Data.

C_{aqlife} Concentration limit derived from aquatic life data

C_{HH} Concentration limit derived from human health data as determined from organism (C_{org}), water/organism (C_{wo}) and MCL (C_{mcl}) data

C_{ol} Concentration limit derived from organoleptic data

C_b Background concentration of the concerned parameter in mg/l is typically determined from ambient monitoring data or data provided by applicant. If the waterbody to which the discharge flows is not on the 303(d) list, the 90th percentile of ambient monitoring data for aquatic life protection for the parameters identified in the Appendix (Water

Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used. If the waterbody to which the discharge flows is not on the 303(d) list, the median value of ambient monitoring data for human health protection for the parameters identified in the Appendix (Water Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used. The background concentration is assumed to be zero (0) in the absence of actual data based on Departmental guidance and EPA recommendation.

i. Determine the derived limits for protection of Aquatic Life (C_{aqlife})

1. The following guidelines apply to determining aquatic life limits using this basic equation:

$$C_{aqlife} = (DF_1 \times WQS_{al}) - \left\{ C_b \times \left(\frac{Q_{7Q10}}{Q_d} \right) \right\}$$

a. Typically, the Criterion Maximum Concentration (CMC) is applied as a daily maximum derived limit and the Criterion Continuous Concentration (CCC) is applied as a monthly average derived limit, after consideration of dilution and background concentrations. The CMC and CCC for specific metals will be adjusted using the procedures in 60 FR 22229, "Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance-Revision of Metals Criteria," May 4, 1995 and the "Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria," Oct. 1, 1993 and applied as a daily maximum and monthly average, respectively, after consideration of dilution and background concentrations. For specific metals, this calculation is explained in detail later in this rationale.

monthly average = C_{aqlife} using CCC as WQS_{al}
daily maximum = C_{aqlife} using CMC as WQS_{al}

b. If only a CMC exists for a particular parameter, the daily maximum derived permit limit will be set using that value, after consideration of dilution and background concentrations. If no other values (e.g., human health) exist for that parameter on which to base a monthly average limit and the discharge is continuous, the monthly average will be set equal to the daily maximum to satisfy Regulation 61-9.122.45(d). In no case shall the monthly average limit be set higher than the daily maximum limit. If only a CCC is given, it will be used as a monthly average derived limit and the daily maximum derived limit will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the US EPA's "Technical Support Document for Water Quality-based Toxics Control", EPA/505/2-90-001, March 1991 (hereafter known as the TSD).

If a CCC exists and no CMC exists and no other acute or chronic data exists, the aquatic life limits are

monthly average = C_{aqlife} using CCC as WQS_{al}
daily maximum = 2 x C_{aqlife}

If a CMC and no CCC exists, and no other acute or chronic data exists, the aquatic life limits are

monthly average = C_{aqlife} using CMC as WQS_{al}
daily maximum = C_{aqlife} using CMC as WQS_{al}

c. If only an acute toxicity effect concentration for a number of species for a particular pollutant is given as a LC_{50}, the lowest concentration should be divided by an acute-to-chronic ratio (ACR) of 10 and a sensitivity factor of 3.3, for an acceptable instream concentration in order to protect against chronic toxicity effects (R.61-68.E.16.a(1)). Other acute toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

monthly average = C_{aqlife} using other data as WQS_{al}
daily maximum = 2 x C_{aqlife}

d. If a chronic toxicity effect concentration for a number of species for a particular pollutant is given as a no observed effect concentration (NOEC), the lowest concentration should be divided by a sensitivity factor of 3.3 in order to protect against chronic toxicity to the most sensitive species (R.61-68.E.16.a(2)). Other chronic toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

monthly average = C_{aqlife} using other data as WQS_{al}
daily maximum = 2 x C_{aqlife}

e. If both acute and chronic data are available for a particular pollutant, monthly average derived limit will be calculated as in c and d above for each acute and chronic, respectively. The more stringent of the monthly average derived limits will be the monthly average derived limit used after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

monthly average = C_{aqlife} using other data as WQS_{al}
daily maximum = 2 x C_{aqlife}

f. Consider the background concentration (C_b) of the parameter of concern. If the background concentration is equal to or greater than the applicable standard (*WQS,* as defined above) for the parameter of concern, then the derived concentration limit (C_{aqlife}) for that parameter is established equal to the standard (*WQS*) so that no additional amount of that pollutant is added to the waterbody. An exception exists where the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. In those situations, the Department may establish permit effluent limitations (C_{efflim}) at a level higher than the derived limit, but no higher than the natural background concentration (i.e. a "rise above background" limit). In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (R.61-68.E.14.c(2)).

If C_b is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{\text{aqlife}} = WQS .$$

If C_b is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{\text{aqlife}} < C_{eff\ \text{lim}} \leq C_b .$$

2. Metals: Regulation 61-9.122.45(c) requires that permit limits be expressed in terms of total recoverable metal (with limited exceptions). In order to translate from the water quality criterion to a total recoverable metal, Regulation R.61-68.E.14.c(4) provides for the use of the EPA Office of Water Policy and "Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria", October 1, 1993. A subsequent revision published in the Federal Register (60 FR 22229) on May 4, 1995 updated the data in the original report. See R.61-68 Appendix for CMC and CCC values and equations, Attachment 1 for "Conversion Factors for Dissolved Metals" and Attachment 2 "Parameters for Calculating Freshwater Dissolved Metals Criteria that are Hardness-Dependent".

Per R.61-68.E.14.a(3), the CMC and CCC are based on a hardness of 25 mg/l if the ambient or mixed stream hardness is equal to or less than 25 mg/l. Concentrations of hardness less than 400 mg/l may be based on the mixed stream hardness if it is greater than 25 mg/l and less than 400 mg/l and 400 mg/l if the ambient stream hardness is greater than 400 mg/l. The ambient stream hardness is assumed to be 25 mg/l in the absence of actual stream data. Mixed stream hardness may be determined using flow-weighted effluent hardness and stream hardness.

The following equations and constants will be used to calculate aquatic life metals limits based on these documents. The values of the terms referenced in this section and determined from the equations below are included in the Metals spreadsheet attached to this rationale.

a. Freshwater: The following metals are subject to this section:

arsenic	lead
cadmium	mercury
chromium (III & VI)	nickel
copper	zinc

The equation for C_d below changes the total metal to dissolved metal. From Technical Guidance Manual for Performing Waste Load Allocations Book II, Rivers and Streams, EPA/440/484/022.

$$S = CCC \; or \; CMC \quad \text{(adjusted for hardness)}$$
$$C_d = S \times CF$$

where C_d = Dissolved metal concentration (µg/l)
S = a constant to represent the CCC or CMC (µg/l)
CF = Conversion factor considered most relevant in fresh water for aquatic life as defined by EPA for each metal

Once the dissolved metal concentration is known, determine C_p using the equation for C_d above and the following equations.

$$C_p = C_d \times \left\{1 + \left(K_{pb} \times TSS_b \times 10^{-6}\right)\right\}$$

$$K_{pb} = K_{po} \times (TSS_b)^a$$

where C_p = Particulate sorbed metal concentration (µg/l). This value represents the revised water quality criterion for the metal to be used for ambient data comparison.
K_{pb} = Linear partition coefficient using the stream TSS (liters/mg)
K_{po} = Metal-specific equilibrium constant (liters/mg)
a = Metal-specific constant
TSS_b = Background or in-stream Total Suspended Solids (TSS) concentration (mg/l). The background TSS is assumed to be 1 mg/l in the absence of actual instream data based on the 5th percentile of ambient TSS data on South Carolina waterbodies from 1993-2000.

To determine the effluent limit (C_{aqlife}), use the following equations to translate the limits into a total recoverable metal concentration.

$$TSS_{avg} = \frac{(Q_d \times TSS_e) + \left(Q_{7Q10} \times TSS_b\right)}{Q_d + Q_{7Q10}}$$

where TSS_e = Effluent Total Suspended Solids (TSS) concentration (mg/l) determined from actual long-term average data or proposed permit limits if no data available.
TSS_{avg} = Average in-stream (mixed) TSS concentration (mg/l)

$$C_t = C_d \times \left\{1 + \left(K_p \times TSS_{avg} \times 10^{-6}\right)\right\}$$

$$K_p = K_{po} \times (TSS_{avg})^a$$

where C_t = Total metal concentration (µg/l)
K_p = Linear partition coefficient (liters/mg). This is the distribution of metal at equilibrium between the particulate and dissolved forms.

Once C_t has been calculated, it is multiplied by DF_1 and background concentrations are accounted for to obtain the derived limit (max or avg) (C_{aqlife}):

$$C_{aqlife} = (C_t \times DF_1) - \left\{C_b \times \left(\frac{Q_{7Q10}}{Q_d}\right)\right\}$$

monthly average = C_{aqlife} based on CCC
daily maximum = C_{aqlife} based on CMC

b. Saltwater: So that metals may be expressed in terms of total recoverable metal as required by R.61-9.122.45(c), the saltwater CCC and CMC will be used in the calculation of limits for all other parameters not included in paragraph 2 above. Monthly average derived limits (C_{aqlife}) for aquatic life protection are calculated as follows:

$$C_{aqlife} = (DF_1 \times WQS_{al}) - \left\{C_b \times \left(\frac{Q_{7Q10}}{Q_d}\right)\right\}$$

c. The more stringent of the freshwater and saltwater values derived above for each pollutant will be used so that all waters are protected.

3. Where a Water Effects Ratio (WER) is used to adjust a criterion, derived limits for the adjusted aquatic life criterion ($C_{aqlife\text{-}adj}$) are calculated as follows. The WER is a type of site-specific permit effluent limit, as allowed by R.61-68.E.14.c(7), derived using a ratio determined from EPA methodology. Both DHEC and EPA must approve the WER prior to implementation. See EPA's 1994 "Interim Guidance on the Determination and Use of Water-Effect Ratios (WERs) for Metals." The approved WER will be shown in the water quality spreadsheets on the Data sheet. The revised aquatic life value will be shown with the WER, hardness and dissolved metals adjustments, as appropriate, in the aquatic life columns on the Pollutant spreadsheet.

a. For metals identified in #2 above, revise the equation for S as follows:

S = [CCC or CMC (adjusted for hardness)] x WER

Follow the remaining calculations in #2 above to get an adjusted C_{aqlife} value that will be used to determine derived limits:

monthly average = $C_{aqlife\text{-}adj}$ based on CCC
daily maximum = $C_{aqlife\text{-}adj}$ based on CMC

b. For other parameters, use the appropriate equation in #1 above to derive an adjusted C_{aqlife} value. The monthly average will be calculated as follows using the appropriate WQS_{al} and the daily maximum calculated using the appropriate equations in #1 above.

$$C_{aqlife-adj} = (DF_1 \times WQS_{al} \times WER) - \left\{ C_b \times \left(\frac{Q_{7Q10}}{Q_d} \right) \right\}$$

4. Where the Recalculation Procedure is used to adjust a criterion, derived limits for the adjusted aquatic life criterion ($C_{aqlife-adj}$) are calculated as follows. The Recalculation Procedure is intended to cause a site-specific criterion to appropriately differ from the State-adopted national aquatic life criterion if justified by demonstrated pertinent toxicological differences between the aquatic species that occur at the site and those that were used in the derivation of the criterion. It is important to note that the site (the portion of the waterbody or watershed being affected) must be clearly defined. This type of site-specific effluent limit is allowed by R.61-68.E.14.c(7) Both DHEC and EPA must approve the recalculation prior to implementation.

   The approved recalculated aquatic life criteria (*SS*-CCC and *SS*-CMC, as appropriate) will be shown adjusted for hardness on the Data spreadsheet. The additional dissolved metals adjustments, as appropriate, will be shown in the aquatic life columns on the Pollutant spreadsheet. If the parameter being adjusted is one of the metals in #2 above, SS will include all the appropriate metals adjustments.

$$C_{aqlife-adj} = (DF_1 \times SS - \left\{ C_b \times \left(\frac{Q_{7Q10}}{Q_d} \right) \right\}$$

   monthly average = $C_{aqlife-adj}$ based on CCC
   daily maximum = $C_{aqlife-adj}$ based on CMC

5. Where a WER and recalculation procedure are combined to adjust a criterion, derived limits ($C_{aqlife-adj}$) for aquatic life protection are calculated by combining the calculations in #3 and #4.

$$C_{aqlife-adj} = (DF_1 \times SS \times WER) - \left\{ C_b \times \left(\frac{Q_{7Q10}}{Q_d} \right) \right\}$$

   monthly average = $C_{aqlife-adj}$ based on CCC
   daily maximum = $C_{aqlife-adj}$ based on CMC

6. Other scientifically defensible methods for developing site-specific aquatic life effluent limits or site-specific criterion may be used on a case-by-case basis.

ii. Determine derived limits for protection of Human Health

1. The following guidelines apply to determining human health limits:

a. The human health criterion given by Regulation 61-68 will be applied as a monthly average derived limit after consideration of dilution and background concentrations ($C_{HH\text{-}avg}$). Exceptions exist based on EPA criteria and are indicated for specific parameters. No limits on human health based on water and organism consumption or drinking water MCLs will be imposed if there is no potential to affect an existing or proposed surface water drinking water intake and no state-approved source water protection area in accordance with Regulation 61-68.E.14.c(5).

b. The daily maximum permit limit will be determined from the monthly average value from (a) above and a multiplier (*M)* determined using a statistical procedure recommended in Section 5.5 using average = 95th percentile from Table 5-3 in the TSD. The permitted or proposed number of samples per month (n) is used with the coefficient of variation (CV) to determine *M*.

$$M = \frac{e^{(Z_m\sigma - 0.5\sigma^2)}}{e^{(Z_a\sigma_n - 0.5\sigma_n{}^2)}}$$

where:

$$\sigma_n{}^2 = \ln\left(\frac{CV^2}{n} + 1\right)$$

$$\sigma^2 = \ln\left(CV^2 + 1\right)$$

CV = coefficient of variation of the effluent concentration. For a data set where *n*>10, the *CV* is calculated as standard deviation divided by mean for the data set being evaluated. For data set where *n*<10, the *CV* is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the *CV* is too large to calculate a standard deviation or mean with sufficient confidence.

n = the number of effluent samples per month (where frequency is less than 1/month, *n* =1)

z_m = the percentile exceedance probability for the daily maximum permit limit (=2.326 for 99th percentile basis)

z_a = the percentile exceedance probability for the monthly average permit limit (=1.645 for 95th percentile basis)

$C_{HH\text{-}max} = M * C_{HH\text{-}avg}$

c. Consider the background concentration (C_b) of the parameter of concern. If the background concentration is equal to or greater than the applicable standard (*WQS,* as defined above) for the parameter of concern, then the derived concentration limit (C_{HHe}) for that parameter and for the protection of that standard is established equal to the standard (*WQS*). An exception exists where the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. In those situations, the Department may establish permit effluent limitations (C_{efflim}) at a level higher than the derived limit, but no higher than the natural background concentration (i.e. a "rise above background" limit). In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (See R.61-68.E.14.c(3)).

If C_b is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{\mathrm{HH}} = WQS\,.$$

If C_b is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{HH} < C_{eff\ \lim} \leq C_b\,.$$

2. Human Health – Organism Consumption (C_{org}).

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{org} = (DF_2 \times WQS_{org}) - \left\{ C_b \times \left(\frac{AAF_d}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$C_{org\text{-}max} = M * C_{org}$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{org} = (DF_1 \times WQS_{org}) - \left\{ C_b \times \left(\frac{Q_{7Q10}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$C_{org\text{-}max} = M * C_{org}$

3. Human Health – Water and Organism Consumption (C_{wo})

   a. For Carcinogens

      The Monthly Average is calculated as follows:

$$C_{wo} = (DF_4 \times WQS_{wo}) - \left\{ C_b \times \left(\frac{AAF_i}{Q_d} \right) \right\}$$

      The Daily Maximum is calculated as

      $C_{wo\text{-}max} = M * C_{wo}$

   b. For Non-carcinogens

      The Monthly Average is calculated as follows:

$$C_{wo} = (DF_3 \times WQS_{wo}) - \left\{ C_b \times \left(\frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

      The Daily Maximum is calculated as

      $C_{wo\text{-}max} = M * C_{wo}$

4. Human Health – Drinking Water Maximum Contaminant Level (MCL) (C_{mcl}).

   a. For Carcinogens

      The Monthly Average is calculated as follows:

$$C_{mcl} = (DF_4 \times WQS_{mcl}) - \left\{ C_b \times \left(\frac{AAF_i}{Q_d} \right) \right\}$$

      The Daily Maximum is calculated as

      $C_{mcl\text{-}max} = M * C_{mcl}$

   b. For Non-carcinogens

      The Monthly Average is calculated as follows:

$$C_{mcl} = (DF_3 \times WQS_{mcl}) - \left\{ C_b \times \left(\frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

      The Daily Maximum is calculated as

      $C_{mcl\text{-}max} = M * C_{mcl}$

5. Organoleptic criteria (C_{ol}).

The Monthly Average is calculated as follows:

$$C_{ol} = (DF_2 \times WQS_{ol}) - \left\{ C_b \times \left(\frac{AAF_d}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$C_{ol\text{-}max} = M * C_{ol}$

iii. Parameters given in a wasteload allocation for oxygen-demanding pollutants and nutrients will be limited as

monthly average = C_{wla}
daily maximum = 2 x C_{wla}

c. Determine the most stringent of applicable water quality data using the derived limits determined above:

monthly average C_{efflim} = minimum of derived monthly averages (C_{aqlife}, C_{org}, C_{wo}, C_{mcl}, C_{ol} , C_{wla})
daily maximum C_{efflim} = minimum of derived daily maximums (C_{aqlife}, $C_{org\text{-}max}$, $C_{wo\text{-}max}$, $C_{mcl\text{-}max}$, $C_{ol\text{-}max}$, $C_{wla\text{-}max}$)

d. Determine whether the discharge causes, has the reasonable potential to cause or contributes to a water quality violation.

Regulation 61-9.122.44(d)(1)(i) states: "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Department determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."

When determining whether a discharge causes, has the reasonable potential to cause or contributes to an instream excursion, the Department will use procedures which account for controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and, where appropriate, the dilution of the effluent in the receiving water (R.61-9.122.44(d)(1)(ii)).

Based on the above statements, there are three scenarios when limitations are required, as follows:

i. When data provided by the permit applicant indicates discharge values greater than the proposed limitation derived above, that discharge may <u>cause</u> an excursion above a narrative or numeric water quality criterion.

ii. A discharge may be determined to contribute to an excursion of a water quality criterion when the waterbody is impaired (e.g., on the 303(d) list) for the parameter of concern and that parameter is also being discharged at levels above the water quality criterion.

iii. Reasonable potential to cause a water quality violation is determined using the following information:

The Department will primarily use EPA's Technical Support Document (TSD) for determining reasonable potential using effluent data. Other methods may be used as well to evaluate data sets. All pollutants given in a wasteload allocation or an effluent limitation guideline will be limited in the permit.

When effluent data consists of non-quantifiable/non-detectable values or when no effluent data is available, other factors and information are considered to determine reasonable potential. In situations where a pollutant is known to be present in the wastestream (due to production data or other information), we know it is being discharged and has the potential to impact even though it may not be quantifiable. The fact that it is present will be enough information to say reasonable potential exists for that pollutant. Therefore, a reasonable potential decision is based on various data and information, and not just non-quantifiable/non-detectable data. Consideration is given to existing data, dilution in the waterbody, type of receiving water, designated use, type of industry/wastestream, ambient data, history of compliance, and history of toxic impact. If any source of information indicates reasonable potential to cause or contribute to an exceedance of the water quality standard, a water quality limit will be established.

Note: The result of the following calculations may indicate that reasonable potential does not exist. However, as stated above, other information may "override" this numerical determination to justify the need for a limit.

1. The procedure for determining reasonable potential from actual effluent data is explained in Box 3-2 on page 53 of the TSD. Multiplying factors are determined from Table 3-2 at a 95% confidence level and 95% probability in Section 3.3.2. The following describes the procedures used for determining reasonable potential for chemical-specific parameters and WET, under certain circumstances. More information on determining reasonable potential for WET is given in Item 2 below.

   Step 1: Data Analysis: The statistical calculations involved in the "Reasonable Potential" analysis require discrete numerical data. The following describes how the effluent data will be used in determining reasonable potential.

   Actual analytical results should be used whenever possible. Results less than detection and quantification should be used as follows:

   a. If the permittee reports results below the practical quantitation limit (PQL) (as defined by the permit), then the reported "less than PQL" value for a given sample is generally assumed to be zero.

b. If the permittee uses a detection/quantification level that is **greater** than the PQL, then the reported "less than" value for a given sample is generally assumed to be a discrete value equal to the detection/quantification level used by the permittee.

c. If the reported data consists of both discrete and non-discrete values and/or the data is reported using varying detection/quantification levels, then, generally, a combination of the above two approaches is used, or the data is evaluated in a manner that is most appropriate for that data set.

Note: For information on the acceptable analytical methods and PQLs please refer to NPDES permit application attachment titled "Practical Quantitation Limits (PQL) and Approved Test Methods."

Step 2: Using data from the permit application, other data supplied by the applicant and/or Discharge Monitoring Report (DMR) data, determine the total number of observations (*n*) for a particular set of effluent data and determine the highest value (C_{max}) from that data set. For the monthly average comparison, the data set will include monthly average results and *n* will be the number of months in which they sampled in the time period being evaluated. For the daily maximum comparison, the data set will include daily maximum results and *n* will be the total number of samples in the time period being evaluated. Individual results may not necessarily be used in the calculation.

Step 3: Determine the coefficient of variation (*CV*) for the data set. For a data set where *n*>10, the *CV* is calculated as standard deviation divided by mean for the data set being evaluated. For data set where *n*<10, the *CV* is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the *CV* is too large to calculate a standard deviation or mean with sufficient confidence.

$$CV = 0.6 \quad \text{for} \quad n < 10$$

$$CV = \frac{\sigma}{\mu} \quad \text{for} \quad n > 10$$

where: σ = Standard Deviation of the samples
μ = Mean of the samples

Step 4: Determine the appropriate multiplying factor (*MF*) from either Table 3-2 or using the formulae in Section 3.3.2 of the TSD.

a. Determine the percentile represented by the highest concentration in the sample data.

$$p_n = (1 - Confidence\ Level)^{1/n}$$

where: p_n = Percentile represented by the highest concentration in the data
n = number of samples
Confidence Level = 0.95 i.e. 95%

b. Determine the multiplying factor (*MF*), which is the relationship between the percentile described above (C_p) and the selected upper bound of the lognormal effluent distribution, which in this case will be the 95th percentile (C_{95}).

$$MF = \frac{C_{95}}{C_p} = \frac{e^{(Z_{95}\sigma + 0.5\sigma^2)}}{e^{(Z_p\sigma + 0.5\sigma^2)}}$$

where: Z_{95} is the standardized Z-score for the 95th percentile of the standardized normal distribution = 1.645

Z_p is the standardized Z-score for the p^{th} percentile of the standardized normal distribution.(determined in (b) above)

Note: The values of Z-scores are listed in tables for the normal distribution. If using Microsoft® Excel, this can be calculated using the NORMSINV function.

$$\sigma^2 = \ln(CV^2 + 1)$$

$$\sigma = \sqrt{\ln(CV^2 + 1)}$$

Step 5: Multiply the highest value from the data set (C_{max}) by the multiplying factor (*MF*) determined in Step 4 to obtain the maximum receiving water concentration (*RWC*).

$$RWC = C_{\max} \times MF$$

Step 6: *RWC* ≤ Derived limit (C_{efflim}) implies that reasonable potential does not exist.
RWC > Derived limit (C_{efflim}) implies that reasonable potential exists.

2. Reasonable potential for Whole Effluent Toxicity (WET) may be determined from numerical data using the following procedure:

a. When the effluent data is given in terms of percent effluent as an IC_{25}, LC_{50} and/or NOEC values:

Step 1: Convert the given values to toxic units: TU_a for acute data and TU_c for chronic data, respectively, using the following formulae. Please note that an NOEC derived using the IC_{25} is approximately the analogue of an NOEC derived using hypothesis testing. The IC_{25} is the preferred statistical method for determining the NOEC (EPA TSD, March 1991, p.6).

$$TU_a = \frac{100}{LC_{50}}$$

$$TU_c = \frac{100}{NOEC} \quad \text{or} \quad TU_c = \frac{100}{IC_{25}} \text{ if } IC_{25} \text{ available}$$

Step 2: Using DMR data or other data provided by the applicant, determine the total number of observations (*n*) for a particular set of effluent data and determine the highest value ($TU_{a,\ max}$ or $TU_{c,\ max}$) from that data set.

Step 3: Determine the coefficient of variation (*CV*) for the data set. For a data set where *n*>10, the *CV* is calculated as standard deviation divided by mean. For data set where *n*<10, the *CV* is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the *CV* is too large to calculate a standard deviation or mean with sufficient confidence.

Step 4: Determine the appropriate multiplying factor (*MF*) from either Table 3-2 or using the formulae in Section 3.3.2. (see iii.1, Step 4 above).

Step 5: Multiply the highest value of $TU_{a,\ max}$ or $TU_{c,\ max}$ from the data set by the multiplying factor (*MF*) determined in Step 4 and the dilution at the edge of the mixing zone (the test concentration obtained from mixing zone modeling or demonstration) to obtain the maximum receiving water concentration (*RWC*)

RWC for Acute Toxicity = [$TU_{a,\ max}$ * *MF* * *conc. at MZ boundary]*
RWC for Chronic Toxicity = [$TU_{c,\ max}$ * *MF* * *conc. at MZ boundary*]

Step 6: *RWC* for Acute Toxicity ≤ $0.3TU_a$ implies that a reasonable potential does not exist
RWC for Acute Toxicity > $0.3TU_a$ implies that a reasonable potential exists

RWC for Chronic Toxicity ≤ $1.0TU_c$ implies that a reasonable potential does not exist
RWC for Chronic Toxicity >$1.0TU_c$ implies that a reasonable potential exists

b. Other methods for determining reasonable potential may be used if appropriately justified.

e. Consider Effluent Limitations Guidelines (ELG or Categorical guidelines)

The more stringent of the effluent limitations guidelines average and maximum derived limits and water quality-derived average and maximum limits shall be used as permit limits, unless other information indicates more stringent limits are needed (e.g. previous permit limits due to backsliding). Categorical limitations based on mass may be converted to concentration using the long-term average flow of the discharge for comparison to the monthly average and daily maximum derived limits.

1. For effluent guidelines based on production, limits will be calculated as follows:

$$ELG\,\text{lim} = \sum (ELGprod)(ELG) \text{ where}$$

*ELG*lim*:* the mass limit, in lbs/day, for an applicable pollutant based on the production
ELGprod: the production rate, in lbs, for the applicable guideline(s), usually based on long-term average data
ELG: the effluent guideline limitation, given as a measure of production (e.g. lbs/1000 lbs), for an applicable pollutant

2. For effluent guidelines based on flow, limits will typically be calculated as follows:

$$ELG\,\text{lim} = \sum (ELGflow)(ELG)(8.345)$$

*ELG*lim: the mass limit, in lbs/day, for the applicable pollutant based on the applicable flow
ELGflow: the long-term average process flow rate, in MGD, for the applicable guideline(s) (unless otherwise specified in the guideline)
ELG: the concentration limitation, in mg/l, for the applicable pollutant from the applicable guideline(s)

H. Other considerations

1. When the derived permit effluent limitation based on aquatic life numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit. Appropriate biological monitoring requirements shall be incorporated into the permit to determine compliance with appropriate water quality standards (R.61-68.E.14.c(2)).

2. When the derived permit effluent limitation based on human health numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit (R.61-68.E.14.c(3)).

3. The effluent concentration limits determined above may not necessarily be the NPDES permit limit. NPDES Permit limits are determined after a reasonable potential analysis is conducted using these derived limits and also after evaluating other issues such as anti-backsliding and antidegradation.

4. When mass limits are calculated, the formula to be used is as follows.

*Mass (lb/day) = Flow (mgd) * Concentration (mg/l) * 8.345*

5. Per Regulation 61-9.122.45(d), for continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall unless impracticable be stated as maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works.

6. Antibacksliding: When a permit is reissued, the terms and conditions of the reissued permit must be at least as stringent as those final limits in the previous permit unless certain exceptions are met (see Regulation 61-9.122.44.l).

IV. PROCEDURES FOR REACHING A FINAL PERMIT DECISION

A. Comment Period (R.61-9.124.10 and 11)

The Department of Health and Environmental Control proposes to issue an NPDES permit to this applicant subject to the effluent limitations and special conditions outlined in this document. These determinations are tentative.

During the public comment period, any interested person may submit written comments on the draft permit to the following address:

SC Dept. of Health and Environmental Control
Water Facilities Permitting Division
Bureau of Water
2600 Bull Street
Columbia, South Carolina 29201

For additional information, interested persons may contact **Byron Amick** at 803-898-4236.

All written comments received during the public comment period shall be considered in making the final decision and shall be responded to as prescribed below.

Per R.61-9.124.17, the Department is only required to issue a response to comments when a final permit is issued. This response shall:

1. Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and

2. Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.

The response to comments shall be available to the public.

B. Public Hearings (R.61-9.124.11 and 12)

During the public comment period, any interested person may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Determinations and Scheduling.

1. Within the thirty (30) day comment period or other applicable comment period provided after posting or publishing of a public notice, an applicant, any affected state or interstate agency, the Regional Administrator or any other interested person or agency may file a petition with the Department for a public hearing on an application for a permit. A petition for a public hearing shall indicate the specific reasons why a hearing is requested, the existing or proposed discharge identified therein and specifically indicate which portions of the application or other permit form or information constitutes necessity for a public hearing. If the Department determines that a petition constitutes significant cause or that there is sufficient public interest in an application for a public hearing, it may direct the scheduling of a hearing thereon.

2. A hearing shall be scheduled not less than four (4) nor more than eight (8) weeks after the Department determines the necessity of the hearing in the geographical location of the applicant or, at the discretion of the Department, at another appropriate location, and shall be noticed at least thirty (30) days before the hearing. The notice of public hearing shall be transmitted to the applicant and shall be published in at least one (1) newspaper of general circulation in the geographical area of the existing or proposed discharge identified on the permit application and shall be mailed to any person or group upon request thereof. Notice shall be mailed to all persons and governmental agencies which received a copy of the notice or the fact sheet for the permit application.

3. The Department may hold a single public hearing on related groups of permit applications.

4. The Department may also hold a public hearing at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision;

5. Public notice of the hearing shall be given in accordance with R.61-9.124.10.

Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under R.61-9.124.10 shall automatically be extended to the close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.

A tape recording or written transcript of the hearing shall be made available to the public.

C. Obligation to raise issues and provide information during the public comment period. (R.61-9.124.13)

All persons, including applicants, who believe any condition of a draft permit is inappropriate or that the Department's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including any public hearing). No issue shall be raised during an appeal by any party that was not submitted to the administrative record as part of the preparation and comment on a draft permit, unless good cause is shown for the failure to submit it. Any supporting materials which are submitted shall be included in full and may not be incorporated by reference, unless they are already part of the administrative record in the same proceeding, or consist of State or Federal statutes and regulations, Department and EPA documents of general applicability, or other generally available reference materials. Commenters shall make supporting materials not already included in the administrative record available. (A comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this section. Additional time shall be granted under R.61-9.124.10 to the extent that a commenter who requests additional time demonstrates the need for such time).

D. Issuance and Effective Date of the Permit

1. After the close of the public comment period on a draft permit, the Department shall issue a final permit decision. The Department shall notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. This notice shall include reference to the procedures for appealing a decision on a permit. For the purposes of this section, a final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit.

2. A final permit decision shall become effective 30 days after the service of notice of the decision unless:

   (a) A later effective date is specified in the decision; or

   (b) No comments requested a change in the draft permit, in which case the permit shall become effective on the effective date shown in the issued permit.

3. Issuance or Denial of Permits. An appeal to a final determination of the Department or to a condition of a permit issued or the denial of a permit pursuant to the State law and Regulation 61-9, shall be in accordance with and subject to 48-1-200 of the SC Code (see E below).

E. Adjudicatory Hearings

Please see the Department's Guide to Board Review:
https://www.scdhec.gov/about-dhec/sc-board-health-and-environmental-control/guide-board-review.