**FACT SHEET AND PERMIT RATIONALE**

# Duke Energy Corporation
# Oconee Nuclear Station
# NPDES Permit No. SC0000515

Permitting Engineer: Byron M. Amick

Modified: March 16, 2011

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: 7800 Rochester Highway, Seneca, SC 29672
County: Oconee
Watershed: Basin 01 (Savannah-Salkehatchie River Basin)

Facility Description (include SIC code): This facility is a nuclear powered steam electric generating station, which consist of 3 nuclear units with a total design capacity of 2580 megawatts. There is also a hydroelectric power plant on site called the Keowee Hydro Station, which consists of 2 turbines with a total generating capacity of 158 megawatts. SIC Code is 4911, Electric Services

Receiving Waters and Classification by outfall: 001- Lake Keowee (FW), 002 thru 007 - Keowee River: aka Seneca River or Lake Hartwell (FW) 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: No monitoring station listed, but the 2008 SC Fish Consumption Advisory considers the Keowee River as part of Lake Hartwell, which has a fish consumption advisory due to PCB.

Does any discharge have the potential to affect a threatened or endangered species? No (endangered species information from SCDNR Heritage Trust, 2008)
If Yes, list the species and the waterbody in which the species resides: While there are no listed threatened or endangered species present, there are species listed which are of State and regional Concern. These species are:
Of Concern, Regional: Allegheny-Spurge, Single-Haired Mountain Mint, Fraser Loosestrife and American Ginseng
Of Concern, State: Three-Parted Violet, Butternut, Faded Trillium, Blue Monkshood, Meadow Vole, Eastern Spotted Skunk, Meadow Jumping Mouse, One-Flowered Broomrape, Swamp Rabbit and Eel-Grass.

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 adversely 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: GA, Lake Hartwell
☒ 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 with an average flow exceeding 0.5 MGD
☐ Permits for federal facilities with a daily average discharge exceeding 0.05 MGD
☒ 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)
☐ Modification to any permit where the schedule of compliance interim dates are extended more than once

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 | Mixing Zone Demonstration (CORMIX) |
| Attachment 6 | 316(a) Demonstration Report and Study Plan |
| Attachment 7 | Other Maps (Watersheds, Endangered Species, etc) |
| Attachment 8 | Mixing Zone Demonstration (August 2010) |

## I. PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

Duke Energy Corp/Oconee Nuclear Station is a nuclear powered steam electric generating facility, which consist of three (3) nuclear units with a total design capacity of 2580 megawatts. The facility began commercial production in 1971.

The facility currently discharges effluent through the following outfalls and corresponding locations. Further discussion of the discharges through each outfall is provided later in this rationale.

| | |
|---|---|
| 001 | Lake Keowee |
| 002 | Keowee River |
| 003 | eliminated Dec 2010 |
| 004 | Keowee River |
| 005 | internal outfall to 002 or outfall 004 |
| 006 | internal outfall to 002 |
| 007 | Keowee River |

Historically, the Oconee Nuclear Station generates approximately 10 dry weight tons of sludge per year. Solids generated from the sanitary wastewater treatment system have been land applied to a 1.6-acre site. A mobile filter press dewatered the solids from the wastewater treatment system. The filter press filtrate was returned to the wastewater treatment plant for additional treatment. The dried sludge (approx. 30% solids) was spread on the field approximately once every year. The land application site is privately owned by the company and is adjacent to the Oconee Station. This facility is in the process of connecting the sanitary wastewater to the City of Seneca sewer lines, which will take sanitary wastewater to the Oconee Joint Regional Sewer Authority's wastewater treatment plant. Once the connection is complete no sanitary sludge will be generated on site. The last of the sludge accumulated on site will be taken to the on-site landfill for final disposal.

**Outfall 001**

Description of outfall, receiving water and wastewater treatment system: This outfall is comprised of non-contact cooling water consisting of condenser circulating water (defined as once-through cooling water) and miscellaneous non-contact cooling water. The discharge is to Lake Keowee at a depth of approximately 20 feet. Each of the three (3) power generation units has four (4) condenser circulating water (CCW) pumps for a total of twelve (12) pumps. The operation of all 12 pumps for three-unit operation would result in a total flow of 2,124,027 gallons per minute or 3058.6 million gallons per day.

Operator requirements: The condenser cooling water intake and discharge structures were permitted under the following Permits to Construct: #1727, which was issued November 19, 1970 and #1727-C-R1, which was issued December 13, 1972. No wastewater treatment operator is required for this system.

Information for this outfall is based on NPDES Permit Application: 2C dated June 20, 2007

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from January 1, 2005 - May 31, 2008 has been used to evaluate permit limitations.

Previous permit limits are based on the permit (or modification) effective date of January 1, 2004.

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, effluent**

1. Previous permit limits:
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: hourly
   Sample Type: logs
2. NPDES Application: (No. of flow analyses: 365)
   Long Term Average Value: 2519.86 MGD
   Maximum 30-day Value: 3058.56 MGD
   Maximum Daily Value: 3058.56 MGD
3. DMR Data: The highest flow was reported in 10/07 as 3058.6 MGD
4. Actual long-term average flow (from DMR and/or application): 2489.62 MGD
5. Conclusion: Flow monitoring will continue as previously permitted.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: hourly
   Sample Type: logs

**B. Temperature**

1. Previous Permit Limits:
   Intake Temperature:
   Monthly Average: MR, (°C/°F)
   Daily Maximum: MR, (°C/°F)
   Sampling Frequency: hourly
   Sample Type: continuous
   Effluent Temperature:
   Monthly Average: MR, (°C/°F)
   Daily Maximum: MR, (°C/°F)
   Discharge temperature shall not exceed 37.8°C(100°F) for a time period in excess of two hours, unless critical hydrological and meteorological conditions are combined with high customer demand, which cannot be met from other sources as determined by the System Operations Center. Under these latter conditions, the discharge temperature shall not be allowed to exceed 39.4°C(103°F).
   Sampling Frequency: hourly
   Sample Type: continuous
   Temperature Rise:
   Monthly Average: --
   Daily Maximum: 12.2°C(22°F), when the intake temperature is greater than 20°C(68°F).
   Sampling Frequency: hourly
   Sample Type: calculation
2. NPDES Application:
   Summer: (No. of analyses: 183)
   Long Term Average Value: 86.88°F
   Maximum 30-day Value: 97.65°F
   Maximum Daily Value: 98.91°F
   Winter: (No. of analyses: 182)
   Long Term Average Value: 78.17°F
   Maximum 30-day Value: 96.68°F
   Maximum Daily Value: 94.59°F

3. DMR Data: The highest value was reported in 9/07 as 98.8°F for the effluent temperature.
   The highest value was reported in 9/07 as 83.7°F for the intake temperature.
   The highest value was reported in 6/06 as 18.4°F for the temperature rise.
4. Water Quality Data: Per Reg. 61-68.E.12.c, The weekly average water temperature of all Freshwaters which are lakes shall not be increased more than 5°F (2.8°C) above natural conditions and shall not exceed 90°F (32.2°C) 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 in C.10 has been established, or a Section 316(a) determination under the Federal Clean Water Act has been completed.
5. Effluent limitation guidelines: not applicable
6. Other Information: This facility performed the first comprehensive environmental assessment of the effect of the heated effluent on the Lake Keowee ecosystem in 1977. This study included physical, chemical and biological components and was essentially equivalent to a 316(a) demonstration. This information was used to establish the 316(a) thermal variance in the 1981 NPDES permit reissuance. Prior to 1981 the thermal discharge was permitted under the authority of the Nuclear Regulatory Commission (NRC). A second report was assembled to support renewal of the NPDES thermal variance in 1995, and provide an updated assessment of the physical, chemical and biological status of the reservoir from the date of initial operation through 1993. A new report dated June 2007 is to update the Lake Keowee thermal, water quality, plankton and fishery information since the last submitted report to the State in 1995.
7. PQL: Not applicable
8. Response to Requested Permit Changes: The permit cannot be written to account for maintenance issues, which we recognize will occur from time to time. Each such issue must be dealt with on a case-by-case basis usually with the Department's Compliance and Enforcement Sections.
9. Conclusion: The Department received a 316(a) Demonstration Report dated June 2007. The Department also asked for and received a new 316(a) study plan dated March 2009. On July 30, 2009 Duke Energy addressed concerns about the study plan. The Department's Fisheries Biologist reviewed the response, and has determined that it adequately addresses each of EPA's revisions and concerns. It is the Department's judgment that the study plan, along with the response addressing each of EPA's concerns, covers the biological and water quality aspects as outlined in the latest EPA memorandum. After a review of both documents the Department's Aquatic Biology Section believes there is sufficient data to support a continuation of the current 316(a) variance. Also to clarify the temperature rise has been renamed to temperature difference, since the measurement is actually the difference between the intake and the effluent. This terminology matches the parameter code listed on the DMR.

   Intake Temperature:
   Monthly Average: MR, °F
   Daily Maximum: MR, °F
   Sampling Frequency: hourly
   Sample Type: continuous

   Effluent Temperature:
   Monthly Average: MR, °F
   Daily Maximum: 100°F (unless critical hydrological and meteorological conditions are combined with high customer demand, which cannot be met from other sources as determined by the System Operations Center)
   Daily Maximum: 103°F (when critical hydrological and meteorological conditions are combined with high customer demand, which cannot be met from other sources as determined by the System Operations Center)
   Sampling Frequency: hourly
   Sample Type: continuous

   Temperature Difference
   Monthly Average: MR, °F
   Daily Maximum: 22°F (this limit only applies when the intake temperature is greater than 68°F)
   Sampling Frequency: hourly
   Sample Type: calculation

**C. Total Residual Chlorine (TRC)**

1. Previous permit limits: Part V.A.3 contains a prohibition that states, "Chlorine may not be added to the condenser cooling water unless the permit is modified to include a chlorine limit."
2. NPDES Application: absent
3. DMR Data: Sampling not required.
4. Water Quality Criteria:
   a. Aquatic Life
      Water Quality Criteria from Reg. 61-68, Appendix:
      Freshwater:
      CCC = 11 µg/l → monthly average=11 µg/l x 1 (DF) = 0.011 mg/l
      CMC = 19 µg/l → daily maximum= 19 µg/l x 1 (DF) = 0.019 mg/l
   b. Human Health: none
   c. Organoleptic: none
5. Effluent limitation guidelines: 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category Best Available Technology (BAT) Standards 423.13:
   a. Once through cooling water for any plant with a total rated electric generating capacity of 25 or more megawatts shall be limited as follows:

| Parameter | Maximum concentration (mg/l) |
|---|---|
| Total Residual Chlorine | 0.20 |

   b. "Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted."
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
7. PQL: 0.05 mg/l; EPA Approved Methods - SM4500Cl B, C, D, E, F or G
8. Conclusion: The prohibition against the use of chlorine in the condenser cooling water, unless the permit is modified to include a chlorine limit, shall remain in the permit.

**D. Copper, total**

1. Previous permit limits: none
2. NPDES Application: (No. of flow analyses: 1)
   Effluent
   Maximum Daily Value: 0.006 mg/l
   Intake
   Long Term Average Value: 0.006 mg/l
3. DMR Data: monitoring not required
4. Effluent limitations guidelines: N/A
5. Water Quality Criteria: See Spreadsheet in Appendix 1.
6. Additional Data: Duke-Oconee provided results from 16 sampling taken between May 2005 and February 2009, showing that the copper concentrations in the lake at the intake structure and the outfall have consistently been the same. This indicates that the copper concentration is straight flow through from the lake and is not the result of any changes while being used as cooling water. Therefore, the Department has determined that for this outfall there is no reasonable potential to cause or contribute to a water quality violation.
7. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
8. PQL: 0.010 µg/l
9. Conclusion: Because the facility was able to provide additional data for copper at the intake and discharge, the Department has determined that monitoring for copper in this permit for outfall 001 is not required.

E. **pH**

1. Previous permit limits: none
2. NPDES Application: (No. of pH analyses: 1)
   minimum: 7.65 standard unit
   maximum: 7.65 standard units
3. DMR Data: monitoring not required
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) Standards 423.12:
   "The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0."
5. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section G.10.f. states that the Class FW standards for pH shall be "Between 6.0 and 8.5"
6. Other Information: As noted in the memorandum from EPA Region IV dated February 24, 1986 in developing the regulation, once through cooling water was not subject to a pH limitation since the pH of intake water is virtually unchanged by passage through the condensers, even during chlorination.
7. Conclusion: pH limitations will not be established for this outfall.

F. **Other Parameters**

The Department ran a Reasonable Potential analysis on all other data reported on the 2C application. This analysis indicated that there was no reasonable potential for any other parameters to cause or contribute to a water quality violation.

**Outfall 002**

Description of outfall, receiving water and wastewater treatment system: This outfall is from Chemical Treatment Pond (CTP) #3 and discharges to the Keowee River below the Keowee Hydro Station. The CTP #3 receives water from the following sources: low volume wastes (from CTP #1 and CTP #2), yard drains (rainfall runoff), turbine building sump, intake dam underdrain, indigenous springs, chemical metal cleaning wastes (regulated at internal outfall 005), landfill leachate (regulated at internal outfall 006), fire protection, RO concentrate and other process wastewater. The treatment provided by the CTP #3 system includes pH neutralization, oil and grease separation, and settling. When the gravity drain system discharges through Outfall 002 it greatly dilutes the discharge with raw lake water and a sample at that time would not be representative of the discharge.

Operator requirements: Based on the treatment system described above 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). The wastewater treatment system was permitted under the following Permits to Construct: #19,125-IW issued June 06, 2007, #19,005-IW issued October 28, 2005, #18,881-IW issued July 14, 2004 and revised March 16, 2005, #17,658-IW issued April 19, 1994, #17,437-IW issued February 2, 1993, #12,828 issued December 10, 1986, #3048-C issued July 26, 1974 and #2049-C issued February 09, 1972.

Information for this outfall is based on NPDES Permit Application: 2C dated June 20, 2007

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from January 1, 2005 - May 31, 2008 has been used to evaluate permit limitations.

Previous permit limits are based on the permit (or modification) effective date of January 1, 2004.

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, effluent**

1. Previous permit limits:
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/week
   Sample Type: instantaneous
2. NPDES Application: (No. of flow analyses: 361)
   Long Term Average Value: 1.76 MGD
   Maximum 30-day Value: 2.43 MGD
   Maximum Daily Value: 8.94 MGD
3. DMR Data: The highest flow was reported in 3/07 as 16.5 MGD
4. Actual long-term average flow (from DMR and/or application): 1.59 MGD
5. Conclusion: Flow monitoring will continue as previously permitted.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/week
   Sample Type: instantaneous

**B. Total Suspended Solids (TSS)**

1. Previous permit limits:
   Monthly Average: 30 mg/l
   Daily Maximum: 95.5 mg/l
   Sampling Frequency: 2/year
   Sample Type: grab
2. NPDES Application: (No. of analyses: 1)
   Long Term Average Value: -- mg/l
   Maximum 30-day Value: -- mg/l
   Maximum Daily Value: 10 mg/l
3. DMR Data: The highest TSS was reported in 12/05 as 20 mg/l.
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) Standards 423.12:
   a. low volume waste sources (§423.12(b)(3)) and metal cleaning waste (§423.12(b)(5)) shall not exceed the following:

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

   b. 423.12(b)(11)) states, "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…"
5. Other Information: A flow weighted average limitation for TSS must be developed. Therefore, the flow weighted average TSS concentration was obtained as follows:

| Summary | Contributor Flows | Total Flows | Cumulative Flows | Monthly Average | Daily Maximum |
|---|---|---|---|---|---|
| 1. Low Volume Waste | | 0.36 | 0.36 | 30 mg/l | 100 mg/l |
| 1.1 Water Treatment Room | 0.03 | | | | |
| 1.2 Turbine Building Sumps | 0.16 | | | | |
| 1.3 RO Reject | 0.17 | | | | |
| 2. Landfill Leachate | | 0.01 | 0.37 | rarely discharges | |
| 3. Sanitary Wastewater - eliminated | | ----- | --- | | |
| 4. Groundwater | | 0.92 | 1.31 | 20 mg/l | 30 mg/l |
| 4.1 Toe Drains | 0.06 | | | | |
| 4.2 Unidentified GW | 0.54 | | | | |
| 4.3 Dam Seepage | 0.29 | | | | |
| 4.4 Tendon gallery | 0.03 | | | | |
| 5. Stormwater | | 0.45 | 1.76 | 20 mg/l | 30 mg/l |

Sanitary Wastewater was completely tied-on to the Oconee County Sewer System in 2010 and will no longer contribute to the discharge. Landfill Leachate rarely discharges and will not be considered a source. Research conducted by EPA for Storm Water Discharges Associated With Industrial Activity From Steam Electric Power Generating Facilities shows that stormwater only outfalls have a median TSS concentration of 40 mg/l. The EPA industrial stormwater multi-sector general NPDES permit sets a TSS benchmark of 100 mg/l for this industry. The industrial stormwater information from EPA will be used as guidance in determining the appropriate TSS limitation contribution for both stormwater and groundwater. In previous permits the Department has used professional judgment to establish a monthly average of 20 mg/l and a daily maximum of 30 mg/l for groundwater. Since the previously established limitation is less than both the industrial stormwater benchmark and the established median concentration, the existing limitation based on professional judgment is acceptable. Therefore the limitations have been calculated as follows:

Monthly Average

$$\frac{(0.36\ \text{MGD} \times 30\ \text{mg/l}) + (0.92\ \text{MGD} \times 20\ \text{mg/l}) + (0.45\ \text{MGD} \times 20\ \text{mg/l})}{1.76\ \text{MGD}} = 21.7\ \text{mg/l}$$

Daily Maximum

$$\frac{(0.36\ \text{MGD} \times 100\ \text{mg/l}) + (0.92\ \text{MGD} \times 30\ \text{mg/l}) + (0.45\ \text{MGD} \times 30\ \text{mg/l})}{1.76\ \text{MGD}} = 43.8\ \text{mg/l}$$

6. Conclusion: Because the source of each flow contributing to the discharge is significantly different from the previous permit, the Department believes more frequent monitoring is necessary to ensure compliance with the new limitations. Therefore the limits are as follows:
   Monthly Average: 21.7 mg/l
   Daily Maximum: 43.8 mg/l
   Sampling Frequency: 1/month
   Sample Type: grab

C. **Total Residual Chlorine (TRC)**

1. Previous permit limits:
   Monthly Average: 0.011 mg/l
   Daily Maximum: 0.019 mg/l
   Sampling Frequency: 1/month
   Sample Type: grab
2. NPDES Application: present
3. DMR Data: 0 (all samples below the PQL)
4. Water Quality Criteria:
   a. Aquatic Life
      Water Quality Criteria from Reg. 61-68, Appendix:
      Freshwater:
      CCC = 11 µg/l → monthly average = 11 µg/l x 19.3 (DF) = 0.2123 mg/l
      CMC = 19 µg/l → daily maximum = 19 µg/l x 19.3 (DF) = 0.3667 mg/l
   b. Human Health: none
   c. Organoleptic: none
5. Effluent limitation guidelines: 40CFR Part 423-The Steam Electric Power Generating Point-Source Category: none
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
7. PQL: 0.05 mg/l; EPA Approved Methods - SM4500Cl B, C, D, E, F or G
8. Conclusion: While the majority of chlorine has historically been from the sanitary treatment system, chlorine may also be present in other low volume waste sources; therefore the potential exists for chlorine to be present in the discharge. Since TRC limits will remain on this outfall, the anti-backsliding regulations require that the concentrations remain as previously permitted. Therefore the limit will remain as follows:
   Monthly Average: 0.011 mg/l
   Daily Maximum: 0.019 mg/l
   Sampling Frequency: 1/month
   Sample Type: grab

**D. Oil and Grease**

1. Previous permit limits:
   Monthly Average: 13.8 mg/l
   Daily Maximum: 18.4 mg/l
   Sampling Frequency: 2/year
   Sample Type: grab
2. NPDES Application: (No. of analyses: 5)
   Long Term Average Value: -- mg/l
   Maximum 30-day Value: -- mg/l
   Maximum Daily Value: < 5 mg/l
3. DMR Data: < 5.0 mg/l. (reported for all samples)
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) Standards 423.12:
   a. low volume waste sources (§423.12(b)(3)) and metal cleaning waste (§423.12(b)(5)) shall not exceed the following:

| Parameter | Monthly Average (mg/l) | Daily Maximum (mg/l) |
|---|---|---|
| Oil & Grease | 15 | 20 |

   b. 423.12(b)(11)) states, "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..."
5. Other Information: A flow weighted average limitation for oil and grease must be developed. Therefore, the flow weighted average oil and grease concentration was obtained as follows:

| Summary | Contributor Flows | Total Flows | Cumulative Flows | Monthly Average | Daily Maximum |
|---|---|---|---|---|---|
| 1. Low Volume Waste | | 0.36 | 0.36 | 15 mg/l | 20 mg/l |
| 4.5 Water Treatment Room | 0.03 | | | | |
| 4.6 Turbine Building Sumps | 0.16 | | | | |
| 4.7 RO Reject | 0.17 | | | | |
| 2. Landfill Leachate | | 0.01 | 0.37 | rarely discharges | |
| 3. Sanitary Wastewater - eliminated | | ----- | ---- | | |
| 4. Groundwater | | 0.92 | 1.31 | 0 mg/l | 0 mg/l |
| a. Toe Drains | 0.06 | | | | |
| b. Unidentified GW | 0.54 | | | | |
| c. Dam Seepage | 0.29 | | | | |
| d. Tendon gallery | 0.03 | | | | |
| 5. Stormwater | | 0.45 | 1.76 | 0 mg/l | 0 mg/l |

Sanitary Wastewater was completely tied-on to the Oconee County Sewer System in 2010 and will no longer contribute to the discharge. Landfill Leachate rarely discharges and will not be considered a source. Oil and Grease should not be present in either groundwater or stormwater. Therefore the limitations have been calculated as follows:

Monthly Average

$$\frac{(0.36\ \text{MGD} \times 15\ \text{mg/l}) + (0.92\ \text{MGD} \times 0\ \text{mg/l}) + (0.45\ \text{MGD} \times 0\ \text{mg/l})}{1.76\ \text{MGD}} = 3.07\ \text{mg/l}$$

Daily Maximum

$$\frac{(0.36\ \text{MGD} \times 20\ \text{mg/l}) + (0.92\ \text{MGD} \times 0\ \text{mg/l}) + (0.45\ \text{MGD} \times 0\ \text{mg/l})}{1.76\ \text{MGD}} = 4.09\ \text{mg/l}$$

6. Conclusion: Because the source of each flow contributing to the discharge is significantly different from the previous permit, the Department believes more frequent monitoring is necessary to ensure compliance with the new limitations. Therefore the limits are as follows:
   Monthly Average: 3.07 mg/l
   Daily Maximum: 4.09 mg/l
   Sampling Frequency: 1/month
   Sample Type: grab

**E. pH**

1. Previous permit limits: "The pH shall not be less than **6.0** standard units nor greater than **8.5** standard units and shall be monitored once per week by grab sample."
2. NPDES Application: (No. of pH analyses: 52)
   minimum: 6.2 standard unit
   maximum: 6.9 standard units
3. DMR Data: The highest value was reported in 3/07 as 6.9 standard units. The lowest value was reported in 10/06 as 6.2 standard units.
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) Standards 423.12:
   "The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0."
5. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section G.10.f. states that the Class **FW** standards for pH shall be "Between 6.0 and 8.5"
6. Response to Requested Permit Changes: The DMR data shows that the facility consistently meets the current pH limitation. It is the permittee that is responsible for taking representative samples, and how that relates to rainfall. Therefore the Department will not write a specific sampling procedure for pH.
7. Conclusion: The pH limit will continue as previously permitted.
   Sampling Frequency: 1/week
   Sample Type: grab

**F. Other Parameters**

The Department ran a Reasonable Potential analysis on all other data reported on the 2C application. This analysis indicated that there was no reasonable potential for any other parameters to cause or contribute to a water quality violation.

**Outfall 003**

Description of outfall, receiving water and wastewater treatment system: The site's sanitary wastewater has been tied into the Oconee Joint Regional Sewer Authority's system. This outfall has been eliminated effective December 1, 2010.

**Outfall 004**

Description of outfall, receiving water and wastewater treatment system: This outfall consists of liquid radiological waste treated by filtration, demineralization, evaporation, incineration, and mixing. Chemical metal cleaning wastes (regulated at internal outfall 005) may also be discharged through this outfall location. In order to meet the radiological release requirements of 10 CFR 20 (NRC requirements) the liquid radiological waste is diluted with service water (raw lake water from Lake Keowee).

This discharge is also regulated by the Nuclear Regulatory Commission (NRC) and is monitored per their specifications and the results are reported to the NRC.

Information for this outfall is based on NPDES Permit Application: 2C dated June 20, 2007

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from January 1, 2005 - May 31, 2008 has been used to evaluate permit limitations.

Previous permit limits are based on the permit (or modification) effective date of January 1, 2004.

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, effluent**

1. Previous permit limits:
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/month
   Sample Type: estimate
2. NPDES Application: (No. of flow analyses: 12)
   Long Term Average Value: 2.94 MGD
   Maximum 30-day Value: 4.7 MGD
   Maximum Daily Value: 4.7 MGD
3. DMR Data: The highest flow was reported in 12/05 as 9.0 MGD
4. Actual long-term average flow (from DMR and/or application): 3.132 MGD
5. Conclusion: Flow monitoring will continue as previously permitted.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/month
   Sample Type: estimate

B. **pH**

1. Previous permit limits: The pH shall not be less than **6.0** standard units nor greater than **8.5** standard units and shall be monitored once per week by grab sample. If the service water from the lake is less than 6.0 then the discharge shall be no more than 0.1 standard units below the raw lake water.
2. NPDES Application: (No. of pH analyses: 12)
   minimum: 6.3 standard unit
   maximum: 7.7 standard units
3. DMR Data: The highest value was reported in 3/06 as 7.7 standard units. The lowest value was reported in 1/06 as 6.3 standard units.
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) Standards 423.12:
   "The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0."
5. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section G.10.f. states that the Class **FW** standards for pH shall be "Between **6.0** and **8.5**"
6. Conclusion: In the previous permit a pH variance was granted only when the raw lake water used as the source of the service water was below 6.0. Because Lake Keowee is the source of the Keowee River, the pH of the lake should be the same as the pH of the river at the discharge location. Standard Methods, SM 4500 allows for a 0.1 standard unit variance due to analytical variability. Therefore the discharge pH shall always be greater than 6.0 or no more than 0.1 standard units below the raw lake water, just like in the previous permit. The pH of the raw lake water is to be sampled at the service water intake. The monitoring frequency and sample type shall remain:
   Sampling Frequency: 1/month
   Sample Type: grab

C. **Other Parameters**

The Department ran a Reasonable Potential analysis on all other data reported on the 2C application. This analysis indicated that there was no reasonable potential for any other parameters to cause or contribute to a water quality violation.

**Outfall 005**

Description of outfall, receiving water and wastewater treatment system: This outfall does not have a physical location, it has been maintained in the NPDES permit in order to keep this option available to the stations and to prevent opening the NPDES permit. Chemical metal cleanings are seldom performed at he site and no chemical metal cleanings are planned for the foreseeable future. Should the facility determined that a chemical metal cleaning is necessary, a construction permit will be obtained based on the treatment system utilized. If the cleaning were to occur on the primary system, then the discharge would be treated with a new treatment system to remove metals and then processed out Radwaste Outfall 004.

Radwaste can remove radiological parameters but is not designed to remove metals. If the cleaning were to occur on a secondary system then the water would be treated with a new treatment system and discharged out Outfall 002 with other conventional pollutants.

Operator requirements: No treatment system exists for this wastestream. A treatment system will be permitted for construction and approved to operate prior to any discharge of chemical metal cleaning wastes. Operator requirements will be established when the wastewater treatment system's construction permit is issued.

Information for this outfall is based on NPDES Permit Application: 2C dated June 20, 2007

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from January 1, 2005 - May 31, 2008 has been used to evaluate permit limitations.

Previous permit limits are based on the permit (or modification) effective date of January 1, 2004.

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, effluent**

1. Previous permit limits:
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/batch
   Sample Type: instantaneous
2. NPDES Application: (No discharge has occurred from this waste stream in the previous 5 years.)
3. DMR Data: no discharge has occurred
4. Actual long-term average flow (from DMR and/or application): no discharge has occurred
5. Conclusion: Flow monitoring will continue as previously permitted.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/batch
   Sample Type: instantaneous

**B. Copper, total recoverable**

1. Previous permit limits:
   Monthly Average: 1.0 mg/l
   Daily Maximum: 1.0 mg/l
   Sampling Frequency: 1/batch
   Sample Type: grab
2. NPDES Application: (No discharge has occurred from this waste stream in the previous 5 years.)
3. DMR Data: no discharge has occurred
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) and Best Available Technology Economically Achievable (BAT) Standards:
   a. metal cleaning waste (§423.12(b)(5) and§423.13(e)) shall not exceed the following:

| Parameter | Monthly Average (mg/l) | Daily Maximum (mg/l) |
|---|---|---|
| Copper, total | 1.0 | 1.0 |

   b. §423.12(b)(11) and §423.13(g) states, "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..."
5. Conclusion: To ensure compliance with the effluent guideline, the existing permit limits will remain in the permit.
   Monthly Average: 1.0 mg/l
   Daily Maximum: 1.0 mg/l
   Sampling Frequency: 1/batch
   Sample Type: grab

**C. Iron, total recoverable**

1. Previous permit limits:
   Monthly Average: 1.0 mg/l
   Daily Maximum: 1.0 mg/l
   Sampling Frequency: 1/batch
   Sample Type: grab
2. NPDES Application: (No discharge has occurred from this waste stream in the previous 5 years.)
3. DMR Data: no discharge has occurred
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) and Best Available Technology Economically Achievable (BAT) Standards:
   a. metal cleaning waste (§423.12(b)(5) and§423.13(e)) shall not exceed the following:

| Parameter | Monthly Average (mg/l) | Daily Maximum (mg/l) |
|---|---|---|
| Iron, total | 1.0 | 1.0 |

   b. §423.12(b)(11) and §423.13(g) states, "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..."
5. Conclusion: To ensure compliance with the effluent guideline, the existing permit limits will remain in the permit.
   Monthly Average: 1.0 mg/l
   Daily Maximum: 1.0 mg/l
   Sampling Frequency: 1/batch
   Sample Type: grab

**D. Total Suspended Solids (TSS)**

1. Previous permit limits: Monitoring not required
2. NPDES Application: (No discharge has occurred from this waste stream in the previous 5 years.)
3. DMR Data: no discharge has occurred
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) and Best Available Technology Economically Achievable (BAT) Standards:
   a. metal cleaning waste (§423.12(b)(5)) shall not exceed the following:

| Parameter | Monthly Average (mg/l) | Daily Maximum (mg/l) |
|---|---|---|
| TSS | 30.0 | 100.0 |

   b. §423.12(b)(11) states, "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..."
5. Conclusion: To ensure compliance with the effluent guideline, the TSS limit will be placed in the permit.
   Monthly Average: 30.0 mg/l
   Daily Maximum: 100.0 mg/l
   Sampling Frequency: 1/batch
   Sample Type: grab

**E. Oil and Grease**

1. Previous permit limits: Monitoring not required
2. NPDES Application: (No discharge has occurred from this waste stream in the previous 5 years.)
3. DMR Data: no discharge has occurred
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) and Best Available Technology Economically Achievable (BAT) Standards:
   a. metal cleaning waste (§423.12(b)(5)) shall not exceed the following:

| Parameter | Monthly Average (mg/l) | Daily Maximum (mg/l) |
|---|---|---|
| Oil and Grease | 15.0 | 20.0 |

   b. §423.12(b)(11) states, "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..."
5. Conclusion: To ensure compliance with the effluent guideline, the Oil and Grease limit will be placed in the permit.
   Monthly Average: 15.0 mg/l
   Daily Maximum: 20.0 mg/l
   Sampling Frequency: 1/batch
   Sample Type: grab

F. **pH**

1. Previous permit limits: none
2. NPDES Application: (No discharge has occurred from this waste stream in the previous 5 years)
3. DMR Data: monitoring not required
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Practicable Control Technology (BPT) Standards 423.12:
   "The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0."
5. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section G.10.f. states that the Class FW standards for pH shall be "Between 6.0 and 8.5"
6. Other Information: EPA Memorandum dated March 21, 1986 establishes the principle that pH limitations may be applied after combination with another wastewater, provided that monitoring is prior to discharge to waters of the US.
7. Conclusion: Since pH is limited at the final outfall, whether it is outfall 002 or outfall 004, no limit will be established for this internal outfall.

**Outfall 006**

Description of outfall, receiving water and wastewater treatment system: This outfall consists of landfill leachate treated in the CTP #3 system, which will eventually discharge through outfall 002. The landfill is permitted to receive stabilized dewatered sewage lagoon sludge, non-hazardous material resulting from spills of petroleum products, asbestos containing materials, extremely low level rad waste, empty drums that previously contained hazardous waste, and non-hazardous excess chemicals. Even though this outfall rarely discharges, it does discharge and has the potential to contain high concentrations of pollutants. A leachate discharge could introduce contamination to the environment long before contamination is detected in the groundwater. Therefore this outfall will remain in the permit.

Operator requirements: Since treatment occurs in the CTP #3 system, please see the outfall 002 operator requirements. The landfill leachate collection system was permitted under Permit to Construct #16,279, which was issued May 24, 1990.

Information for this outfall is based on NPDES Permit Application: 2C dated June 20, 2007

40 CFR Part 445-Landfills Point-Source Category states, "This part does not apply to discharges of landfill wastewater from landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill ...". Therefore the Department has determined that this point-source category does not apply.
Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from January 1, 2005 - May 31, 2008 has been used to evaluate permit limitations.

Previous permit limits are based on the permit (or modification) effective date of January 1, 2004.

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, effluent**

1. Previous permit limits:
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/quarter
   Sample Type: instantaneous
2. NPDES Application: (No. of flow analyses: 4)
   Long Term Average Value: 0.01 MGD
   Maximum 30-day Value: 0.02 MGD
   Maximum Daily Value: 0.02 MGD
3. DMR Data: The highest flow was reported in 3/06 as 0.019 MGD
4. Actual long-term average flow (from DMR): 0.026268 MGD

5. Conclusion: Flow monitoring will continue as previously permitted.
   Monthly Average: MR, MGD
   Daily Maximum: MR, MGD
   Sampling Frequency: 1/quarter
   Sample Type: instantaneous

**B. Biochemical Oxygen Demand ($BOD_5$)**

1. Previous permit limits:
   Monthly Average: --
   Daily Maximum: MR, mg/l (only if sewage sludge is placed in the landfill)
   Sampling Frequency: 1/quarter
   Sample Type: grab
2. NPDES Application: (no sewage sludge placed in the landfill)
3. DMR Data: (no sewage sludge placed in the landfill)
4. Conclusion: Starting with the permit that became effective in October 1999, the permittee was allowed to land apply the sanitary sewage sludge to the "land farm" on-site. From that point on the sewage sludge was no longer placed in the landfill. Because of this the BOD in the landfill leachate continued to decrease. In June 2001 the BOD in the landfill leachate was below the PQL of 2.0 mg/l and continued to be below the PQL, until monitoring was removed from the permit in the first quarter of 2003. The sanitary sewage sludge was the only source of BOD and the DMR data supports the fact BOD is no longer a concern in the leachate. This facility is pursuing a municipal connection for sanitary sewage. Part of this sanitary connection includes the closure of the existing sanitary treatment lagoon. The final disposal of sanitary sludge from this closure may still go to the landfill. If sanitary sewage sludge is placed in the landfill, monitoring will begin on the first quarter following the event, and monitoring will continue for the duration of this permit.
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab

**C. Total Suspended Solids (TSS)**

1. Previous permit limits: not limited
2. NPDES Application: (No. of analyses: 1)
   Long Term Average Value: < 4 mg/l
   Maximum 30-day Value: < 4 mg/l
   Maximum Daily Value: < 4 mg/l
3. DMR Data: monitoring not required
4. Conclusion: Leachate treatment occurs in CTP #3, which discharge through the final outfall 002. Since limitations for this parameter are monitored at outfall 002, no limitation will be placed on this internal outfall.

**D. Oil and Grease**

1. Previous permit limits: not limited
2. NPDES Application: (No. of analyses: 1)
   Long Term Average Value: -- mg/l
   Maximum 30-day Value: -- mg/l
   Maximum Daily Value: < 5 mg/l
3. DMR Data: monitoring not required
4. Conclusion: Leachate treatment occurs in CTP #3, which discharge through the final outfall 002. Since limitations for this parameter are monitored at outfall 002, no limitation will be placed on this internal outfall.

**E. pH**

1. Previous permit limits: not limited
2. NPDES Application: (No. of pH analyses: 1)
   minimum: 7.92 standard units
   maximum: 7.92 standard units

3. DMR Data: monitoring not required
4. *S.C. Water Classifications and Standards (S.C. Reg. 61-68)*: Section G.10.f. states that the Class **FW** standards for pH shall be "Between 6.0 and 8.5"
5. Other Information: EPA Memo dated March 21, 1986 establishes the principle that pH limitations may be applied after combination with another wastewater, provided that monitoring is prior to discharge to waters of the US.
6. Conclusion: Leachate treatment occurs in CTP #3, since pH is limited at final outfall 002, no limit will be established for this internal outfall.

**F. Nitrates**

1. Previous permit limits:
   Monthly Average: --
   Daily Maximum: MR, mg/l (only if sewage sludge is placed in the landfill)
   Sampling Frequency: 1/quarter
   Sample Type: grab
2. NPDES Application: (No. of analyses: 1)
   Long Term Average Value: -- mg/l
   Maximum Daily Value: 1.34 mg/l
3. DMR Data: (no sewage sludge placed in the landfill)
4. Conclusion: The sanitary sewage sludge was the only known source of Nitrates. This facility is pursuing a municipal connection for sanitary sewage. Part of this sanitary connection includes the closure of the existing sanitary treatment lagoon. The final disposal of sanitary sludge from this closure may still go to the landfill. If sanitary sewage sludge is placed in the landfill, monitoring will begin on the first quarter following the event. The Department also believes that Nitrate-Nitrite is a better indicator of Nitrogen compounds in the effluent. Therefore the current monitoring will be replace with Nitrite and Nitrate, total as N.
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab

**G. Total Organic Carbon (TOC)**

1. Previous permit limits:
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab
2. NPDES Application: (No. of analyses: 4)
   Long Term Average Value: 3.09 mg/l
   Maximum 30-day Value: 5.7 mg/l
   Maximum Daily Value: 5.7 mg/l
3. DMR Data: The highest TOC was reported in 12/06 as 5.7 mg/l.
4. Other Information: It is our professional judgment that 40 CFR Part 419-The Petroleum Refining Point-Source Category is acceptable guidance for this wastewater. The guideline states "If wastewater consist solely of contaminated runoff and is not commingled or treated with process wastewater, it may be discharged if it does not exceed 15 mg/l oil and grease and 110 mg/l total organic carbon (TOC) based upon an analysis of any single grab or composite sample."
5. Conclusion: One of the items permitted for landfilling at this site is non-hazardous material resulting from spills of petroleum products. Since TOC is used to control contamination in the Petroleum Refining Category, it is reasonable to use TOC as an indicator for petroleum related contamination. Therefore TOC shall continue to be monitored as previously permitted.
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab

**H. Copper, total recoverable**

1. Previous permit limits:
   Monthly Average: –
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab
2. NPDES Application: (No. of analyses: 5)
   Long Term Average Value: 3.6 µg/l
   Maximum 30-day Value: 7 µg/l
   Maximum Daily Value: 7 µg/l
3. DMR Data: The highest Copper was reported in 12/05 as 0.009 mg/l.
4. Conclusion: There is no reasonable potential for copper shown at final outfall 002. Since copper continues to be shown as present at concentration levels greater that the Aquatic Life concentration numbers, it is reasonable to monitor this parameter as an indicator of possible contamination. Therefore copper shall continue to be monitored as previously permitted.
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab

**I. Selenium, total recoverable**

1. Previous permit limits:
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab
2. NPDES Application: (No. of analyses: 5)
   Long Term Average Value: 2 µg/l
   Maximum 30-day Value: 2 µg/l
   Maximum Daily Value: 2 µg/l
3. DMR Data: All data was reported as < 0.002 mg/l.
4. Conclusion: There is no reasonable potential for selenium shown at final outfall 002. The 2C application indicates that the selenium was present at outfall 006; therefore it is reasonable to monitor this parameter as an indicator of possible contamination. Selenium shall continue to be monitored as previously permitted.
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab

**J. Zinc, total recoverable**

1. Previous permit limits:
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab
2. NPDES Application: (No. of analyses: 5)
   Long Term Average Value: 15 µg/l
   Maximum 30-day Value: 15 µg/l
   Maximum Daily Value: 15 µg/l
3. DMR Data: The highest Zinc was reported in 6/07 as 0.043 mg/l.
4. Conclusion: There is no reasonable potential for zinc shown at final outfall 002. The data continues to indicate that zinc is present at outfall 006; therefore it is reasonable to monitor this parameter as an indicator of possible contamination. Zinc shall continue to be monitored as previously permitted.
   Monthly Average: --
   Daily Maximum: MR, mg/l
   Sampling Frequency: 1/quarter
   Sample Type: grab

**Outfall 007**

Description of outfall, receiving water and wastewater treatment system: This outfall is comprised of 'utility water' from Keowee Hydro. This water consists of non-contact cooling water and dewatering/sump water. A description of the various waste streams from the hydro is described below:

A. **Cooling Water Discharges:** An estimate of the volume of cooling water used at Keowee Hydro is 8 MGD. Various components within a hydroelectric facility generate heat during operation and need to be cooled. These components may be cooled with a lubricant such as oil or water. In some instances, oil reservoirs may be cooled by a heat exchanger with once through non-contact cooling water.

A description of cooling water discharges is listed below:

1. Generator Air Cooling Water: The cooling water flow of each unit combines with hydro turbine water discharge in the facility tailrace at a single point, which is below the surface of the water. The cooling water is generally less than 0.01% of the total discharge flow.

2. Water Cooled Bearings: Bearings are cooled with non-contact cooling water withdrawn from the station's service water and discharged via a concrete trench, sump, or wheel pit to the tailrace. The discharge point is below the water level.

3. Miscellaneous component cooling: Non-contact cooling water used to cool various components within the station such as air compressors and lube oil coolers.

B. **Other Discharges**

**Component Lubrication:** Since various components of systems within the station require lubrication for proper operation and are in direct contact with water, lubrication processes are minimized. Descriptions of lubricating processes associated with such systems are listed below:

1. Head Gates: All hydro stations have head gates that are used to isolate turbines from the intake waters in the lake or river in order to gain access to the unit internals. Prior to the head gates being removed or operated (normally no more than once per year), the mechanism must be lubricated. The head gates have pivot points that are manually lubricated with grease to assure proper operation.

2. Wicket Gates: All hydro stations use wicket gates to control the flow of water to each unit. They consist of a series of gates that surround the turbine and subsequently control the generator speed. There are mechanical linkages between the wicket gates of each unit that are periodically lubricated with grease at the pivot points of each wicket gate.

3. Floodgates: Floodgates that can be raised in an emergency if the potential of flooding exists. Tests are required annually by the Federal Energy Regulatory Commission to ensure the gates are operable in the event of such an emergency. Up to a gallon of oil may be used to lubricate each floodgate to prevent binding.

**Fire Protection Water:** The fire protection system uses non-chlorinated water in the event of a fire. This system is periodically tested to assure that they are operable. Water from the tests may drain to stormwater drains and to the tailrace. In addition, fire hydrants at stations are periodically tested. This non-chlorinated water flows to yard drains that discharge to storm drains or to the tailrace.

Should biofouling threaten the operability of the system, chlorine will be injected as needed. The fire protection system will be operated in such a manner to minimize the discharge of chlorine to receiving waters. This includes such practices as directing system flushes across the ground to eliminate residual chlorine. If general corrosion should become significant, additional corrosion treatment could be provided. If chemicals other than chlorine are used, the system will be operated in such a way to prevent the discharge of toxic quantities of the chemical to receiving waters. Appropriate permissions will be obtained prior to use of alternate chemicals.

**Oil/Water Separators:** Oil/water separator units may be used to process oily wastewater which has been collected at the site during maintenance and/or cleaning activities (i.e. condensate from air compressors). The wastewater produced from such units will be discharged to the floor drainage system. The remaining oily waste will be disposed and handled according to applicable waste regulations.

**Sanitary Systems:** Keowee Hydro uses an approved septic tank system.

**Sumps and Water Collection Systems:** The nature of hydroelectric facilities is such that water is constantly moving through the facility via designed stress relief seepage and minor cooling water leakage in piping systems. These leakage sources are: bearing cooling water, generator air-cooling water, strainer systems, and seepage through the dam proper (uncontaminated groundwater). The systems and activities listed in this section result primarily in discharge of this water to the tailrace of the hydroelectric facility.

1. Floor Drains: Keowee hydro is equipped with floor drains. Their purpose is for the collection of condensate, groundwater seepage and equipment leakage throughout the facility.

2. Station Sumps: The sumps may collect service water leakage, drain valve relief water, bearing cooling water, wheel pit drainage, lube oil cooling water, emergency flood waters, and leakage from the gallery. These sumps may collect small amounts of oil and grease, depending on the source of the water. Oil absorbent materials are used in the sumps to minimize oil and grease discharged.

3. Unwatering Sumps: Keowee hydro station uses pumps or pressurized air to remove water from within the turbine when maintenance is to be performed. Certain sections of a unit may be isolated by head gate installation and then unwatered to allow access to station equipment that may need repairs or inspections. These sumps contain only raw water from the unwatering process.

4. Gallery Wash Water: The Gallery is a tunnel that provides access to certain bearings. Due to seepage of groundwater through wall fissures in the Gallery, mineral encrustation develops (calcium primarily from the concrete). Periodically, these mineral deposits are removed by pressure washing with water. This wash water would flow into the trench that discharges to the tailrace.

5. Wheel Pit Wash Water: The wheel pit is the area above the turbine that contains oil lubricated bearings, motors, gate arms, and lube oil coolers. The wheel pit water is pulled out with the hydro flow when the unit is on line or is pumped out. The wheel pit can become oily or greasy during normal station operation and is cleaned periodically. Depending on the location and the size of the wheel pit, this may be performed either with a high pressure spray water wash and/or is done by hand wiping with a degreaser. Detergents or degreasers on Duke Energy's approved chemical's list may be used in the washing process. This activity is performed for general housekeeping and to assure that safe access can be obtained to the wheel pit.

**Trash Removal:** Since hydroelectric facilities are located on rivers and lakes, various floating debris collects on the upstream side of the dam. Sediment accumulates along the upstream side of the dam and is deposited in the river bed or lake bottom. There are several systems that are designed to deal with removal of this accumulated trash and sediment.

1. Service Water Strainers: A system of strainers collect debris that periodically has to be backwashed. These strainer systems are backwashed with water to prevent clogging of pipes or premature equipment failure. Some locations have automatic back wash systems.

2. Trash Gates: Trash gates are available at some locations to allow debris that accumulates on the upstream side of a station to pass downstream.

Most wastewater discharges are contained within the structure of the dam and discharges into the river below the water line. It is physically impossible to obtain samples for these outfalls. Therefore, the hydroelectric station is considered one outfall, with the effects monitored below the dam in the Keowee River.

Operator requirements: No treatment system has been permitted for this area.

Information for this outfall is based on NPDES Permit Application: 2E dated June 20, 2007

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from January 1, 2005 - May 31, 2008 has been used to evaluate permit limitations.

Previous permit limits are based on the permit (or modification) effective date of January 1, 2004.

The Department's professional judgment and water quality standards from Regulation 61-68 have been used to justify the permit limits:

Oil & Grease: The oil and grease limits are derived from the narrative water quality criteria in Reg. 61-68.E.5.b which prohibits the discharge of oil and grease in amounts sufficient to create a nuisance or to interfere with the classified water uses. The Department interprets this narrative criterion as prohibiting a discharge that would cause oil sheen. Since direct samples of the discharge are not possible reports of visual observations shall be required to demonstrate compliance with the criteria. The required once per month observation must be performed by a certified operator. The operator grade will be the grade identified for the process wastewater treatment system. Duke has stated that daily visual inspections are taken below the hydro station. Other station personnel may perform inspections not required by the permit, yet **all** inspections shall be documented, whether they are done by the certified operator or other station personnel.

Temperature: Temperature of the cooling water discharge is not expected to be a concern given the dilution provided by the receiving waters.

pH: The source of all wastewater is Lake Keowee. None of the systems are expected to significantly alter the pH. With both the wastewater and the receiving stream originating in Lake Keowee, and the large dilution provided by the receiving stream, the discharge is not expected alter pH.

**All Outfalls**

**A. Polychlorinated Biphenyl Compounds (PCBs)**

1. Previous permit limits: Part V.A.2 contains a prohibition that states, "There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid."
2. NPDES Application: believed absent
3. DMR Data: reporting not required
4. 40 CFR Part 423-The Steam Electric Power Generating Point-Source Category
   Best Available Technology (BAT) Standards 423.13:
   a. "There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid."
5. Water Quality Criteria: See Spreadsheet in Appendix 1.
6. Other Information: Lake Hartwell is listed on the 303(d) list of impaired waters due to a fish-consumption advisory on PCBs. Since the waterbody is impaired, the assumption is that an addition to the water column levels can affect the PCB accumulation in the fish, which would contribute to a water quality violation.
7. Conclusion: The federal guideline for steam electric power generators prohibits the discharge of PCBs, therefore the prohibition will remain as previously permitted.

**Whole Effluent Toxicity (WET) Requirements**

**A. Background Information**

1. Previous permit requirements (effective January 1, 2004):
   Chronic whole effluent toxicity testing at a CTC = 12% using the dilution series 0%, 18%, 32%, 56% and 100%
   Quarterly Average: 25% effect (total, reproduction, & mortality)
   Maximum: 40% effect (total, reproduction, & mortality)
   Sampling Frequency: 1/quarter
   Sample Type: 24-hour composite
2. DMR Data: The 9/07 report indicated a total effect of 7.3%, due to reproduction only.
3. Current permit requirements (effective May 1, 2010):
   Chronic whole effluent toxicity testing at a CTC = 12% using the dilution series 0%, 6%, 25%, 37.2%, 50% and 100%
   Monthly Average: 25% effect (total, reproduction, & mortality)
   Maximum: 40% effect (total, reproduction, & mortality)
   Sampling Frequency: 1/quarter
   Sample Type: 24-hour composite
4. Discharge Method: The treated wastewater is discharged from 72-inch culverts onto a rip-rap rock slope on the right bank of the tailrace channel, which is considered the Keowee River. This channel forms the headwaters of Lake Harwell and the water depths vary with the water level of the lake. The effective 7Q10 in the river is 50 cfs based on leakage from the dam.
5. Mixing Zone Demonstration: A dye study was conducted on June 10, 2010. Dye was injected into the effluent stream at the weir, which is approximately 1800ft upstream from the point where the effluent reaches the river. The effluent channel is filled with rip-rap (rock), which enhances mixing. On the day of sampling the minimum flow was being discharged from the Keowee Dam and full pool in Lake Hartwell backed up water in to the study site. The width of the Keowee River at the discharge point was measured at 200ft. For the study the effluent flow was adjusted to maximum flow two hours prior to the initiation of dye release and the high flow was maintained throughout the study period. Due to the very slow velocity of the river under the study conditions, it was noted that effluent flowed in both an upstream and downstream direction. As a result a study zone was set with its center at the discharge point, extending 200ft upstream, 200ft downstream and across the width of the Keowee River.

**B. Acute Toxicity**

1. Zone of Initial Dilution (ZID) Information:
   The conservative results of the dye studay at full pool conditions and maximum discharge have minimized the size of the ZID. The area of the ZID with the highest Acute Test Concentration (ATC) is $0ft^2$ because of the poor mixing in the near field region and recirculation. Therefore:

   Acute ZID
   Width: 0 m
   Length: 0 m

   Acute concentrations
   Width: 100%
   Length: 100%

2. Conclusion: Based on the ZID as determined by the Mixing Zone Demonstration an acute toxicity limitation will be added to the permit. The effluent will be tested at an **ATC of 100%**, and the sampling frequency will be the same as the existing chronic testing frequency.

   Sampling Frequency: 1/quarter
   Sample Type: 24-hr. composite

C. **Chronic Toxicity**

1. Mixing Zone: Initially the study proposed a mixing zone of 400ft long (200ft upstream, 200ft downstream) and 100ft wide. Due to the widely variable results at the 100ft boundary, the study suggests that at this lateral boundary there are eddies and inconsistencies in mixing, such that precise measurements of the effluent concentrations are unreliable.
2. Facility Proposal: Due to the inconsistencies at the lateral boundary noted above the facility proposes that the lateral boundary be disregarded and that the mixing be considered at the downstream boundary only. By averaging the dye study concentrations from the 60ft instream out to the far bank the downstream concentration is more stringent than the upstream concentration, therefore the proposed CTC is 14.5%.
3. Conclusion: The Department agrees that as far as the upstream and downstream boundaries go, averaging concentrations at those boundaries is a reasonable approach, and the conditions at the 100ft lateral boundary makes the data in that zone unreliable. That being said the Department believes that a lateral boundary still needs to be considered to ensure a safe passage zone for the aquatic biology. Therefore instead of considering concentrations out to the far bank of the Keowee River, the Department will consider concentrations to the 140ft area as the lateral boundary for the mixing zone. Therefore the upstream boundary is determined by averaging the concentrations 200ft upstream between 60ft and 140ft in river which yields a CTC of 13.6%, the downstream boundary is determined by averaging the concentrations 200ft downstream between 60ft and 140ft in river which yields a CTC of 14.6%, and the lateral boundary is determined by averaging the concentrations obtained 140ft from the discharge bank between 200ft upstream and 200 downstream which yields a CTC of 19.4%. Taking the most conservative result from the three boundaries for consideration the lateral boundary will be applied as a permit limitation.

   Based on a new CTC concentration the multiple dilutions were recalculated as follows:

   0% (control), 4%, 8.9%, 19.4 (CTC)%, 44.7% and 100%

   The limitations are:

   Monthly Average* = 25%
   Daily Maximum = 40%
   Chronic whole effluent toxicity testing shall be performed at a CTC = 19.4% using the dilution series 0%, 4%, 8.9%, 19.4% (CTC), 44.7%, 100%
   Sampling Frequency: 1/quarter
   Sample Type: 24-hour composite

   * 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.

**Chemical Additives**

A. Cooling Water Additives (Outfall 001)

Chlorine additives – The addition of chlorine to the cooling water is prohibited.

Biocides – Any planned use of biocides must be reported to the SCDHEC for review and approval. Approved biocides are limited to the No Observable Effect Level (NOEL) for general fish populations as a daily maximum.

Dispersants – Previously reported dispersants are limited to the NOEL concentration for general fish populations as a daily maximum.

Corrosion Inhibitors – Where not already limited in the permit, previously reported corrosion inhibitors are limited to the NOEL concentration for general fish populations as a daily maximum.

B. Hazardous and Toxic Substances Table 2c-3: At Oconee Nuclear Station the projected concentration level and potential for toxic and hazardous substances being in a discharge is very low. With reference to Item V-D of Form 2-C the substances identified under Table 2c-3 which may be in a discharge are as follows:

a. Formaldehyde is present in the laboratory in the pH buffers and turbidity standards. It potentially can be discharged via outfalls 002 and 004 in very small concentrations. An additional source of Formaldehyde is discussed under outfall 002 for RO lay up (pages 7 & 8).

b. Triethylamine is contained in an herbicide. It could be present in very small concentrations in outfall 002 and storm water.

c. Monoethylamine is used in the laboratory in the sodium analyzer reagent in order to adjust the pH. It potentially could be in outfalls 002 and 004 but at very low concentrations.

d. Acetaldehyde is used in the laboratory in denatured alcohol. It could be present in outfalls 002 and 004 but at very low concentrations in outfalls 002 and 004.

e. Dicamba is a herbicide that is 2.82 per cent of the product. The product is applied as a percent solution. It could be present in outfall 002 and stormwater but in very low concentrations.

f. Triethananolamine is contained in a non-petroleum lubricant. The product contains 10% of Triethanolamine and the product is used at 3 % concentration. This product potentially could be in outfall 002 but at very low concentrations.

g. Asbestos potentially can be present in outfall 001, 002, 003 and 004 due to removal of asbestos materials. If it is present it would be at very low concentrations. Historical sampling for outfall 002 has resulted in no detectable levels.

C. Hazardous Substances Under 40 CFR 117 and CERCLA: The following are hazardous substances located at Oconee Nuclear site that could be released in the event of a spill in quantities equal to or greater than the reportable quantity (RQ) levels as referenced in 40 CFR (a) (2) and 355. This list was provided in order to qualify for the reportability exemption provided under 40 CFR 117 and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

The Clean Water Act was amended in 1978 to allow exclusions from Section 311 (Section 311 prohibits the discharge of oil and hazardous substances into or upon waters of the United States). The 311 exclusions apply to (1) discharges in compliance with a permit; (2) discharges resulting from circumstances identified, reviewed, and made a part of the public record with respect to a permit, and (3) continuous or anticipated intermittent discharges which are caused by events occurring within the scope of relevant operating or treatment systems. These excluded discharges are exempted from Section 311 and are instead subject to Section 402 and 409 of the Act.
The values below represent the maximum quantities on-site that could be released at one time. They do not reflect quantities that are discharged through typical use. The spill reportability exemption is requested for the substances identified below.

| Substance | Quantity (lbs)* | Source | Discharge (outfall) |
|---|---|---|---|
| Hydrazine | 1550 | Water Treatment | 002, 004 |
| Sodium Hydroxide | 22000 | Demineralizer Regen | 002 |
| Sulfuric Acid | 35000 | Demineralizer Regen | 002 |
| Calcium Hypochlorite | 100 | Sewage Disinfection | 002, 003 |
| Sodium Hypochlorite | 500 | Water Treatment | 002 |

Sulfuric Acid, Sodium Hydroxide – These compounds effect pH. Their toxicity toward aquatic life is assumed to be a function of the resulting pH, which is limited at Outfall 002.

Hydrazine – Based on the history of hydrazine monitoring at this facility it has been determined that there is no reasonable potential for hydrazine to impact the receiving stream. The Department will reevaluate hydrazine if use of this chemical increases.

Sodium hypochlorite and calcium hypochlorite – Total Residual Chlorine has been evaluated at Outfalls 001 & 002.

**Groundwater Monitoring Requirements**

The Groundwater Quality Section recommends the **removal** of the following parameters from the groundwater monitoring requirement:

| | | |
|---|---|---|
| Total Organic Carbon | Total Arsenic | Total Cadmium |
| Total Chromium | Total Iron | Total Lead |
| Total Manganese | Total Mercury | Total Selenium |
| Total Silver | Total Zinc | |

Monitoring well A-9 is dry with insufficient water to acquire a representative sample, therefore A-9 will be removed from the permit and replaced with existing well A-13. The permittee shall monitor and report each of the eight (8) groundwater monitoring wells (A-1, A-2, A-8, A-10, A-11, A-12, A-13 and BG-4) semi-annually for the following parameters:

| | | |
|---|---|---|
| Water Table Elevation | Depth to the Water Table | Field pH |
| Field Specific Conductivity | Ammonia-Nitrogen | Nitrate |
| Sulfate | Total Barium | Total Copper |

The 3 wells A-14, A-17 and A-18 should be removed from the permit. These wells were monitored for water table elevations only. Duke will continue to monitor these and use the information to construct potentiometric data maps; however it is not necessary that the water table elevations be submitted as a permit requirement.

The permittee shall also monitor and report four (4) groundwater monitoring wells (A-1, A-10, A-11, and A-13) semi-annually for the following parameters:

Fission and Activation Products (pCi/L)
Tritium (pCi/L)

Semi-annual samples shall be taken in second and fourth calendar quarter of each year.

**316(b)**

Section 316(b) of the CWA states "Cooling water intake structures: Any standard established pursuant to section 301 or section 306 of this Act and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact." During the initial operation of Oconee Nuclear Station (ONS), studies were conducted to address potential impingement/entrainment concerns, as required by the licensing of ONS.

The initial study was submitted on March 24, 1976 and indicated that operation of ONS had no Adverse Environmental Impact (AEI) to the aquatic community of Lake Keowee. At that time, the Department made a Best Professional Judgment determination that the technology used for the intake structure was appropriate for minimizing environmental impacts at this facility.

On July 9, 2004, 40 CFR Part 125 Subpart J for Cooling Water Intake Structures for Phase II, Large Existing Electric Generating Plants was promulgated to deal with how facilities are required to meet 316(b) requirements. As required by this rule, additional impingement studies were approved by SCDHEC and completed at ONS from September 2006 to August 2007. A report titled, "Information Submitted for Best Professional Judgment §316(b) Decision-making for Duke Energy's Oconee Nuclear Station", dated November 2008 was provided to the Department.

In March 2007, EPA suspended this regulation due to litigation over certain conditions of the regulation. Since the regulation has now been suspended and changes to the regulation have yet to be made, the Department is delaying our final decision on compliance with 316(b).

The Department has included a reopener statement that allows the permit to be reopened when the regulation referenced above is updated.

**Land Application of Sanitary Sludge**

When the permit application was first submitted the Oconee Station requested additional land be added to the landfarm. Since that time, work on completing the sanitary connection has continued. Any sludge that remains is to be placed into the on-site landfill once the lagoon is abandoned. Therefore the land application of sanitary sludge will be removed from this permit.

## II. GENERAL INFORMATION

A. The effluent from this facility may be subject to the requirements of any of the following regulations: R.61-68, R.61-69, R.61-9.122, 124, 125, 129, 133, and 403; 40 CFR Part 136; Subchapter N (40 CFR Parts 400 through 402 and 404 through 471); and R.61-9.503, 504 and 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.

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 at the boundary of the source water protection area above a proposed or existing drinking water intake (if applicable) 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 at the boundary of the SWP area for a proposed or existing 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 data will be evaluated as human health values 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 defines the source water protection (SWP) area to be the primary SWP area delineated by the Source-Water Assessment and Protection (SWAP) Program initiated by the EPA and required by the states to identify SWP areas to protect drinking water sources. Using the procedure described in the document entitled, "Determination of the Primary and Secondary Source-Water Protection Areas for Selected Surface-Water Public-Supply Systems in South Carolina, 1999," USGS Water Resource Investigations Report 00-4097, the primary SWP area for a drinking water intake is the area which encompasses all 14-digit Hydrologic Unit Code (HUC) basins that adjoin streams, tributaries, and reservoirs between an intake and the upstream 10-percent exceedance, 24-hour travel distance ($TOT_{10}$). The entire basin above a drinking water intake has been designated as the SWP area where the drainage area is equal to or less than one HUC basin or is estimated to have less than 24-hours of instream travel time between the intake and the HUC basin in the headwaters of the drainage basin.

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 (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(j)(4)). 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(i)(2)).

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. (R.61-9.122.47(c)(1))

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(c)(2))

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 (e.g., nitrogen and phosphorus) 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, 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 typically 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 guidelines will be identified in Part I 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 typically 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, Attachment 3 and any categorical limitations. The more stringent of the limitations will be imposed. Calculations for aquatic life criteria and other wasteload recommendations are 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 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 (except ammonia toxicity calculations) 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) of the receiving water at the SWP Area boundary in mgd. |
| $Q_d$ | Long term average discharge flow in mgd. |

a. Determine dilution factors:
The following information is to be used (where applicable) for establishing effluent concentration limits:

$DF_1$: Dilution factor 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.

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

$DF_2$: Dilution factor, at the discharge point, 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.

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

$DF_3$: Dilution factor based on the 7Q10 or other critical flow condition at the source water protection area boundary for protection of a proposed or existing water intake downstream of the discharge ($Q_{7Q10i}$). 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 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 is above any 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 potentially higher level of protection in terms of applicable dilution than consumption of organisms. In addition, to satisfy the requirements of R.61-68.C.10(a), the Department has determined that dilution at the boundary of the Source Water Protection area will protect the source water protection area and drinking water intake to meet this requirement.

For discharges except those to lakes affecting the primary source water protection (SWP) area, dilution will be determined using the largest flow (7Q10 or annual average flow, as appropriate) associated with any TOT10 point along the SWP area boundary upstream of the drinking water intake of concern. For discharges to lakes affecting the primary SWP area, dilution will be determined using the sum of the flows (7Q10 or average annual flow, as appropriate) associated with all TOT10 point(s) along the SWP area boundary upstream of the drinking water intake of concern. If multiple drinking water intakes are present below the discharge, the SWP area of the intake closest to the discharge will be protected. If the entire basin is designated as the SWP area, the boundary will be the TOT10 at the beginning of the basin, even if it is outside the State boundaries (e.g. North Carolina).

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 is above any 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. In addition, to satisfy the requirements of R.61-68.C.10(a), the Department has determined that dilution at the boundary of the Source Water Protection area will protect the source water protection area and drinking water intake to meet this requirement.

For discharges except those to lakes affecting the primary source water protection (SWP) area, dilution will be determined using the largest flow (7Q10 or annual average flow, as appropriate) associated with any TOT10 point along the SWP area boundary upstream of the drinking water intake of concern. For discharges to lakes affecting the primary SWP area, dilution will be determined using the sum of the flows (7Q10 or average annual flow, as

appropriate) associated with all TOT10 point(s) along the SWP area boundary upstream of the drinking water intake of concern. If multiple drinking water intakes are present below the discharge, the SWP area of the intake closest to the discharge will be protected. If the entire basin is designated as the SWP area, the boundary will be the TOT10 at the beginning of the basin, even if it is outside the State boundaries (e.g. North Carolina).

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

$DF_4$: Dilution factor based on the Average Annual Flow at the source water protection area boundary for protection of a proposed or existing water intake downstream of the discharge ($AAF_i$).
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 is above any 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 potentially higher level of protection in terms of applicable dilution than consumption of organisms. In addition, to satisfy the requirements of R.61-68.C.10(a), the Department has determined that dilution at the boundary of the Source Water Protection area will protect the source water protection area and drinking water intake to meet this requirement.

   For discharges except those to lakes affecting the primary source water protection (SWP) area, dilution will be determined using the largest flow (7Q10 or annual average flow, as appropriate) associated with any TOT10 point along the SWP area boundary upstream of the drinking water intake of concern. For discharges to lakes affecting the primary SWP area, dilution will be determined using the sum of the flows (7Q10 or average annual flow, as appropriate) associated with all TOT10 point(s) along the SWP area boundary upstream of the drinking water intake of concern. If multiple drinking water intakes are present below the discharge, the SWP area of the intake closest to the discharge will be protected. If the entire basin is designated as the SWP area, the boundary will be the TOT10 at the beginning of the basin, even if it is outside the State boundaries (e.g. North Carolina).

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 is above any 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 potentially higher level of protection in terms of applicable dilution than consumption of organisms. In addition, to satisfy the requirements of R.61-68.C.10(a), the Department has determined that dilution at the boundary of the Source Water Protection area will protect the source water protection area and drinking water intake to meet this requirement.

   For discharges except those to lakes affecting the primary source water protection (SWP) area, dilution will be determined using the largest flow (7Q10 or annual average flow, as appropriate) associated with any TOT10 point along the SWP area boundary upstream of the drinking water intake of concern. For discharges to lakes affecting the primary SWP area, dilution will be determined using the sum of the flows (7Q10 or average annual flow, as

appropriate) associated with all TOT10 point(s) along the SWP area boundary upstream of the drinking water intake of concern. If multiple drinking water intakes are present below the discharge, the SWP area of the intake closest to the discharge will be protected. If the entire basin is designated as the SWP area, the boundary will be the TOT10 at the beginning of the basin, even if it is outside the State boundaries (e.g. North Carolina).

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

b. Determine derived limits using the following procedures:

$WQS_{al}$ Freshwater 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

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

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

$WQS_{mcl}$ Standard (based on an established criteria or other published data per R.61-68) for Drinking Water MCL (Maximum Contaminant Level).

$WQS_{ol}$: 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

$C_b$ The 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 90$^{th}$ 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. 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.

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

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.

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

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

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 ($C_{aqlife\text{-}adj}$) 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 procedure is used to develop site-specific criteria in accordance with R.61-68.C.12. Both DHEC and EPA must approve the recalculated criterion prior to implementation. The recalculated criterion will require an update to the Water Classifications and Standards Regulations, R.61-68 and 61-69.

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 ($C_{HH-avg}$). 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 drinking water intake and no state-approved source water protection area (i.e., if there is no intake downstream of the discharge) 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 = 95$^{th}$ 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 99$^{th}$ percentile basis)

$z_a$ = the percentile exceedance probability for the monthly average permit limit (=1.645 for 95$^{th}$ 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 ($C_{HH}$) 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,

$$C_{HH} = WQS.$$

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

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 cause 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: $\sigma$ = Standard Deviation of the samples
$\mu$ = 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 95$^{th}$ 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 95$^{th}$ 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* $\leq$ Derived limit ($C_{effluent}$) implies that reasonable potential does not exist.

*RWC* > Derived limit ($C_{effluent}$) 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 $\leq 0.3TU_a$ 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 $\leq 1.0TU_c$ implies that a reasonable potential does not exist
*RWC* for Chronic Toxicity $> 1.0TU_c$ implies that a reasonable potential exists

b. When pass/fail effluent data only is available and all tests have passed, the Department may be able to determine reasonable potential in a manner similar to above assuming the test concentration of interest is greater than or equal to the concentration at which the permittee has tested. If the permittee has not tested at or above the test concentration of interest, the Department cannot say that reasonable potential does not exist, unless perhaps, circumstances related to the discharge have changed. If any failures exist in the data set, reasonable potential may be determined to exist.

c. 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 M. 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

The issuance of this permit by the S.C. Department of Health and Environmental Control (Department) becomes the final agency decision 15 days after notice of the decision has been mailed to the applicant or respondent, unless a written request for final review is filed with the Department.

An applicant, permittee, licensee, or affected person who wishes to appeal this decision must file a written request for final review with the Clerk of the Board at the following address or by facsimile at 803-898-3323:

Clerk of the Board
SC DHEC
2600 Bull Street
Columbia, SC 29201

The request for final review should include the following:

1. The grounds on which the Department's decision is challenged and the specific changes sought in the decision,
2. A statement of any significant issues or factors the Board should consider in deciding how to handle the matter, and
3. A copy of the Department's decision or action under review.

If the 15th day occurs on a weekend or State holiday, the request is due to be received by the Clerk of the Board on the next working day. The request for final review must be received by the Clerk of the Board by 5:00 p.m. on the date it is due. If a timely request for final review is filed with the Clerk of the Board, the Clerk will provide additional information regarding procedures.

The Board of Health and Environmental Control has 60 days from the date of receipt of a request for final review to conduct a final review conference. The conference may be conducted by the Board, its designee, or a committee of three members of the Board appointed by the chair.

If a final review conference is not conducted within 60 days, the Department decision becomes the final agency decision, and a party may request a contested case hearing before the Administrative Law Court within 30 days after the deadline for the final review conference.

Information pertaining to adjudicatory matters may be obtained by contacting the Legal Office of the Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina or by calling 803-898-3350.