

New NPDES Permit  
Issued 12/3/2002  
Effective date: 2/1/2002

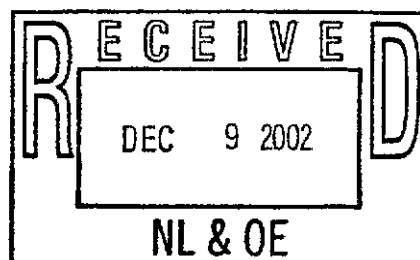


2600 Bull Street  
Columbia, SC 29201-1708

**CERTIFIED MAIL/RETURN RECEIPT REQUESTED**

December 3, 2002

Mr. Stephen A. Byrne  
Sr Vice President  
Nuclear Operations  
SCE&G  
PO Box 88  
Jenkinsville, SC 29065



Re: NPDES Permit No. SC0030856  
SCE&G/V C Summer Nuclear Station  
Fairfield County

Dear Mr. Byrne:

Enclosed is the National Pollutant Discharge Elimination System (NPDES) Permit for the above-referenced facility. The permit is issued with the following changes to the draft permit which was public noticed:

1. PART III.A.9. – the sampling frequency for oil & grease has been reduced to 2/year.
2. PART III.B.2. & 3. – The sample type has been changed from 24-Hour Composite to Grab
3. PART III.B.1.,2.,3.,&4. – The outfall descriptions have been added to match the corresponding description in PART III.A..
4. PART III.A.9. – The sampling frequency for TSS has been reduced to 2/year.
5. PART IV.A.1.(d). – PART IV.A.1.(d). stated that the permittee shall be compliance with WET limitations on page 33 for Outfall 012. The reference has been changed to page 31.

The Department of Health and Environmental Control (DHEC) will enforce all the provisions of this permit in an equitable and timely manner. In order that you understand your responsibilities included in the provisions of this permit, particular attention should be given to the following sections:

1. PART II.E.: This section contains your responsibilities for the proper operation and maintenance of your facility.
2. PART II.L.3.: This section describes the specific requirements for an NPDES permit to be transferred to another party.
3. PART II.L.4.: This section contains your responsibilities for reporting monitoring results. Preprinted Discharge Monitoring Report (DMR) forms are provided by DHEC for reporting monitoring results. A new preprinted DMR form will be sent to you at a later date, but prior to the date specified for submittal in PART II.L.4.a.(1).
4. PART III.: This section contains listings of effluent characteristics, discharge limitations, and monitoring requirements.
5. PART V: This section contains all the special requirements relative to your permit. Such items in this section include the certified operator required to operate your wastewater treatment plant, the day of the week on which monitoring shall occur, sludge disposal requirements, and whole effluent toxicity requirements.

This permit, as issued, will become effective on the effective date specified on the permit, provided no appeal for an adjudicatory hearing is made. The issuance of the permit represents a final staff decision that may be appealed to the Board of DHEC. Such appeal must be made within fifteen (15) days of the receipt of the permit.

In the event an appeal is filed, the entire reissued permit is automatically stayed. After the start of the administrative review, any party may request the Administrative Law Judge (ALJ) to lift the automatic stay. The ALJ will then determine which portions of the permit, if any, will go into effect before the administrative review has been completed. The applicable portions of the previous permit will continue in effect until the administrative review has been completed.

If you wish to appeal the staff's decision, you must submit an initial pleading in accordance with Regulation 61-72, Volume 25, S.C. Code of Laws, 1976, as amended. As required by this regulation, the initial pleading must be served on the Board of SCDHEC, ATTN: Clerk of the Board, 2600 Bull Street, Columbia, S.C. 29201, (803)898-3300. The submission of the initial appeal will be within the time period if delivered by First Class Mail or other parcel delivery service on or before the fifteenth day.

Stephen Byrne  
SCE&G  
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The following elements must, at a minimum, be included within the request:

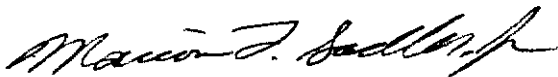
1. The name of the party requesting the hearing and the issue(s) for which review the hearing is requested;
2. The caption or other information sufficient to identify the permit decision being appealed;
3. The relief requested.

In addition, the Administrative Law Judge Division now requires that a person requesting a contested case hearing must file a copy of the request and a filing fee in the amount of \$70.00 with the Administrative Law Judge Division at the following address:

Clerk, Administrative Law Judge Division  
1205 Pendleton Street, Suite 224  
PO Box 11667  
Columbia, SC 29211

If you have any questions about the technical aspects of this permit, please contact Ms. Christina Lewis, (803) 898-4198. Information pertaining to adjudicatory matters may be obtained by contacting the Legal Office, SCDHEC, 2600 Bull Street, Columbia, S.C. 29201, or by calling them at (803)898-3350.

Sincerely,



Marion F. Sadler, Jr.  
Industrial, Agricultural, and Storm Water  
Permitting Division

Enclosure

cc: EPA

Lewis Bedenbaugh, Central Midlands  
Sandra Hursey, WP Enforcement  
Columbia EQC Lab  
Tom Knight, Groundwater  
Christina Lewis, BOW  
NPDES Administration



South Carolina Department of Health  
and Environmental Control

# ***National Pollutant Discharge Elimination System Permit***

for Discharge to Surface Waters

This Permit Certifies That

***SCE&G Virgil C. Summer Nuclear Station***

has been granted permission to discharge from a facility located at

***Highway 215  
Jenkinsville, SC  
Fairfield County County***

to receiving waters named

***Monticello Reservoir and Broad River***

in accordance with limitations, monitoring requirements and other conditions set forth herein. This permit is issued in accordance with the provisions of the Pollution Control Act of South Carolina (S.C. Code Sections 48-1-20 *et seq.*, 1976), Regulation 61-9 and with the provisions of the Federal Clean Water Act (PL 92-500), as amended, 33 U.S.C. 1251 *et seq.*, the "Act."

Marion F. Sadler, Jr., Director  
Industrial, Agricultural, and Storm Water Permitting Division  
Bureau of Water

***Issue Date: December 3, 2002***

***Expiration Date: April 30, 2007***

***Effective Date: February 1, 2003***

***Permit No.: SC0030856***

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## **PART I. Definitions**

Any term not defined in this Part has the definition stated in the Pollution Control Act or in "Water Pollution Control Permits", R.61-9 or its normal meaning.

- A. The "Act", or CWA, shall refer to the Clean Water Act (Formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended.
- B. The "arithmetic mean" of any set of values is the summation of the individual values divided by the number of individual values.
- C. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
- D. A "composite sample" shall be defined as one of the following four types:
  - 1. An influent or effluent portion collected continuously over a specified period of time at a rate proportional to the flow.
  - 2. A combination of not less than 8 influent or effluent grab samples collected at regular (equal) intervals over a specified period of time and composited by increasing the volume of each aliquot in proportion to flow. If continuous flow measurement is not used to composite in proportion to flow, the following method will be used: An instantaneous flow measurement should be taken each time a grab sample is collected. At the end of the sampling period, the instantaneous flow measurements should be summed to obtain a total flow. The instantaneous flow measurement can then be divided by the total flow to determine the percentage of each grab sample to be combined. These combined samples form the composite sample.
  - 3. A combination of not less than 8 influent or effluent grab samples of equal volume but at variable time intervals that are inversely proportional to the volume of the flow. In other words, the time interval between aliquots is reduced as the volume of flow increases.
  - 4. If the effluent flow varies by less than 15 percent, a combination of not less than 8 influent or effluent grab samples of constant (equal) volume collected at regular (equal) time intervals over a specified period of time.

All samples shall be properly preserved in accordance with Part II.J.4. Continuous flow or the sum of instantaneous flows measured and averaged for the specified compositing time period shall be used with composite results to calculate mass.

- E. "Daily maximum" is the highest average value recorded of samples collected on any single day during the calendar month.
- F. "Daily minimum" is the lowest average value recorded of samples collected on any single day during the calendar month.
- G. The "Department" shall refer to the South Carolina Department of Health and Environmental Control.
- H. The "geometric mean" of any set of values is the Nth root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the

logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

- I. A "grab sample" is an individual, discrete or single influent or effluent portion of at least 100 milliliters collected at a time representative of the discharge and over a period not exceeding 15 minutes and retained separately for analysis. Instantaneous flow measured at the time of grab sample collection shall be used to calculate quantity, unless a totalizer is used.
- J. The "instantaneous maximum or minimum" is the highest or lowest value recorded of all samples collected during the calendar month.
- K. The "monthly average", other than for fecal coliform, is the arithmetic mean of all samples collected in a calendar month period. The monthly average for fecal coliform bacteria is the geometric mean of all samples collected in a calendar month period. The monthly average loading is the arithmetic average of all individual loading determinations made during the month.
- L. The "practical quantitation limit (PQL)" is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. It is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specific sample weights, volumes, and processing steps have been followed.
- M. "Quarter" is defined as the first three calendar months beginning with the month that this permit becomes effective and each group of three calendar months thereafter.
- N. "Quarterly average" is the arithmetic mean of all samples collected in a quarter.
- O. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- P. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- Q. "Weekly average", other than for fecal coliform, is the arithmetic mean of all the samples collected during a one-week period. The weekly average for fecal coliform is the geometric mean of all samples collected during a one-week period. For self-monitoring purposes, weekly periods in a calendar month are defined as three (3) consecutive seven-day intervals starting with the first day of the calendar month and a fourth interval containing seven (7) days plus those days beyond the 28th day in a calendar month. The value to be reported is the single highest of the four (4) weekly averages computed during a calendar month. The weekly average loading is the arithmetic average of all individual loading determinations made during the week.



## **PART II. Standard Conditions**

### **A. Duty to comply**

The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of the Clean Water Act and the Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

1. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
  - b. It is the responsibility of the permittee to have a treatment facility that will meet the final effluent limitations of this permit. The approval of plans and specifications by the Department does not relieve the permittee of responsibility for compliance.
2. Failure to comply with permit conditions or the provisions of this permit may subject the permittee to civil penalties under S.C. Code Section 48-1-330 or criminal sanctions under S.C. Code Section 48-1-320. Sanctions for violations of the Federal Clean Water Act may be imposed in accordance with the provisions of 40 CFR Part 122.41(a)(2) and (3).
3. A person who violates any provision of this permit, a term, condition or schedule of compliance contained within this NPDES permit, or the State law is subject to the actions defined in the State law.

### **B. Duty to reapply**

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. A permittee with a currently effective permit shall submit a new application 180 days before the existing permit expires, unless permission for a later date has been granted by the Department. The Department may not grant permission for applications to be submitted later than the expiration date of the existing permit.

### **C. Need to halt or reduce activity not a defense**

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

### **D. Duty to mitigate**

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

### **E. Proper operation and maintenance**

1. The permittee shall at all times properly operate and maintain in good working order and operate as efficiently as possible all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance based on design facility removals, adequate funding, adequate operator staffing and training and also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
2. Power Failures. In order to maintain compliance with effluent limitations and prohibitions of this permit, the permittee shall either:
  - a. provide an alternative power source sufficient to operate the wastewater control facilities;
  - b. or have a plan of operation which will halt, reduce, or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.
3. The permittee shall maintain at the permitted facility a complete Operations and Maintenance Manual for the waste treatment plant. The manual shall be made available for on-site review during normal working hours. The manual shall contain operation and maintenance instructions for all equipment and appurtenances associated with the waste treatment plant and land application system. The manual shall contain a general description of the treatment process(es), operating characteristics that will produce maximum treatment efficiency and corrective action to be taken should operating difficulties be encountered.
4. The permittee shall provide for the performance of routine daily treatment plant inspections by a certified operator of the appropriate grade as specified in Part V. The inspection shall include, but is not limited to, areas which require a visual observation to determine efficient operations and for which immediate corrective measures can be taken using the O & M manual as a guide. All inspections shall be recorded and shall include the date, time and name of the person making the inspection, corrective measures taken, and routine equipment maintenance, repair, or replacement performed. The permittee shall maintain all records of inspections at the permitted facility as required by this permit. Records shall be made available for on-site review during normal working hours.
5. The name and grade of the operator of record shall be submitted to DHEC/Bureau of Water/Water Enforcement Division prior to placing the facility into operation. A roster of operators associated with the facility's operation and their certification grades shall also be submitted with the name of the "operator-in-charge". Any changes in operator or operators shall be submitted to the Department as they occur.

F. Permit actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

G. Property rights

This permit does not convey any property rights of any sort, or any exclusive privilege nor does it authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

#### H. Duty to provide information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

#### I. Inspection and entry

The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act and Pollution Control Act, any substances or parameters at any location.

#### J. Monitoring and records

1. a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be present and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than  $\pm 10\%$  from the true discharge rates throughout the range of expected discharge volumes. The primary flow device must be accessible to the use of a continuous flow recorder.

- c. The permittee shall maintain at the permitted facility a record of the method(s) used in measuring the discharge flow for the outfall(s) designated on limits pages to monitor flow. Records of any necessary

calibrations must also be kept. This information shall be made available for on-site review by Department personnel during normal working hours.

2. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by R.61-9.503 or R.61-9.504), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.
3. Records of monitoring information shall include:
  - a. The date, exact place, and time of sampling or measurements;
  - b. The individual(s) who performed the sampling or measurements;
  - c. The date(s) analyses were performed;
  - d. The individual(s) who performed the analyses;
  - e. The analytical techniques or methods used; and
  - f. The results of such analyses.
4.
  - a. Monitoring results for wastewater must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in R.61-9.503 or R.61-9.504, unless other test procedures have been specified in the permit.
  - b. Unless addressed elsewhere in this permit, the permittee shall use a sufficiently sensitive analytical method that achieves a value below the derived permit limit stated in Part III. If more than one method of analysis is approved for use, the Department recommends for reasonable potential determinations that the permittee use the method having the lowest practical quantitation limit (PQL) unless otherwise specified in Part V of the permit. For the purposes of reporting analytical data on the Discharge Monitoring Report (DMR):
    - (1) Analytical results below the PQL from methods available in 40 CFR 136 or otherwise specified in the permit shall be reported as zero (0). Zero (0) shall also be used to average results which are below the PQL. When zero (0) is reported or used to average results, the permittee shall report, in the "Comment Section" or in an attachment to the DMR, the analytical method used, the PQL achieved, and the number of times results below the PQL were reported as zero (0).
    - (2) Analytical results above the PQL from methods available in 40 CFR 136 or otherwise specified in the permit shall be reported as the value achieved. When averaging results using a value containing a "less than," the average shall be calculated using the value and reported as "less than" the average of all results collected.

(3) Mass values shall be calculated using the flow taken at the time of the sample and either the concentration value actually achieved or the value as determined from the procedures in (1) or (2) above, as appropriate.

5. The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

K. Signatory requirement.

1. All applications, reports, or information submitted to the Department shall be signed and certified.

a. Applications. All permit applications shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or

(b) The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency or public facility: By either a principal executive officer, mayor, or other duly authorized employee or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(a) The chief executive officer of the agency, or

(b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator, Region IV, EPA).

- b. All reports required by permits, and other information requested by the Department, shall be signed by a person described in Part II.K.1.a of this section, or by a duly authorized representative of that person. A person is a duly authorized representative if:

(1) The authorization is made in writing by a person described in Part II.K.1.a of this section;

- (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,
  - (3) The written authorization is submitted to the Department.
- c. Changes to authorization. If an authorization under Part II.K.1.b of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part II.K.1.b of this section must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.
  - d. Certification. Any person signing a document under Part II.K.1.a or b of this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
2. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

#### L. Reporting requirements

##### 1. Planned changes.

The permittee shall give written notice to DHEC/Bureau of Water/Industrial, Agricultural and Storm Water Permitting Division as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in R 61-9.122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part II.L.8 of this section.
- c. The alteration or addition results in a significant change in the permittee's sewage sludge or industrial sludge use or disposal practices, and such alteration, addition, or change may justify the application of

permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan (included in the NPDES permit directly or by reference);

2. Anticipated noncompliance.

The permittee shall give advance notice to the DHEC/Bureau of Water/Water Enforcement Division of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers.

This permit is not transferable to any person except after written notice to the DHEC/Bureau of Water/NPDES Administration. The Department may require modification or revocation and reissuance of the permit to change the name of permittee and incorporate such other requirements as may be necessary under the Pollution Control Act and the Clean Water Act.

- a. Transfers by modification. Except as provided in paragraph b of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under R.61-9.122.62(e)(2)), or a minor modification made (under R.61-9.122.63(d)), to identify the new permittee and incorporate such other requirements as may be necessary under CWA.
- b. Other transfers. As an alternative to transfers under paragraph a of this section, any NPDES permit may be transferred to a new permittee if:
  - (1) The current permittee notifies the Department at least 30 days in advance of the proposed transfer date in Part II.L.3.b(2) of this section;
  - (2) The notice includes U.S. EPA NPDES Application Form 1 and a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
  - (3) Permits are non-transferable except with prior consent of the Department. A modification under this section is a minor modification which does not require public notice.

4. Monitoring reports.

Monitoring results shall be reported at the intervals specified elsewhere in this permit.

- a. Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Department for reporting results of monitoring of sludge use or disposal practices including the following:
  - (1) Effluent Monitoring: Effluent monitoring results obtained at the required frequency shall be reported on a Discharge Monitoring Report Form (EPA Form 3320-1). The DMR is due postmarked no later than the 28th day of the month following the end of the monitoring period. One original and one copy of the Discharge Monitoring Reports (DMRs) shall be submitted to:

S.C. Department of Health and Environmental Control  
Bureau of Water/Compliance Assurance Division  
Permit and Data Administration Section  
2600 Bull Street  
Columbia, South Carolina 29201

- (2) Groundwater Monitoring: Groundwater monitoring results obtained at the required frequency shall be reported on a Groundwater Monitoring Report Form (DHEC 2110) postmarked no later than the 28th day of the month following the end of the monitoring period. One original and one copy of the Groundwater Monitoring Report Form (DHEC 2110) shall be submitted to:

S.C. Department of Health and Environmental Control  
Bureau of Water/Water Monitoring, Assessment and Protection Division  
Groundwater Quality Section  
2600 Bull Street  
Columbia, South Carolina 29201

- (3) Sludge, Biosolids and/or Soil Monitoring: Sludge, biosolids and/or soil monitoring results obtained at the required frequency shall be reported in a laboratory format postmarked no later than the 28th day of the month following the end of the monitoring period. Two copies of these results shall be submitted to:

S.C. Department of Health and Environmental Control  
Bureau of Water/Water Enforcement Division  
Water Pollution Enforcement Section  
2600 Bull Street  
Columbia, South Carolina 29201

- (4) All other reports required by this permit shall be submitted at the frequency specified elsewhere in the permit to:

S.C. Department of Health and Environmental Control  
Bureau of Water/Water Enforcement Division  
Water Pollution Enforcement Section  
2600 Bull Street  
Columbia, South Carolina 29201

- b. If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in R.61-9.503 or R.61-9.504, or as specified in the permit, all valid results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Department. The permittee has sole responsibility for scheduling analyses, other than for the sample data specified in Part V, so as to ensure there is sufficient opportunity to complete and report the required number of valid results for each monitoring period.



- c. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Department in the permit.

5. Twenty-four hour reporting

- a. The permittee shall report any non-compliance, which may endanger health or the environment. Any information shall be provided orally to local DHEC office within 24 hours from the time the permittee becomes aware of the circumstances. During normal working hours call:

County	EQC District	Phone No.
Anderson Oconee	Appalachia I	864-260-5569
Greenville Pickens	Appalachia II	864-241-1090
Cherokee, Spartanburg Union	Appalachia III	864-596-3800
Chester, Lancaster York	Catawba	803-285-7461
Fairfield, Lexington Newberry, Richland	Central Midlands	803-896-0620
Beaufort, Colleton Hampton, Jasper	Low Country	843-522-9097
Aiken, Allendale, Bamberg, Barnwell, Calhoun, Orangeburg	Lower Savannah	803-641-7670
Chesterfield, Darlington, Dillon, Florence, Marion, Marlboro	Pee Dee	843-661-4825
Berkeley, Charleston Dorchester	Trident	843-740-1590
Abbeville, Edgefield, Greenwood Laurens, McCormick, Saluda	Upper Savannah	864-223-0333
Georgetown, Horry Williamsburg	Waccamaw	843-448-1902
Clarendon, Kershaw Lee, Sumter	Wateree	803-778-1531

After-hour reporting should be made to the 24-Hour Emergency Response telephone number 803-253-6488 or 1-888-481-0125 outside of the Columbia area. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances to the address in Part II.L.4.a(4). The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as information which must be reported within 24 hours under this paragraph.

- (1) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See R.61-9.122.44(g)).
- (2) Any upset which exceeds any effluent limitation in the permit.
- (3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit to be reported within 24 hours (See R 61-9.122.44(g)). If the permit contains maximum limitations for any of the pollutants listed below, a violation of the maximum limitations shall be reported orally to the DHEC/Bureau of Water/Water Enforcement Division within 24 hours or the next business day.

- (a) Whole Effluent Toxicity (WET),
- (b) fecal coliform,
- (c) tributyl tin (TBT), and
- (d) any of the following bioaccumulative pollutants:

$\alpha$ BHC	Lindane
$\beta$ BHC	Mercury
$\delta$ BHC	Mirex
BHC	Octachlorostyrene
Chlordane	PCBs
DDD	Pentachlorobenzene
DDE	Photomirex
DDT	1,2,3,4-Tetrachlorobenzene
Dieldrin	1,2,4,5-Tetrachlorobenzene
Hexachlorobenzene	2,3,7,8-TCDD
Hexachlorobutadiene	Toxaphene

c. The Department may waive the written report on a case-by-case basis for reports under Part II.L.5.b of this section if the oral report has been received within 24 hours.

#### 6. Other noncompliance.

The permittee shall report all instances of noncompliance not reported under Part II.L.4 and 5 of this section and Part IV at the time monitoring reports are submitted. The reports shall contain the information listed in Part II.L.5 of this section.

#### 7. Other information.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information to the Industrial, Agricultural and Storm Water Permitting Division. This information may result in permit modification, revocation and reissuance, or termination in accordance with Regulation 61-9.

8. Existing manufacturing, commercial, mining, and silvicultural dischargers.

In addition to the reporting requirements under Part II.L.1 of this section, all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the DHEC/Bureau of Water/Water Enforcement Division of the Department as soon as they know or have reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

- (1) One hundred micrograms per liter (100 µg/l);
- (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
- (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
- (4) The level established by the Department in accordance with section R.61-9.122.44(f).

- b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed in the highest of the following "notification levels":

- (1) Five hundred micrograms per liter (500 µg/l);
- (2) One milligram per liter (1 mg/l) for antimony;
- (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with R.61-9.122.21(g)(7).
- (4) The level established by the Department in accordance with section R.61-9.122.44(f).

M. Bypass

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.M.2 and 3 of this section.
2. Notice.
  - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass to the DHEC/Bureau of Water, Industrial, Agricultural and Storm Water Permitting Division.

- b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.L.5 of this section.

3. Prohibition of bypass

- a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:

- (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

- (3) The permittee submitted notices as required under Part II.M.2 of this section.

- b. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in Part II.M.3.a of this section.

N. Upset

- 1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Part II.N.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- 2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
  - b. The permitted facility was at the time being properly operated; and
  - c. The permittee submitted notice of the upset as required in Part II.L.5.b(2) of this section.
  - d. The permittee complied with any remedial measures required under Part II.D of this section.
- 3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

O. Misrepresentation of Information

1. Any person making application for a NPDES discharge permit or filing any record, report, or other document pursuant to a regulation of the Department, shall certify that all information contained in such document is true. All application facts certified to by the applicant shall be considered valid conditions of the permit issued pursuant to the application.
2. Any person who knowingly makes any false statement, representation, or certification in any application, record, report, or other documents filed with the Department pursuant to the State law, and the rules and regulations pursuant to that law, shall be deemed to have violated a permit condition and shall be subject to the penalties provided for pursuant to 48-1-320 or 48-1-330.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

1. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 001: once through noncontact cooling water to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration			Sampling Frequency	Sample Type
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum		
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	Continuous	Estimate <sup>2</sup>
Intake Temperature <sup>3</sup>	-	-	-	MR <sup>1</sup>	MR <sup>1</sup>	Continuous	Continuous
Plume Temperature <sup>4</sup>	-	-	-	32.2°C(90°F)	MR <sup>1</sup>	Continuous	Continuous
Discharge Temperature <sup>5</sup>	-	-	-	MR <sup>1</sup>	45°C(113°F)	Continuous	Continuous
Copper <sup>6, 8</sup>	-	-	-	MR <sup>1</sup>	MR <sup>1</sup>	1/Month	Grab
Mercury <sup>7</sup>	-	-	-	MR <sup>1</sup>	MR <sup>1</sup>	1/Month	Grab
Iron <sup>8</sup>	-	-	-	MR <sup>1</sup>	MR <sup>1</sup>	1/Month	Grab
Manganese <sup>8</sup>	-	-	-	MR <sup>1</sup>	MR <sup>1</sup>	1/Month	Grab
pH	-	-	6.0 s.u.	-	8.5 s.u.	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

<sup>3</sup>Intake temperature shall be measured on the inlet side of the main condenser

<sup>4</sup>Plume temperature shall be taken at the intake structure of Fairfield Pumped Storage Facility when the Fairfield Pumped Storage Facility is generating

<sup>5</sup>Discharge temperature shall be monitored at the outlet corresponding to an individual unit prior to mixing with the receiving stream

<sup>6</sup>See Part V.A.5

<sup>7</sup>See Part V.A.4

<sup>8</sup>See Part V.A.6

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) unless otherwise specified: after treatment but prior to mixing with the receiving stream.

There shall be no addition of chlorine to the main condenser cooling water

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

2. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 003: low level radiological wastes to the Broad River

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration				
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	1/Occurrence <sup>3</sup>	Estimate <sup>2</sup>
Total Suspended Solids	-	-	-	30 mg/l	100 mg/l	1/Occurrence <sup>3</sup>	Grab
Oil & Grease	-	-	-	15 mg/l	20 mg/l	1/Occurrence <sup>3</sup>	Grab
pH	-	-	6.0 s.u.	-	9.0 s.u.	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

<sup>3</sup>Samples shall be taken at least once per occurrence of discharge but need not be more than once per month

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) : the nearest accessible point after the discharge from the Liquid Waste Processing System or the Waste Monitor Tanks, but prior to mixing with the receiving stream.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

3. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 004: steam generator blowdown via Outfall 001 to the Monticello Reservoir or Outfall 003 to Broad River

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration				
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	1/Occurrence <sup>3</sup>	Continuous <sup>2</sup>
Total Suspended Solids	-	-	-	30 mg/l	100 mg/l	1/Occurrence <sup>3</sup>	Grab
Oil & Grease	-	-	-	15 mg/l	20 mg/l	1/Occurrence <sup>3</sup>	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

<sup>3</sup>Samples shall be taken at least once per occurrence of discharge but need not be more than once per month

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) : after discharge of steam generator blowdown, but prior to commingling with any other wastestream or the receiving stream.



### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

4. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 005: treated sanitary sewage via Outfall 014 to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration			Sampling Frequency	Sample Type
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum		
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	1/Month	Instantaneous <sup>2</sup>
Biochemical Oxygen Demand (BOD <sub>5</sub> )	-	-	-	30 mg/l	45 mg/l	1/Month	24 Hr Composite
Total Suspended Solids	-	-	-	30 mg/l	45 mg/l	1/Month	24 Hr Composite
Fecal Coliform	-	-	-	200/100 ml	400/100 ml	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after discharge from the chlorine contact chamber, but prior to commingling with any other waste stream.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

5. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 06A: low volume waste from the alum sludge basin via Outfall 014 to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration			Sampling Frequency	Sample Type
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum		
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	1/Month	Instantaneous <sup>2</sup>
Total Suspended Solids	-	-	-	30 mg/l	100 mg/l	1/Month	Grab
Oil & Grease	-	-	-	15 mg/l	20 mg/l	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) : after discharge from the sedimentation basin, but prior to commingling with any other waste stream.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

6. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 06B: low volume wastes and storm water from sumps in the transformer and fuel oil storage areas via Outfall 014 to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration				
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	1/Month	Instantaneous <sup>2</sup>
Total Suspended Solids	-	-	-	30 mg/l	98 mg/l	1/Month	Grab
Oil & Grease	-	-	-	15 mg/l	19 mg/l	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) : after discharge from the retention basin, but prior to commingling with any other waste stream.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

7. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 007: low volume waste from the ion exchange regeneration and from sumps in the chemical feed equipment area, caustic tank area and "D" battery room via Outfall 001 to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration			Sampling Frequency	Sample Type
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum		
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	1/Month	Instantaneous <sup>2</sup>
Total Suspended Solids	-	-	-	30 mg/l	100 mg/l	1/Month	Grab
Oil & Grease	-	-	-	15 mg/l	20 mg/l	1/Month	Grab
pH	-	-	6.0 s.u.	-	9.0 s.u.	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) : after discharge from the neutralization basin, but prior to commingling with any other waste stream.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

8. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 008: metal cleaning wastewater via Outfall 014 to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration			Sampling Frequency	Sample Type
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum		
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	1/Day	Instantaneous <sup>2</sup>
Total Suspended Solids	-	-	-	30 mg/l	100 mg/l	1/Occurrence	Grab
Oil & Grease	-	-	-	15 mg/l	20 mg/l	1/Occurrence	Grab
Copper, Total	-	-	-	1.0 mg/l	1.0 mg/l	1/Occurrence	Grab
Iron, Total	-	-	-	1.0 mg/l	1.0 mg/l	1/Occurrence	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

- a. Samples shall be taken at least once per occurrence of discharge. Should the duration of the discharge exceed one week, the discharge shall be sampled once per week until the end of discharge
- b. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) : after discharge from the Plant Startup Holding Basin, but prior to commingling with any other waste stream.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

9. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 012: storm water runoff from the north/northeast area of the plant site from yard drains, roof drains, refueling water storage tank pit drains, industrial and CDRM coolers and drainage from the Turbine Building Closed Cycle Cooling System Cooling Towers to the Broad River.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration				
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	1/Month	Instantaneous <sup>2</sup>
Total Suspended Solids	-	-	-	26 mg/l	70 mg/l	2/Year	Grab
Oil & Grease	-	-	-	9 mg/l	11 mg/l	2/Year	Grab
pH	-	-	6.0 s.u.	-	8.5 s.u.	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) : after discharge but prior to mixing with the receiving stream.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

10. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 013: storm water runoff from the southeast area of the plant site from yard drains, roof drains, water storage tank sumps, and miscellaneous floor drains to the Broad River.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration			Sampling Frequency	Sample Type
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum		
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	2/Year	Estimate <sup>2</sup>
Total Suspended Solids	-	-	-	MR <sup>1</sup>	MR <sup>1</sup>	2/Year	Grab
pH	-	-	MR <sup>1</sup>	-	MR <sup>1</sup>	2/Year	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) : after discharge but prior to mixing with the receiving stream.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

11. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 014: combination of internal Outfalls 005, 06A, 06B and 008 to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration			Sampling Frequency	Sample Type
	Monthly Average	Daily Maximum	Daily Minimum	Monthly Average	Daily Maximum		
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD	-	-	-	Continuous	Continuous <sup>2</sup>
Total Residual Chlorine <sup>3</sup>	-	-	-	0.011 mg/l	0.019 mg/l	1/Month	Grab
Ammonia	-	-	-	2.1 mg/l	4.2 mg/l	1/Month	Grab
Copper	-	-	-	0.028 mg/l	0.039 mg/l	1/Month	Grab
Mercury <sup>4</sup>	-	-	-	MR <sup>1</sup>	MR <sup>1</sup>	1/Month	Grab
pH (April – October)	-	-	6.0 s.u.	-	9.0 s.u.	1/Month	Grab
pH (November – March)	-	-	6.0 s.u.	-	8.5 s.u.	1/Month	Grab

<sup>1</sup>MR: Monitor and Report

<sup>2</sup>See Part II.J.1

<sup>3</sup>See Part V.A.5

<sup>4</sup>See Part V.A.4

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s) unless otherwise specified: after discharge but prior to mixing with the receiving stream.



## B. Effluent Toxicity Limitations and Monitoring Requirements

1. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall 001: once through noncontact cooling water to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Quarterly Average <sup>1</sup>	Maximum <sup>1</sup>	Measurement Frequency	Sample Type
WET Chronic Testing @ CTC= 100%	25 % <sup>2</sup>	40 % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab
Whole Effluent Toxicity Chronic Testing -Reproduction @ CTC= 100%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab
Whole Effluent Toxicity Chronic Testing - Mortality @ CTC= 100%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab

<sup>1</sup>Quarterly average is defined as the mean of percent effects for all valid tests performed during the monitoring period following the procedures given in Part V.B.1.d. Maximum is defined as the highest percent effect of all valid tests performed during the monitoring period following the procedures in Part V.B.1.d.

<sup>2</sup>See Part V.B.1 for additional toxicity reporting requirements. MR = Monitor and Report.

<sup>3</sup>Valid tests must be separated by at least 13 days (from the time the first sample is taken to start one test until the time the first sample is taken to start a different test). There is no restriction on when a new test may begin following a failed or invalid test.

- a. Samples used to demonstrate compliance with the discharge limitations and monitoring requirements specified above shall be taken at or near the final point-of-discharge but, prior to mixing with the receiving waters or other waste streams.
- b. If only one valid test is conducted during a quarter, results from that test must be used to assess compliance with the quarterly average limit as well as the maximum limit. If more than one valid test is completed during the quarter, the mean percent inhibition of all valid tests must be used to demonstrate compliance with the quarterly average limit.
- c. Valid test results from split samples shall be reported on the DMR. For reporting an average on the DMR, individual valid results for each test from a split sample are averaged first to determine a sample value. That value is averaged with other sample results obtained in the reporting period and the average of all sample results reported. For reporting the maximum on the DMR, individual valid results for each test from a split sample are averaged first to determine a sample value. That value is compared to other sample results obtained in the reporting period and the maximum of all sample results reported. For the purposes of reporting, split samples are reported as a single sample regardless of the number of times it is split. All laboratories used shall be identified on the DMR attachment.

## B. Effluent Toxicity Limitations and Monitoring Requirements

2. During the period beginning on the effective date of this permit and lasting until one year after the effective date of this permit, the permittee is authorized to discharge from outfall 012: storm water runoff from the north/northeast area of the plant site from yard drains, roof drains, refueling water storage tank pit drains, industrial and CDRM coolers and drainage from the Turbine Building Closed Cycle Cooling System Cooling Towers to the Broad River.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Whole Effluent Toxicity Acute Testing @ ATC= 100%	-	0*	1/Quarter	Grab
Whole Effluent Toxicity Acute Testing - NOEC	-	MR***%	1/Quarter	Grab

\* Report "0" if test passes or "1" if test fails in accordance with Part V.2.a,b,c(1),d

\*\* MR = Monitor and Report the NOEC (as a percent) in accordance with Part V.2.a,b,c(2),d

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: at or near the discharge, but prior to mixing with the receiving waters.

## B. Effluent Toxicity Limitations and Monitoring Requirements

3. During the period beginning on one year after the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall 012: storm water runoff from the north/northeast area of the plant site from yard drains, roof drains, refueling water storage tank pit drains, industrial and CDRM coolers and drainage from the Turbine Building Closed Cycle Cooling System Cooling Towers to the Broad River.

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Quarterly Average <sup>1</sup>	Maximum <sup>1</sup>	Measurement Frequency	Sample Type
WET Chronic Testing @ CTC= 100%	25 % <sup>2</sup>	40 % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab
Whole Effluent Toxicity Chronic Testing -Reproduction @ CTC= 100%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab
Whole Effluent Toxicity Chronic Testing - Mortality @ CTC= 100%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab

<sup>1</sup>Quarterly average is defined as the mean of percent effects for all valid tests performed during the monitoring period following the procedures given in Part V.B.3.d. Maximum is defined as the highest percent effect of all valid tests performed during the monitoring period following the procedures in Part V.B.3.d.

<sup>2</sup> See Part V.B.3 for additional toxicity reporting requirements. MR = Monitor and Report.

<sup>3</sup> Valid tests must be separated by at least 13 days (from the time the first sample is taken to start one test until the time the first sample is taken to start a different test). There is no restriction on when a new test may begin following a failed or invalid test.

- Samples used to demonstrate compliance with the discharge limitations and monitoring requirements specified above shall be taken at or near the final point-of-discharge but, prior to mixing with the receiving waters or other waste streams.
- If only one valid test is conducted during a quarter, results from that test must be used to assess compliance with the quarterly average limit as well as the maximum limit. If more than one valid test is completed during the quarter, the mean percent inhibition of all valid tests must be used to demonstrate compliance with the quarterly average limit.
- Valid test results from split samples shall be reported on the DMR. For reporting an average on the DMR, individual valid results for each test from a split sample are averaged first to determine a sample value. That value is averaged with other sample results obtained in the reporting period and the average of all sample results reported. For reporting the maximum on the DMR, individual valid results for each test from a split sample are averaged first to determine a sample value. That value is compared to other sample results obtained in the reporting period and the maximum of all sample results reported. For the purposes of reporting, split samples are reported as a single sample regardless of the number of times it is split. All laboratories used shall be identified on the DMR attachment.

## B. Effluent Toxicity Limitations and Monitoring Requirements

4. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall 014: combination of internal Outfalls 005, 06A, 06B and 008 to the Monticello Reservoir

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Quarterly Average <sup>1</sup>	Maximum <sup>1</sup>	Measurement Frequency	Sample Type
WET Chronic Testing @ CTC= 100%	25 % <sup>2</sup>	40 % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab
Whole Effluent Toxicity Chronic Testing -Reproduction @ CTC= 100%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab
Whole Effluent Toxicity Chronic Testing - Mortality @ CTC= 100%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/Quarter <sup>3</sup>	Grab

<sup>1</sup>Quarterly average is defined as the mean of percent effects for all valid tests performed during the monitoring period following the procedures given in Part V.B.4.d. Maximum is defined as the highest percent effect of all valid tests performed during the monitoring period following the procedures in Part V.B.4.d.

<sup>2</sup>See Part V.B.4 for additional toxicity reporting requirements. MR = Monitor and Report.

<sup>3</sup>Valid tests must be separated by at least 13 days (from the time the first sample is taken to start one test until the time the first sample is taken to start a different test). There is no restriction on when a new test may begin following a failed or invalid test.

- Samples used to demonstrate compliance with the discharge limitations and monitoring requirements specified above shall be taken at or near the final point-of-discharge but, prior to mixing with the receiving waters or other waste streams.
- If only one valid test is conducted during a quarter, results from that test must be used to assess compliance with the quarterly average limit as well as the maximum limit. If more than one valid test is completed during the quarter, the mean percent inhibition of all valid tests must be used to demonstrate compliance with the quarterly average limit.
- Valid test results from split samples shall be reported on the DMR. For reporting an average on the DMR, individual valid results for each test from a split sample are averaged first to determine a sample value. That value is averaged with other sample results obtained in the reporting period and the average of all sample results reported. For reporting the maximum on the DMR, individual valid results for each test from a split sample are averaged first to determine a sample value. That value is compared to other sample results obtained in the reporting period and the maximum of all sample results reported. For the purposes of reporting, split samples are reported as a single sample regardless of the number of times it is split. All laboratories used shall be identified on the DMR attachment.

### C. Groundwater Monitoring Requirements

1. During the period beginning on the effective date and lasting through the expiration date, each of the monitoring wells, GW 8, 9, 12, 13A & 15, shall be sampled by the permittee as specified below:

<u>PARAMETER</u>	<u>MEASUREMENT FREQUENCY</u>	<u>SAMPLE METHOD</u>
Water Table Elevation, MSL tenth/feet	Semiannually	Bail Method
Ammonia	Semiannually	Bail Method
Field pH, standard units	Semiannually	Bail Method
Field Specific Conductivity, umhos/cm	Semiannually	Bail Method
Iron, Total, mg/l	Semiannually	Bail Method
Lead, Total, mg/l	Semiannually	Bail Method
Nitrate	Semiannually	Bail Method
Sulfate, mg/l	Semiannually	Bail Method
Total Dissolved Solids, mg/l	Semiannually	Bail Method

2. Sample collection methods shall be in accordance with EPA's "Environmental Investigations Standard Operating Procedures and Quality Assurance Manual", November 2001, and the most recent version of SCE&G/VC Summer Groundwater Monitoring Plan.
3. All groundwater monitoring wells must be properly maintained at all times.
4. On an annual basis, the monitoring wells shall be sampled for Volatile Organic Compounds – EPA Method 8260.

D. Sludge Monitoring Requirements

N/A

E. Soil Monitoring Requirements

N/A

#### Part IV. Schedule of Compliance

##### A. Schedule(s)

###### 1. For Whole Effluent Toxicity limitations on Outfall 012:

The permittee shall achieve compliance with the effluent Toxicity limitations specified for discharges in accordance with the following schedule:

- (a). Within 90 days of the effective date of this permit, the permittee shall submit to the Department a mixing zone study plan for alternate toxicity requirements.
- (b). In sufficient time to attain compliance with the proposed limit but not less than 90 days before the final compliance date, complete the mixing zone study and submit a final report for Departmental approval accompanied by a written request for a permit modification on toxicity. The final report shall include:
  - (i) Discussion of the toxicity requirements.
  - (ii) The proposed test concentrations for acute and chronic toxicity, as appropriate, which are justified by the demonstration.
  - (iii) The mixing zone dimensions.
  - (iv) A demonstration that the mixing zone has been minimized in accordance with Water Classifications & Standards (R.61-68) Section C.7.
  - (v) A statement as to whether the discharge will comply with the proposed limit along with a summary of the data used in determining this.
- (c). Interim reports of progress describing measures to comply with the toxicity limits shall be submitted to the Department every nine months beginning (nine months from the issuance date) until (the final compliance date). The last date may not be a full nine months.
- (d). On or before (one year after the effective date of the permit), the Permittee shall be in compliance with the WET limitations on Page 31 for Outfall 012.

##### B. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled date.

## Part V. Other Requirements

### A. Effluent Requirements

1. There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the effluent cause a visible sheen on the receiving waters.
2. Unless authorized elsewhere in this Permit, the permittee must meet the following requirements concerning maintenance chemicals for the following waste streams: once-through noncontact cooling water, recirculated cooling water, boiler blowdown water, and air washer water. Maintenance chemicals shall be defined as any man-induced additives to the above-referenced waste streams.
  - a. Detectable amounts of any of the one hundred and twenty-six priority pollutants is prohibited in the discharge, if the pollutants are present due to the use of maintenance chemicals.
  - b. Slimicides, algicides and biocides are to be used in accordance with registration requirements of the Federal Insecticides, Fungicide and Rodenticide Act.
  - c. The use of maintenance chemicals containing bis(tributyltin) oxide is prohibited.
  - d. Any maintenance chemicals added to the above-referenced waste streams must degrade rapidly, either due to hydrolytic decomposition or biodegradation.
  - e. Discharges of maintenance chemicals added to waste streams must be limited to concentrations which protect indigenous aquatic populations in the receiving stream.
  - f. The permittee must keep sufficient documentation on-site that would show that the above requirements are being met. The information shall be made available for on-site review by Department personnel during normal working hours.
  - g. The occurrence of instream problems may necessitate the submittal of chemical additive data and permit modification to include additional monitoring and limitations.
3. The company shall notify SCDHEC in writing no later than sixty (60) days prior to instituting use of any additional maintenance chemicals in the cooling water system. Such notification shall include:
  1. Name and general composition of the maintenance chemical
  2. Quantities to be used
  3. Frequency of use
  4. Proposed discharge concentration
  5. EPA Registration number, if applicable
  6. Aquatic toxicity information
4. Beginning November 1, 2002, the practical quantitation limit (PQL) using the analytical methods stated below shall be used for sampling and reporting results for mercury.



<u>Analytical Method</u>	<u>PQL</u>
EPA 1669/1631C	0.0005 µg/l

The permittee shall use the results obtained from mercury sampling to calculate reasonable potential in accordance with Part II.G.2.d.iii.1 of the permit rationale. Reasonable potential may be evaluated after each sample using the guidelines established in the permit rationale. (In accordance with Part II.J.4.b.(1), zero may be used in the calculation when the PQL stated above is achieved.) At any time reasonable potential is determined not to exist, the permittee may submit a written request to the following address requesting mercury monitoring be discontinued.

S.C. Department of Health and Environmental Control  
Bureau of Water/Industrial, Agricultural and Storm Water Permitting Division  
2600 Bull Street  
Columbia, South Carolina 29201

Upon Departmental concurrence, a new DMR will be sent to the permittee with no mercury monitoring included. If the discharge causes, has the reasonable potential to cause or contributes to an instream water quality violation for mercury based on two years of data, the permit may be reopened to include additional requirements and/or limitations on mercury.

5. The Water Quality-Based Effluent Limitations (WQBEL) for the parameters listed are not quantifiable using EPA-approved analytical methods. Therefore, the practical quantitation limit (PQL) using the analytical method stated below shall be considered as being in compliance with the limit provided appropriate biological monitoring requirements are incorporated into the permit.

<u>Parameter</u>	<u>Analytical Method</u>	<u>PQL</u>
Mercury, Total	EPA 1669/1631C	0.0005 µg/l
Total Residual Chlorine	SM4500C1B, C, D, F or G	50 µg/l

6. This permit may be reopened to eliminate monitoring requirements if reasonable potential is determined not to exist or to include limitations if the discharge causes, has the reasonable potential to cause or contributes to an instream water quality violation for copper, iron and manganese based on two years of data collected at the sampling frequency stated in Part III.

#### B. Whole Effluent Toxicity and Other Biological Monitoring Requirements

1. For the limits identified in Part III.B.1:

- a. A three brood chronic toxicity test shall be conducted at the frequency stated in Part III.B, "Effluent Toxicity Limitations and Monitoring Requirements," using the CTC of 100% and the following test concentrations: 0% (control), 50%, 60%, 71% and 84% effluent. The permittee may add additional test concentrations without prior authorization from the Department provided that the test begins with at least 10 replicates in each concentration and all data is used to determine permit compliance.
- b. The test shall be conducted using EPA Method 1002.0 in accordance with "Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," (EPA/600/4-91/002; 3<sup>rd</sup> ed., 1994) using *Ceriodaphnia dubia* as the test species.

- c. In determining compliance with permit limits for chronic toxicity, the permittee shall use the 3-parameter logistic regression (3PLR) model assuming a Poisson distribution as recommended in the DHEC Bureau of Water document entitled "Options for Data Analysis of Whole Effluent Toxicity Testing Required by NPDES Permits," September 2001 for calculating biological effect (percent inhibition) at the applicable CTC.
- d. Percent effect is the difference between control and test group performance expressed as a percentage of control group performance, or  $\% \text{ effect} = (1 - \frac{\text{test group performance}}{\text{control group performance}}) * 100$ , where performance is survival or reproduction. The permittee shall report the percent effect on both *Ceriodaphnia dubia* survival and reproduction at the CTC. Overall percent effect is the greater of the percent effect on survival and reproduction. Average and maximum overall percent effect shall not exceed the limits on the appropriate limitations page in Part III.B.
- e. A test shall be invalidated if any part of Method 1002.0 is not followed or if the laboratory is not certified at the time the test is conducted. The permittee shall use the additional test acceptance criteria (TAC) identified in the "Options for Data Analysis of Whole Effluent Toxicity Testing Required by NPDES Permits," September 2001. As such, tests must be invalidated if the applicable TACs are not met. The following additional TACs must also be used and applied uniformly to all tests for invalidation during every reporting period:
- (1) The most recent valid reference toxicant test must be within laboratory control limits as determined from individual laboratory control charts.
  - (2) The most recent valid reference toxicant test was completed less than 30 days prior to the completion of the WET test required by this permit.
- f. The Department reserves the right of independent decision regarding the validity, acceptability, or outcome of any test, after review of raw data and/or water chemistry bench sheets.
- g. All valid toxicity test results shall be submitted on the DHEC form entitled "DMR Attachment for Toxicity Test Results" in accordance with Part II.L.4. In addition, results from all invalid tests must be appended to DMRs, including lab control data. The permittee has sole responsibility for scheduling toxicity tests so as to ensure there is sufficient opportunity to complete and report the required number of valid test results for each monitoring period.
- h. If the discharge complies with all applicable toxicity limits for four consecutive quarters, the permittee may request that the Department decrease WET monitoring requirements.
- i. The permittee is responsible for reporting a valid test during each monitoring period. However, the Department acknowledges that invalid tests may occur. All of the following conditions must be satisfied for the permittee to be in compliance with limitations on Whole Effluent Toxicity (WET) for a particular monitoring period when a valid test was not obtained.
- (1) A minimum of five (5) tests have been conducted which were invalid in accordance with Part

V.B.1.e above;

- (2) The data and results of all invalid tests are attached to the DMR;
- (3) At least one additional State-certified laboratory is used after two (2) consecutive invalid tests were determined by the first laboratory. The name(s) and lab certification number(s) of the additional lab(s) shall be reported in the comment section of the DMR; and
- (4) A valid test was reported during each of the previous three reporting periods.

If these conditions are satisfied, the permittee may enter "H" in the appropriate boxes on the toxicity DMR and add the statement to the Comment Section of the DMR that "H indicates invalid tests."

- j. This permit may be modified based on new information that supports a modification in accordance with Regulation 61-9.122.62 and Regulation 61-68.D.

- 2.
  - a. A 48-hour static acute toxicity test shall be conducted at the frequency stated in Part III.B Effluent Toxicity Limitations and Monitoring Requirements using a control and the following effluent dilutions including the acute test concentration (ATC) of : 0% (control), 50%, 60%, 71% 84% and 100% (ATC) effluent. The test shall be conducted using *Ceriodaphnia dubia* as the test organism, in accordance with "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms" EPA/600/4-90/027F.
  - b. If the test group *Ceriodaphnia dubia* survival is less than the control group survival by a percent significant at the 0.05 $\alpha$  level (95 percent one-ended confidence level), the test shall be deemed a failure.
  - c.
    - (1) The permittee must report on the discharge monitoring report (DMR) form whether the test passes or fails at the specified ATC. If the test fails, the number "1" shall be placed on the form. If the test passes, the number "0" shall be placed on the form. If more than one test is performed during a monitoring period (including tests from split samples), the worst case result shall be reported on the DMR. The DMR Attachment for Toxicity Test Results shall also be completed and submitted with the DMR.
    - (2) The permittee must report on the discharge monitoring report (DMR) form the No Observed Effect Concentration (NOEC) of the dilution series noted in (a) above. The NOEC is defined as the highest (least dilute) dilution that is below the lowest (most dilute) dilution that fails according to the criterion in (b) above when each dilution listed in (a) is compared to a common control. Under this definition, dilutions above (less dilute than) the NOEC may pass according to the criterion in (b) above.
  - d. Four consecutive quarters of acceptable toxicity testing results at the ATC may result in reduced testing in lieu of quarterly tests.
- 3. For the limits identified in Part III.B.3:
  - a. A three brood chronic toxicity test shall be conducted at the frequency stated in Part III.B, "Effluent Toxicity Limitations and Monitoring Requirements," using the CTC of 100% and the following test

concentrations: 0% (control), 50%, 60%, 71% and 84% effluent. The permittee may add additional test concentrations without prior authorization from the Department provided that the test begins with at least 10 replicates in each concentration and all data is used to determine permit compliance.

- b. The test shall be conducted using EPA Method 1002.0 in accordance with "Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," (EPA/600/4-91/002; 3<sup>rd</sup> ed., 1994) using *Ceriodaphnia dubia* as the test species.
- c. In determining compliance with permit limits for chronic toxicity, the permittee shall use the 3-parameter logistic regression (3PLR) model assuming a Poisson distribution as recommended in the DHEC Bureau of Water document entitled "Options for Data Analysis of Whole Effluent Toxicity Testing Required by NPDES Permits," September 2001 for calculating biological effect (percent inhibition) at the applicable CTC.
- d. Percent effect is the difference between control and test group performance expressed as a percentage of control group performance, or  $\% \text{ effect} = (1 - \frac{\text{test group performance}}{\text{control group performance}}) * 100$ , where performance is survival or reproduction. The permittee shall report the percent effect on both *Ceriodaphnia dubia* survival and reproduction at the CTC. Overall percent effect is the greater of the percent effect on survival and reproduction. Average and maximum overall percent effect shall not exceed the limits on the appropriate limitations page in Part III.B.
- e. A test shall be invalidated if any part of Method 1002.0 is not followed or if the laboratory is not certified at the time the test is conducted. The permittee shall use the additional test acceptance criteria (TAC) identified in the "Options for Data Analysis of Whole Effluent Toxicity Testing Required by NPDES Permits," September 2001. As such, tests must be invalidated if the applicable TACs are not met. The following additional TACs must also be used and applied uniformly to all tests for invalidation during every reporting period:
  - (1) The most recent valid reference toxicant test must be within laboratory control limits as determined from individual laboratory control charts.
  - (2) The most recent valid reference toxicant test was completed less than 30 days prior to the completion of the WET test required by this permit.
- f. The Department reserves the right of independent decision regarding the validity, acceptability, or outcome of any test, after review of raw data and/or water chemistry bench sheets.
- g. All valid toxicity test results shall be submitted on the DHEC form entitled "DMR Attachment for Toxicity Test Results" in accordance with Part II.L.4. In addition, results from all invalid tests must be appended to DMRs, including lab control data. The permittee has sole responsibility for scheduling toxicity tests so as to ensure there is sufficient opportunity to complete and report the required number of valid test results for each monitoring period.
- h. If the discharge complies with all applicable toxicity limits for four consecutive quarters, the permittee may request that the Department decrease WET monitoring requirements.

- i. The permittee is responsible for reporting a valid test during each monitoring period. However, the Department acknowledges that invalid tests may occur. All of the following conditions must be satisfied for the permittee to be in compliance with limitations on Whole Effluent Toxicity (WET) for a particular monitoring period when a valid test was not obtained.

- (1) A minimum of five (5) tests have been conducted which were invalid in accordance with Part V.B.1.e above;
- (2) The data and results of all invalid tests are attached to the DMR;
- (3) At least one additional State-certified laboratory is used after two (2) consecutive invalid tests were determined by the first laboratory. The name(s) and lab certification number(s) of the additional lab(s) shall be reported in the comment section of the DMR; and
- (4) A valid test was reported during each of the previous three reporting periods.

If these conditions are satisfied, the permittee may enter "H" in the appropriate boxes on the toxicity DMR and add the statement to the Comment Section of the DMR that "H indicates invalid tests."

- j. This permit may be modified based on new information that supports a modification in accordance with Regulation 61-9.122.62 and Regulation 61-68.D.

4. For the limits identified in Part III.B.4:

- a. A three brood chronic toxicity test shall be conducted at the frequency stated in Part III.B, "Effluent Toxicity Limitations and Monitoring Requirements," using the CTC of 100% and the following test concentrations: 0% (control), 50%, 60%, 71% and 84% effluent. The permittee may add additional test concentrations without prior authorization from the Department provided that the test begins with at least 10 replicates in each concentration and all data is used to determine permit compliance.
- b. The test shall be conducted using EPA Method 1002.0 in accordance with "Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," (EPA/600/4-91/002; 3<sup>rd</sup> ed., 1994) using *Ceriodaphnia dubia* as the test species.
- c. In determining compliance with permit limits for chronic toxicity, the permittee shall use the 3-parameter logistic regression (3PLR) model assuming a Poisson distribution as recommended in the DHEC Bureau of Water document entitled "Options for Data Analysis of Whole Effluent Toxicity Testing Required by NPDES Permits," September 2001 for calculating biological effect (percent inhibition) at the applicable CTC.

- d. Percent effect is the difference between control and test group performance expressed as a percentage of control group performance, or  $\% \text{ effect} = (1 - \frac{\text{test group performance}}{\text{control group performance}}) * 100$ ,

where performance is survival or reproduction. The permittee shall report the percent effect on both *Ceriodaphnia dubia* survival and reproduction at the CTC. Overall percent effect is the greater of

the percent effect on survival and reproduction. Average and maximum overall percent effect shall not exceed the limits on the appropriate limitations page in Part III.B.

- e. A test shall be invalidated if any part of Method 1002.0 is not followed or if the laboratory is not certified at the time the test is conducted. The permittee shall use the additional test acceptance criteria (TAC) identified in the "Options for Data Analysis of Whole Effluent Toxicity Testing Required by NPDES Permits," September 2001. As such, tests must be invalidated if the applicable TACs are not met. The following additional TACs must also be used and applied uniformly to all tests for invalidation during every reporting period:
  - (1) The most recent valid reference toxicant test must be within laboratory control limits as determined from individual laboratory control charts.
  - (2) The most recent valid reference toxicant test was completed less than 30 days prior to the completion of the WET test required by this permit.
- f. The Department reserves the right of independent decision regarding the validity, acceptability, or outcome of any test, after review of raw data and/or water chemistry bench sheets.
- g. All valid toxicity test results shall be submitted on the DHEC form entitled "DMR Attachment for Toxicity Test Results" in accordance with Part II.L.4. In addition, results from all invalid tests must be appended to DMRs, including lab control data. The permittee has sole responsibility for scheduling toxicity tests so as to ensure there is sufficient opportunity to complete and report the required number of valid test results for each monitoring period.
- h. If the discharge complies with all applicable toxicity limits for four consecutive quarters, the permittee may request that the Department decrease WET monitoring requirements.
- i. The permittee is responsible for reporting a valid test during each monitoring period. However, the Department acknowledges that invalid tests may occur. All of the following conditions must be satisfied for the permittee to be in compliance with limitations on Whole Effluent Toxicity (WET) for a particular monitoring period when a valid test was not obtained.
  - (1) A minimum of five (5) tests have been conducted which were invalid in accordance with Part V.B.1.e above;
  - (2) The data and results of all invalid tests are attached to the DMR;
  - (3) At least one additional State-certified laboratory is used after two (2) consecutive invalid tests were determined by the first laboratory. The name(s) and lab certification number(s) of the additional lab(s) shall be reported in the comment section of the DMR; and
  - (4) A valid test was reported during each of the previous three reporting periods.

If these conditions are satisfied, the permittee may enter "H" in the appropriate boxes on the toxicity DMR and add the statement to the Comment Section of the DMR that "H indicates invalid tests."

- j. This permit may be modified based on new information that supports a modification in accordance with Regulation 61-9.122.62 and Regulation 61-68.D.

C. Groundwater Requirements

N/A

D. Sludge and Other Land Application Requirements

1. All waste oil and solid and hazardous waste shall be disposed of in accordance with the rules and regulations of SCDHEC's Bureau of Land and Waste Management, including intake screen backwash.

E. Other Conditions

1. The wastewater treatment plant has been assigned a classification of **Group II-B** in the Permit to Construct which was issued by the Department. This classification corresponds to an operator with a Grade of **C-B**.
2. The permittee shall maintain an all weather access road to the wastewater treatment plant, land application areas, and appurtenances at all times.
3. The permittee shall monitor all parameters consistent with conditions established by this permit on the 1st Monday of every calendar month, unless otherwise approved by this Department. Additional monitoring, as necessary to meet the frequency requirements of this permit shall be performed by the permittee.
4. The South Carolina Department of Health and Environmental Control has determined pursuant to Section 316(b) of the Act that the location, design, construction, and capacity of the cooling water intake structure reflects the best technology available for minimizing adverse environmental impact. If the cooling water intake structure is relocated a new Section 316(b) report will be required.
5. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluids.
6. The Permittee shall not store soil nor other similar erodible materials in a manner in which runoff is uncontrolled, nor conduct construction activities in a manner which produces uncontrolled runoff unless such uncontrolled runoff has been specifically approved by SCDHEC. "Uncontrolled" shall mean without sedimentation basin or other controls approved by SCDHEC.
7. Discharge of any waste resulting from the combustion of chemical metal cleaning wastes, toxic wastes, or hazardous wastes to any waste stream that ultimately discharges to waters of the United States is prohibited unless specifically authorized elsewhere in this permit.
8. The permittee shall maintain at the permitted facility a record of the method(s) used in measuring the discharge flow:

Estimate – pump curve, production chart, water use records

Instantaneous – bucket and watch, weir and gauge, parshall flume  
Continuous – totalizer, continuous chart recorder

9. Low volume waste sources shall mean, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in this permit. Low volume wastes sources include, but are not limited to, wastewaters from wet scrubber air pollution control systems, ion exchange water treatment systems, water treatment systems, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included.
10. a. If the Permittee elects to determine site specific limits for metals, the procedure must be one of the following:
  1. The Recalculation Procedure as specified in Appendix B, "The Recalculation Procedure," which is contained in the "Interim Guidance On Determination and Use of Water-Effect Ratios for Metals," February 1994 (EPA Manual EPA-823-B-94-001). Sections IV and V of the "Guidelines For Deriving Numerical National Water Quality Criteria For the Protection of Aquatic Organisms and Their Uses," 1985 (National Technical Information Service Number PB-85-227049) will be used in conjunction with the "Interim Guidelines" in the recalculation procedure.
  2. The Water-Effect Ratio Procedure as specified in the "Interim Guidance on Determination and Use of Water-Effect Ratios For Metals," February 1994 (EPA Manual EPA-823-B-94-001).
  3. The Resident Species Procedure as specified in "Guidelines for Deriving Numerical Aquatic Site Specific Water Quality Criteria by Modifying National Criteria," October 1984 (EPA Manual EPA-600/3-84-099).
  4. An EPA-Approved, Scientifically-Defensible Procedure that is also accepted by the Department.
- b. Prior to determining a site specific limit for metals, the Permittee will advise the Department of their intention and will provide, as a minimum within 120 days of the effective date of this Permit, the following:
  1. The procedure that will be followed.
  2. A Plan of Study that includes any proposed testing, as well as any data collection and analysis.
  3. A schedule for initiating and completing any testing, data collection, documentation review, information analysis and compilation of the final report that is to be submitted. The schedule, when approved by the Department, will be incorporated into and become part of the Permit requirements.
- c. The Plan of Study will be submitted to the Department for review and approval prior to beginning the study. Upon approval, the Plan of Study will be incorporated into and made a part of this Permit by reference. Any proposed modifications to the approved Plan of Study must be approved by the Department prior to their being incorporated into the approved Plan of Study.
- d. Interim reports on the progress of the site specific limits determination will be submitted to the



Department every six months from the effective date of this Permit until the final report is submitted to and approved by the Department. Interim reports will be due on the last working day of the month.

- e. The proposed site specific limit for any parameter shall not exceed a value that protects human health according to the Water Classifications and Standards Regulation (R.61-68).
- f. Should a site specific limit be justified by the Permittee and accepted by this Department, this Permit would be modified (subject to EPA Region IV certification for major facilities) to change the limits contained in Part I to conform to the limits contained in the final report when approved by the Department. The action to change the permit limits may also require a modification to the Schedule of Compliance to allow for construction or other activities, if necessary. In certain situations, the detection limit as determined by the Department may be the limiting condition.

RATIONALE

Permitting Engineer: Christina H. Lewis

October 14, 2002

Name of Facility: VC Summer Nuclear Station

NPDES Permit No.: SC0030856

Facility Rating: Major ☒ (EPA review required)

Minor ☐ (EPA review may be required; see below)

Facility Location: Jenkinsville, South Carolina.

County: Fairfield County

Watershed: Basin 05 (Broad River Basin)

Permit based on NPDES Permit Application: 2C & 2E

Application Received Date: 4/17/2002

Issuance (New) ☐

Reissuance ☒

Modification ☐

If this application is for a new or expansion of an existing facility, an antidegradation review may be required per the requirements of R.61-68.D.

Facility Description (include SIC code): This facility is a nuclear power plant. Discharges consist of process wastewater through Outfalls 003 & 014 and internal outfalls 004, 06A, 06B, 007, & 008. Outfall 001 discharges once-through non-contact cooling water and 005 is sanitary wastewater. SIC Code is 4911

→Is any discharge subject to any of the Primary Industry Categories identified in R.61-9.122, Appendix A as listed at right? Yes (If yes, EPA review required.)

Indicate category(ies) applicable and Regulations governing the discharge: Steam Electric Guidelines

Receiving Water: Lake Monticello and Broad River

Receiving Water Classification (see R.61-69 for water classifications): Fresh Water

→Does this discharge(s) have the potential to affect waters in another state? No (If yes, EPA review required.)

Is the discharge to Impaired Waters?: Yes

If Yes, list the monitoring station number and parameter(s) causing impairment: B-337 for fecal coliform

→Average Discharge Flow: ( $Q_d$ ) (MGD): 674.92 (from permit application) (EPA review required for any average discharge exceeding 0.5 MGD)

→Is this permit for a Federal facility with a daily average flow greater than 0.05 MGD (from all sources)? No (If yes, EPA review required.)

Primary Industry Categories

Adhesives and sealants  
Aluminum forming  
Auto and other laundries  
Battery manufacturing  
Coal mining  
Coil coating  
Copper forming  
Electrical and electronic components  
Electroplating  
Explosives manufacturing  
Foundries  
Gum and wood chemicals  
Inorganic chemicals manufacturing  
Iron and steel manufacturing  
Leather tanning and finishing  
Mechanical products manufacturing  
Nonferrous metal manufacturing  
Ore mining  
Organic chemicals manufacturing  
Paint and ink formulation  
Pesticides  
Petroleum refining  
Pharmaceutical preparations  
Photographic equipment and supplies  
Plastics processing  
Plastic and synthetic materials manufacturing  
Porcelain enameling  
Printing and publishing  
Pulp and paper mills  
Rubber processing  
Soap and detergent manufacturing  
Steam electric power plants  
Textile Mills  
Timber Products Processing

Stream Data from Wasteload Allocation dated (4/18/02)

Receiving Stream Flow Data	cfs	MGD
7Q10 at discharge point ( $Q_{7Q10}$ )	0.000	0.000
Average Annual Flow at discharge point ( $AAF_d$ )	0.000	0.000

Is the discharge above a drinking water intake? Yes, Intake #S20103, City of Columbia, Broad River  
Map showing the SWP area and the discharge point included: Yes

Source Water Protection Stream Flow Data	cfs	MGD
7Q10 at source water protection area boundary ( $Q_{7Q10}$ )	592.820	382.465
Average Annual Flow at source water protection area boundary ( $AAF_s$ )	2732.00 0	1762.58 0

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from 1/97 - 5/02 has been used to evaluate permit limitations.

## I. GENERAL INFORMATION

- The effluent from this facility may be subject to the requirements of any of the following regulations: R.61-9.125, 129, 133, and 403; 40 CFR Part 136; Subchapter N (40 CFR Parts 400 through 402 and 404 through 471); R.61-9.503, R.61-9.504 and R.61-9.505.
- 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.
- Under R.61-9.124.8 (Fact Sheet), a fact sheet shall be prepared for every draft permit for a major NPDES facility or activity, for every Class I sludge management facility, for every NPDES draft permit that incorporates a variance or requires an explanation under section 124.56(b), and for every draft permit which the Department finds is the subject of wide-spread public interest or raises major issues. The Rationale will be included as an attachment to the Fact Sheet prepared under this regulation.
- 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.

## II. RATIONALE GUIDANCE PROCEDURES

- The receiving stream 7Q10, annual average stream flow at the discharge point, and 7Q10 and annual average stream flow 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 and Annual Average Flow are based on information published or verified by the USGS or an estimate extrapolation from published or verified USGS data. These flows may be adjusted by the Wasteload Allocation Section to account for existing water withdrawals that impact the stream flow. The 7Q10 (or 30Q5 if provided by the applicant) and annual average flow at the discharge point or 7Q10 (or 30Q5 if provided by the applicant) and annual average flow 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." See R.61-68.E.12.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<sub>10</sub>). 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 organoleptic consumption, water and organism consumption (W/O), and drinking water Maximum Contaminant Levels (MCLs), they shall be applied as appropriate. The most stringent of the criteria shall be applied to protect the existing and classified uses of the waters of the State. See R.61-68.E.12.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.11.
- E. Sampling Frequency: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit (R.61-9.122.41). Typically requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge but in no case less than once a year (R.61-9.122.44)
- F. Compliance Schedules:
1. A person issued an NPDES permit by the Department who is not in compliance with applicable effluent standards and limitations or other requirements contained therein at the time the permit is issued, shall be required to achieve compliance within a period of time as set forth by the Department, with effluent standards and limitations, with water quality standards, or with specific requirements or conditions set by the Department. The Department shall require compliance with terms and conditions of the permit in the shortest reasonable period of time as determined thereby or within a time schedule for compliance which shall be specified in the issued permit.
  2. If a time schedule for compliance specified in an NPDES permit which is established by the Department, exceeds nine (9) months, the time schedule shall provide for interim dates of achievement for compliance with certain applicable terms and conditions of the permit. (R.61-9.122.47)

G. Procedure for establishing effluent limitations:

1. Effluent limits (mass and concentration) for Five day Biochemical Oxygen Demand (BOD<sub>5</sub>), Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO), Total Ammonia Nitrogen (as N), and Nutrients are established by the Wasteload Allocation (WLA) Section, with consideration given to technology-based limitations.

- a. Five day Biochemical Oxygen Demand BOD<sub>5</sub>, Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO):

Effluent limits for conventional oxygen demanding constituents (BOD<sub>5</sub>, UOD and DO) are established to protect in-stream water quality and uses, while utilizing a portion of the assimilative capacity of the receiving water. The ability of a water body to assimilate oxygen-demanding substances is a function of its physical and chemical characteristics above and below the discharge point. Various mathematical techniques, called models, have been developed to estimate this capacity. The Department follows the procedures as outlined in the "State/EPA Region IV Agreement on the Development of Wasteload Allocations/Total Maximum Daily Loads and NPDES Permit Limitations" dated October 30, 1991 (as updated) for determining the assimilative capacity of a given water body. Mathematical models such as QUAL2E and QUAL2E-UNCAS are used in accordance with "Enhanced Stream Water Quality Models QUAL2E and QUAL2E-UNCAS: Documentation and Users Manual" (EPA/600/3-87/007; dated May 1987) as updated. BOD<sub>5</sub> and UOD values determined from modeling results will be used in permitting as monthly average derived limits ( $C_{wla}$ ). Daily maximum derived limits will be determined by multiplying the monthly average value by two.

For facilities subject to effluent guidelines limitations or other technology-based limitations, BOD<sub>5</sub> will also be evaluated in accordance with the applicable industrial categorical guidelines. These parameters will be identified in Part III of this rationale when they are applicable to the permit.

- b. Total Ammonia Nitrogen (as N):

Ammonia limitations based on oxygen demand will be determined from modeling information as described above. These values will be used as monthly average derived limits and a daily maximum will be determined by multiplying the monthly average derived limit by two. These values will be compared with the ammonia water quality criteria for protection of aquatic life from Regulation 61-68, Attachment 3 and any categorical limitations. The more stringent of the limitations will be imposed. Calculations for aquatic life criteria and other wasteload recommendations will be shown later in Part III 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.9, the Department controls the nutrients as prescribed below. Nutrient limitations will be determined from the best available information and/or modeling performed by the Wasteload Allocation Section to meet these water quality standards.

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

- ii. Numeric nutrient criteria for lakes are based on an ecoregional approach which takes into account the geographic location of the lakes within the State and are listed below. These numeric criteria are applicable to lakes of 40 acres or more. Lakes of less than 40 acres will continue to be protected by the narrative criteria.
    1. for the Blue Ridge Mountains ecoregion of the State, total phosphorus shall not exceed 0.02 mg/l, chlorophyll *a* shall not exceed 10 ug/l, and total nitrogen shall not exceed 0.35 mg/l
    2. for the Piedmont and Southeastern Plains ecoregions of the State, total phosphorus shall not exceed 0.06 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l
    3. for the Middle Atlantic Coastal Plains ecoregion of the State, total phosphorus shall not exceed 0.09 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.
  - iii. In evaluating the effects of nutrients upon the quality of lakes and other waters of the State, the Department may consider, but not be limited to, such factors as the hydrology and morphometry of the waterbody, the existing and projected trophic state, characteristics of the loadings, and other control mechanisms in order to protect the existing and classified uses of the waters.
  - iv. The Department shall take appropriate action, to include, but not limited to: establishing numeric effluent limitations in permits, establishing Total Maximum Daily Loads, establishing waste load allocations, and establishing load allocations for nutrients to ensure that the lakes attain and maintain the above narrative and numeric criteria and other applicable water quality standards.
  - v. The criteria specific to lakes shall be applicable to all portions of the lake. For this purpose, the Department shall define the applicable area to be that area covered when measured at full pool elevation.
2. Effluent concentration limits ( $C_{efflim}$ ) for parameters other than the parameters listed in G.1.a-c above are established using the following procedures:
- |            |   |
|------------|---|
| $Q_{7Q10}$ | 7Q10 of the receiving stream at the discharge point in mgd. (may require adjustment for withdrawals)                      |
| $AAF_d$    | Average Annual Flow (AAF) of the receiving stream at the discharge point in mgd. (may require adjustment for withdrawals) |
| $Q_{7Q10}$ | 7Q10 of the receiving stream at the SWP Area boundary in mgd.   |
| $AAF_s$    | Average Annual Flow (AAF) of the receiving stream at the SWP Area boundary in mgd.  |
| $Q_s$      | 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 of the receiving stream 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 stream 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 where it enters the stream.
- 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 stream.

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

$DF_3$ : Dilution factor based on the 7Q10 at the source water protection area boundary for protection of a proposed or existing water intake downstream of the discharge ( $Q_{7Q10}$ ). 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.12.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 stream and consuming aquatic organisms from the same stream is provided by this criterion, but drinking the water withdrawn from the stream 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 drinking water intake to meet this requirement.

For discharges affecting the primary SWP area, dilution will be determined using the largest  $TOT_{10}$  flow 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  $TOT_{10}$  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.12.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 stream after conventional treatment per R.61-

68.G.8 and 10 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 drinking water intake to meet this requirement.

For discharges affecting the primary SWP area, dilution will be determined using the largest  $TOT_{10}$  flow 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  $TOT_{10}$  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.12.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 stream and consuming aquatic organisms from the same stream is provided by this criterion, but drinking the water withdrawn from the stream 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 drinking water intake to meet this requirement.

For discharges affecting the primary SWP area, dilution will be determined using the largest  $TOT_{10}$  flow 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  $TOT_{10}$  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.12.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 stream and consuming aquatic organisms from the same stream is provided by this criterion, but drinking the water withdrawn from the stream 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 drinking water intake to meet this requirement.

For discharges affecting the primary SWP area, dilution will be determined using the largest  $TOT_{10}$  flow 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 TOT<sub>10</sub> at the beginning of the basin, even if it is outside the State boundaries (e.g. North Carolina).

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

Dilution Factors (using formulas above):

$DF_1$	1.00
$DF_2$	1.00
$DF_3$ , if applicable	1.57
$DF_4$ , if applicable	3.61

- b. Determine monthly average derived limits using the following procedures:

$WQS_a$  Freshwater Stream 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

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

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

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

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

$C_{aqlife}$  Concentration limit derived from aquatic life data

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

$C_{ol}$  Concentration limit derived from organoleptic data

$C_b$  Background concentration of the concerned parameter in mg/l determined from ambient monitoring data or data provided by applicant. The 90<sup>th</sup> 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 per the procedures used for 303(d) listing. 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 per the procedures used for 303(d) listing. 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 limit for protection of Aquatic Life ( $C_{aqlife}$ )

1. The following guidelines apply to determining aquatic life limits:

- 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. Exceptions exist based on EPA criteria and are indicated for specific parameters. 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.
  - b. If only a CMC exists for a particular parameter, a daily maximum derived permit limit only (no monthly average) will be set using that value, after consideration of dilution and background concentrations. 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) considering an assumed coefficient of variation (CV) of 0.6 and 95<sup>th</sup> percentile occurrence probability.
  - 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 (ACR) of 10 and a sensitivity factor of 3.3, for an acceptable instream concentration in order to protect against chronic toxicity effects (from R.61-68.E.14.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 considering an assumed coefficient of variation (CV) of 0.6 and 95<sup>th</sup> percentile occurrence probability.
  - 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 (from R.61-68.E.14.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 considering an assumed coefficient of variation (CV) of 0.6 and 95<sup>th</sup> percentile occurrence probability.
  - 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 considering an assumed coefficient of variation (CV) of 0.6 and 95<sup>th</sup> percentile occurrence probability.
2. Consider the background concentration ( $C_b$ ) of the parameter of concern. If the background

concentration is equal to or greater than the applicable stream standard ( $WQS$ , as defined above) for the parameter of concern, then the derived concentration limit ( $C_{aqlife}$ ) for that parameter and for the protection of that stream standard, is established equal to the stream 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 ( $C_{eff\lim}$ ) at a level higher than the derived limit, but no higher than the natural background concentration. In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (See R.61-68.E.12.c.2). i.e.

If  $C_b$  is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then

$$C_{aqlife} = WQS.$$

If  $C_b$  is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then

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

Otherwise, the limits are established as described in Item 3 or 4 below.

3. For the parameters listed in Table A below, Regulation R.61-68 Section E.12 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 Attachment 1 "Conversion Factors for Dissolved Metals" and Attachment 2 "Parameter for Calculating Freshwater Dissolved Metals Criteria that are Hardness-Dependent". The following equations and constants will be used to calculate aquatic life metals limits based on the Federal Register data. The water quality standard for these metals (CCC or CMC) will also be adjusted using this approach in accordance with Regulation 61-68.E.12.d(3) for evaluation of ambient water quality.

$TSS_e$	Effluent Total Suspended Solids (TSS) concentration in mg/l from actual or proposed monthly average permit limits.
$TSS_b$	Background or in-stream Total Suspended Solids (TSS) concentration. The background TSS is assumed to be 1 mg/l in the absence of actual stream data based on the 5th percentile of ambient TSS data on South Carolina streams from 1993-2000.
$TSS_{avg}$	Average in-stream (mixed) TSS concentration.
$CF$	Conversion factor considered most relevant in fresh water for aquatic life as defined by EPA in dissolved metals documents for each listed metal
$H$	Hardness in mg/l of $CaCO_3$ . Per R.61-68.E.12.a(3), the CMC and CCC are based on a hardness of 25 mg/l if the ambient hardness is less than 25 mg/l. Concentrations of hardness less than 400 mg/l may be based on the actual mixed stream hardness if it is greater than 25 mg/l and less than 400 mg/l and 400 mg/l if the ambient hardness is greater than 400 mg/l. The background hardness is assumed to be 25 mg/l in the absence of actual stream data. Mixed stream hardness may be determined using effluent hardness and actual stream hardness.
$K_{sp}$	Metal-specific equilibrium constant
$a$	Metal-specific constant

$K_p$	Linear partition coefficient
$K_{pb}$	Linear partition coefficient for use in the derivation of an adjusted water quality standard
$C_d$	Dissolved phase metal concentration
$C_t$	Total metal concentration
$S$	a constant to represent the CCC or CMC

The following table lists the values for the constants, the CCC and CMC, the recommended values of the conversion factor (CF), and the adjusted CCC and CMC:

Table A

Parameter	$k_{po}$	$a$	CMC ( $\mu\text{g/l}$ )	$CF_{CMC}$	CCC ( $\mu\text{g/l}$ )	$CF_{CCC}$
Arsenic	$0.48 \times 10^6$	-0.7286	340	100	150	100
Cadmium	$4.00 \times 10^6$	-1.1307	0.95*	100*	0.83*	96.7*
Chromium+3	$3.36 \times 10^6$	-0.9304	580*	31.6	68*	86
Chromium+6	$3.36 \times 10^6$	-0.9304	16	98.2	11	96.2
Copper	$1.04 \times 10^6$	-0.7436	3.8*	96	2.9*	96
Lead	$0.31 \times 10^6$	-0.1856	14*	99.3*	0.54*	99.3*
Mercury	$2.91 \times 10^6$	-1.1356	1.6	85	0.091	85
Nickel	$0.49 \times 10^6$	-0.5719	150*	99.8	16*	99.7
Zinc	$1.25 \times 10^6$	-0.7038	37*	97.8	37*	98.6

\* The equations for calculating the CCC, CMC, and conversion factors are given in the Appendix to Regulation 61-68 and Attachments 1 and 2 for each parameter. The values given for the CMC and CCC and CF in the table are based on 25 milligrams/liter (mg/l) hardness (as expressed as  $\text{CaCO}_3$ ).

Effluent TSS concentration ( $TSS_e$ ) (mg/l) (based on monthly average permit limit)	6.4
Background or In-stream TSS concentration ( $TSS_b$ ) (mg/l)	1
Calculated In-stream Average TSS concentration after mixing ( $TSS_{mix}$ ) (mg/l)	6.40

From Technical Guidance Manual for Performing Waste Load Allocations Book II, Rivers and Streams, EPA/440/484/022:

$$S = CCC \text{ or } CMC$$

$$C_d = S \times CF$$

To determine the adjusted water quality standard ( $WQS_{adj}$ ), use  $S$  and the equation for  $C_d$  above and the following equations:

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

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

To determine the effluent limit ( $C_{aqlife}$ ), use  $S$  and the equation for  $C_d$  above and the

following equations:

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

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

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

Once  $C_t$  has been calculated, it is multiplied by  $DF_t$  and background concentrations are accounted for to obtain the monthly average derived limit ( $C_{aqlife}$ ):

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

4. For all other parameters not included in paragraph 3, Table A, monthly average derived limits ( $C_{aqlife}$ ) for aquatic life protection are calculated as follows:

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

ii. Determine derived limit 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 a drinking water intake or source water protection area (i.e., if there is no intake downstream of the discharge).
- 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<sup>th</sup> 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  $M$ . CV is assumed to be 0.6 as a default value if information is not known.

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

where:

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

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

$$CV = \text{coefficient of variation of the effluent concentration} = \frac{\text{Std. Deviation}}{\text{Mean}}$$

$n$  = 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<sup>th</sup> percentile basis)

$z_s$  = the percentile exceedance probability for the monthly average permit limit (=1.645 for 95<sup>th</sup> percentile basis)

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

2. Consider the background concentration ( $C_b$ ) of the parameter of concern. If the background concentration is equal to or greater than the applicable stream 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 stream standard, is established equal to the stream 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 ( $C_{eff\ lim}$ ) at a level higher than the derived limit, but no higher than the natural background concentration. In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (See R.61-68.E.12.c.3).

If  $C_b$  is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then

$$C_{HH} = WQS.$$

If  $C_b$  is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then

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

Otherwise, the limits are established as described in Items 3-6 below.

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

- a. For Carcinogens

The Monthly Average is calculated as follows:

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

- b. For Non-carcinogens

The Monthly Average is calculated as follows:

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

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

a. For Carcinogens

The Monthly Average is calculated as follows:

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

b. For Non-carcinogens

The Monthly Average is calculated as follows:

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

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

a. For Carcinogens

The Monthly Average is calculated as follows:

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

b. For Non-carcinogens

The Monthly Average is calculated as follows:

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

6. Organoleptic criteria ( $C_{ol}$ ).

The Monthly Average is calculated as follows:

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

- c. Determine most stringent of applicable data using the monthly average derived limits determined or calculated above:

$$C_{efflim} = \text{minimum of } (C_{efflim}, C_{org}, C_{wo}, C_{mcl}, C_{ol}, C_{mcl})$$

Note: If a CMC is present for the parameter of concern, the daily maximum derived limit obtained from that calculation must also be considered under reasonable potential.

- 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 values greater than the proposed limitation derived above, that discharge will cause an excursion above a narrative or numeric water quality criterion.
- ii. A discharge will 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.
- iii. Reasonable potential to cause a water quality violation is determined using the following information:

Chapter 3 of the TSD provides information for determining the need for permit limits based on the regulatory statements above. A statistical procedure is also presented in Chapter 3 for use in determining reasonable potential from effluent data. "National Guidance for the Permitting, Monitoring, and Enforcement of Water Quality-Based Effluent Limitations Set Below Analytical Detection/Quantitation Level" draft dated March 22, 1994, offers recommendations on how to interpret data below detection capabilities to make a reasonable potential analysis.

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 stream, 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 developed.

**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 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 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 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. When there is also a 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.

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

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

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.

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

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<sup>th</sup> 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<sup>th</sup> percentile of the standardized normal distribution = 1.645

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

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

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

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

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

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

Step 6:  $RWC$  Derived monthly average limit ( $C_{efflim}$ ) implies that a reasonable potential does not exist.

$RWC >$  Derived monthly average limit ( $C_{efflim}$ ) implies that a reasonable potential exists.

**Note:** If a CMC is available for a given parameter, the daily maximum value will be used in addition to the monthly average for a determination of reasonable potential.

2. Reasonable potential for WET will be determined from numerical data using one of the following procedures:

- a. When the effluent data is given as  $LC_{50}$  and/or NOEC values:

Step 1: Convert the given  $LC_{50}$  and NOEC values to toxic units,  $TU_a$  for acute data and  $TU_c$  for chronic data, respectively, using the following formulae:

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

$$TU_c = \frac{100}{NOEC}$$

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 ( $RWC$ )

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

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

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

$$RWC \text{ for Chronic Toxicity } 1.0 * TU_c \text{ implies that a reasonable potential does not exist}$$

$$RWC \text{ for Chronic Toxicity } > 1.0 * TU_c \text{ implies that a reasonable potential exists}$$

- 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 Item 1 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 that cannot be

removed, reasonable potential may be determined to exist.

- c. Where WET results are given as percent effect, the procedures in Item 1, Steps 1-6 above are followed. In the case of WET in these circumstances,  $C_{lim}$  will be 25% for the monthly average and 40% for the maximum since these are the limits for WET testing as a percent effect preferred by the Department.
- e. Determine permit limits based on water quality data
  - i. When the discharge is determined to cause or have the reasonable potential to cause a water quality violation for a particular parameter, except WET, limits are needed. Limits are typically based on the monthly average values calculated from G.2.c above. However, daily maximum values may be evaluated under reasonable potential under certain circumstances. If reasonable potential exists for either average or maximum derived limits, limits on both are needed per Regulation 61-9.122.45(d).
    1. If the monthly average from G.2.c is based on a wasteload allocation for oxygen-demanding pollutants and nutrients and
      - a. no CMC exists, the water quality limits are  
monthly average =  $C_{wa}$   
daily maximum =  $2 \times C_{wa}$
      - b. a CMC exists (for ammonia), the water quality limits are  
monthly average =  $C_{wa}$   
  
and the daily maximum is the most stringent of  
  
daily maximum =  $2 \times C_{wa}$   
or  
daily maximum =  $C_{aq\ life\ -\ dm}$  using CMC as WQS in G.2.b.i.3 or 4
    2. If the monthly average from G.2.c is based on aquatic life data given as a CCC, if the discharge causes, has the reasonable potential to cause or contributes to a water quality violation based on the monthly average and a CMC also exists for the parameter, the water quality limits are  
  
monthly average =  $C_{aq\ life\ -\ ma}$  using CCC as WQS in G.2.b.i.3 or 4  
daily maximum =  $C_{aq\ life\ -\ dm}$  using CMC as WQS in G.2.b.i.3 or 4
    3. If the monthly average from G.2.c is based on aquatic life data given as a CCC and if the discharge does not cause, have the reasonable potential to cause or contribute to a water quality violation for that monthly average, but a CMC also exists for the parameter and the discharge causes, has the reasonable potential to cause or contributes to a water quality violation based on that daily maximum, the water quality limits are  
  
monthly average =  $C_{aq\ life\ -\ ma}$  using CCC as WQS in G.2.b.i.3 or 4  
daily maximum =  $C_{aq\ life\ -\ dm}$  using CMC as WQS in G.2.b.i.3 or 4
    4. If the monthly average from G.2.c is based on aquatic life data given as a CCC or other acute or chronic data and no CMC exists for the parameter, the water quality limits are  
  
monthly average =  $C_{aq\ life}$

$$\text{daily maximum} = 2 \times C_{\text{acute}}$$

5. If no CMC exists and the monthly average from G.2.c is based on human health (organism, w/o, MCL) data, the water quality limits are

$$\text{monthly average} = C_{\text{HH}}$$

$$\text{daily maximum} = M \times C_{\text{HH}} \text{ using the calculation for } M \text{ from G.2.b.ii.1.b}$$

6. If a CMC exists and the monthly average from G.2.c is based on human health (organism, w/o, MCL) data, the water quality limits will be

$$\text{monthly average} = C_{\text{HH}}$$

and the daily maximum will be the most stringent of

$$\text{daily maximum} = M \times C_{\text{HH}} \text{ using the calculation for } M \text{ from G.2.b.ii.1.b}$$

or

$$\text{daily maximum} = C_{\text{acute-dm}} \text{ using CMC as WQS in G.2.b.i.3 or 4}$$

7. If no CMC exists and the monthly average from G.2.c is based on organoleptic data, the water quality limits are

$$\text{monthly average} = C_{\text{ol}}$$

$$\text{daily maximum} = M \times C_{\text{ol}} \text{ using the calculation for } M \text{ from G.2.b.ii.1.b}$$

8. If a CMC exists and the monthly average from G.2.c is based on organoleptic data, the water quality limits will be

$$\text{monthly average} = C_{\text{ol}}$$

and the daily maximum will be the most stringent of

$$\text{daily maximum} = M \times C_{\text{ol}} \text{ using the calculation for } M \text{ from G.2.b.ii.1.b}$$

or

$$\text{daily maximum} = C_{\text{acute-dm}} \text{ using CMC as WQS in G.2.b.i.3 or 4}$$

9. If only a CMC exists, then the water quality limits will be no monthly average and

$$\text{daily maximum} = C_{\text{acute-dm}} \text{ using CMC as WQS in G.2.b.i.3 or 4}$$

- ii. If the discharge is determined to cause or have the reasonable potential to cause a water quality violation for WET, permit limitations will be explained in the rationale for that parameter.
- iii. If the discharge is determined to contribute to an existing water quality violation, monthly average and daily maximum limits will be set giving no credit for dilution of the receiving stream (end-of-pipe limits) based on the criteria in Item 1 above.

f. 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 determined in e above shall be used as permit limits, unless other information indicates more stringent limits are needed as indicated in the notes at the end of this section. Categorical limitations based on mass may first be converted to concentration using the long term average flow of the discharge for both the monthly average and daily maximum calculations, unless the applicable guidelines require use of an alternate flow.

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

$$ELG \text{ lim} = \sum (ELG_{prod})(ELG) \text{ where}$$

*ELGlim*: 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 be calculated as follows:

$$ELG \text{ lim} = \sum (ELG_{flow})(ELG)(8.34) \text{ where}$$

*ELGlim*: the mass limit, in lbs/day, for an applicable pollutant based on applicable flow

*ELGprod*: the long term average flow rate, in MGD, for the applicable guideline(s)

*ELG*: the concentration limitation, in mg/l, for an applicable pollutant from the applicable guideline(s)

- a. For BOD and TSS limits based on OCPSF Effluent Guidelines with two or more applicable subparts in subparts B-H, the limits will be calculated as follows:

$$ELG_o = \sum \left( \frac{\text{subpart production}}{\text{total OCPSF production}} \right) (ELG \text{ lim}) \text{ where}$$

*ELG<sub>o</sub>*: the final OCPSF limitation, in lbs/day

*ELGlim*: the limitation, in lbs/day, determined from the calculation in item 2 above.

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.12.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.12.c(3))

Note 1: 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 (e.g. anti-backsliding).

Note 2: Mass limitations may be required in certain circumstances. When mass limits are calculated the formula to be used is as follows.

$$\text{Mass (lb/day)} = \text{Flow (mgd)} * \text{Concentration (mg/l)} * 8.34$$

Note 3: Final Limitations will typically be rounded to two (2) significant figures (based on EPA's policy with its national criteria) while considering the PQL for a given parameter. Rounding will be performed using the following procedure (as recommended by the DHEC lab):

- a. If the digit of interest is even and the number following it is a five (5), the digit of interest remains the same.
- b. If the digit of interest is odd and the number following it is a five (5), the digit of interest is rounded up.
- c. If the digit of interest is even or odd and the number following it is between 0 and 4, the digit of interest remains the same.
- d. If the digit of interest is even or odd and the number following it is between 6 and 9, the digit of interest is rounded up.

### III. PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

#### Outfall 001

Outfall 001 discharges once-through non-contact cooling water at an average rate of 674 MGD to the Monticello Reservoir. Outfall 007 is an internal outfall to Outfall 001 which consists of low volume waste. Applicable guidelines for this outfall are the Steam Electric Point Source Category for existing sources.

#### Flow

1. Previous permit limits (effective 10/1/1997):  
Monthly average: Monitor and Report, MGD  
Daily Maximum: Monitor and Report, MGD  
Sampling Frequency: Continuous  
Sample Type: Estimate
2. NPDES Application (2C & 2E): (No. of flow analyses: 12)  
Long Term Average Value: 674.92 MGD  
Maximum Daily Value: 738.72 MGD
3. DMR Data: The highest flow was reported on 11/01 as 738.7 MGD
4. Conclusion:  
Monthly average: M & R  
Daily maximum: M&R  
Sampling Frequency: Continuous  
Sampling Type: Estimate

#### Total Suspended Solids (TSS)

1. Previous permit limits (effective 10/1/1997):  
Monthly average: N/A  
Daily Maximum: N/A
2. NPDES Application (2C & 2E): (No. of TSS analyses: 1)  
Long Term Average Value: N/A  
Maximum Daily Value: 6.4 mg/l
3. DMR Data: N/A
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: N/A
6. Other information: N/A
7. PQL: 1000 µg/l
8. Conclusion: There shall be no limit for TSS.



**pH**

1. Previous Permit Limits (effective 10/1/1997): 6.0 – 8.5 standard units.  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application (2C & 2E): (No. of pH analyses: 12)  
Minimum: 7.15 standard units.  
Maximum: 7.57 standard units.
3. DMR Data: The highest pH was reported on 4/97 as 8.4 s.u. and the lowest pH was reported on 2/28 as 6.01 s.u.
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: N/A
6. Other information:
7. PQL: Not applicable
8. Conclusion: pH should be between 6.0 s.u. and 8.5 s.u.  
Sampling Frequency: 1/Month  
Sample type: Grab

**Temperature**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: MR  
Daily maximum: 113°F (45°C)  
Sampling frequency: Continuous  
Sample type: Continuous
2. NPDES Application (2C & 2E):  
Summer:  
Long Term Avg: 38.4°C  
Daily Max: 43.5°C  
Winter:  
Long Term Average: 23.5°C  
Maximum Daily Value: 37.3°C
3. DMR Data: The highest value was reported on 7/98 as 119.1°F
4. Water Quality Criterion: R.61-68.E.10.a, 1998: The water temperature of all FRESHWATERS which are free flowing shall not be increased more than 5 F (2.8 C) above natural temperature conditions and shall not exceed a maximum of 90 F (32.2 C) as a result of the discharge of heated liquids unless" a site-specific standard has been established in accordance with the regulation, a mixing zone has been established in accordance with the regulation or a CWA Section 316(a) determination has been completed.

On April 7, 1975, as a part of permitting activities of the original NPDES permit, SCE&G provided information to

support its request that alternative thermal effluent limitations be allowed under Section 316(a) of the Act. In April 30, 1976, a determination was made that the permittee had submitted adequate information to demonstrate that the alternative limitations for the thermal component of the discharge would assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the Monticello Reservoir. The alternate maximum discharge temperature for Outfall 001 is 45°C(113°F). A maximum thermal plume temperature of 32.2°C(90°F) and temperature rise of 1.66°C(3.0°F) is also imposed. On December 4, 2000, the permittee requested that the requirement to monitor the plume temperature rise be eliminated. There have been no observed adverse impacts to the aquatic environment attributed to the plume temperature rise. DMR data from 1993 until present shows that there have been no violations of the 3 °F plume temperature rise. The Department agreed that there was no useful data being generated by the continuous monitoring at Monticello Reservoir and the request to remove plume temperature rise monitoring requirements from the permit was granted August 2001.

A continuation of the 316(a) variance was allowed by the reissuance of the NPDES permit on July 1, 1984, January 3, 1989, and June 19, 1997. A request to continue the variance was included as part of the application for reissuance of the NPDES Permit which was received on April 17, 2002. In order to support the request, the permittee has indicated there has been no change in facility operation and no change in the biological community. A tentative determination has been made that continuation of the 316(a) variance is appropriate in the reissuance of this permit.

5. Other Information: In addition to the discharge temperature, the permittee monitors and reports the plume temperature at the inlet structure as well as the intake temperature on the inlet side of the main condenser.
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: yes
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL:
9. Conclusion: Based on the approved 316(a) study, the limit is
  - Discharge Temperature:
    - Monthly average: MR
    - Daily maximum: 45°C (113°F)
    - Sampling Frequency: Continuous
    - Sample type: Continuous
  - Intake Temperature:
    - Monthly average: MR
    - Daily maximum: MR
    - Sampling Frequency: Continuous
    - Sample type: Continuous
  - Plume Temperature:
    - Monthly average: 32.2°C (90°F)
    - Daily maximum: MR
    - Sampling Frequency: Continuous
    - Sample type: Continuous

#### Copper

1. Previous permit limits: N/A
2. NPDES Application (2C & 2E): 1.84 µg/l
3. DMR Data: N/A

4. Water Quality Criterion: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes, based on Aquatic Life from R.61-68
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL: 0.010 mg/l
9. Conclusion: In a letter dated September 24, 2002, the permittee stated that there was no source for copper in this outfall and that the level of copper in the discharge is equal to the amount of copper in the intake. As explained in Section II.G.2.b.i.2, if the background concentration is equal to or greater than the applicable stream standard for the parameter of concern, then the derived concentration limit ( $C_{eqys}$ ) for that parameter and for the protection of that stream standard, is established equal to the stream standard. The Department does not have any intake data to compare to the discharge data. However, due to the fact that there is insufficient data to do a reasonable potential calculation, the limit for copper shall be monitor and report. A reopener clause will be added to Part V.A in order to evaluate the monitoring data for reasonable potential. Reasonable potential may be evaluated after each sample using the guidelines established in the permit rationale. (In accordance with Part II.J.4.b.(1), zero may be used in the calculation when the PQL stated above is achieved.) At any time reasonable potential is determined not to exist, the permittee may submit a written request that copper monitoring be discontinued. In addition, the permittee may conduct a dilution study, mixing zone study, recalculation procedure, water-effect ratio procedure, resident species procedure or other EPA-approved procedure in order to either eliminate the monitoring requirement for copper or obtain a site specific limit.  
Daily maximum: Monitor and Report  
Monthly Average: Monitor and Report  
Sampling Frequency: 1/Month  
Sample type: Grab

#### Mercury

1. Previous permit limits: N/A
2. NPDES Application (2C & 2E): <0.200 µg/l
3. DMR Data: N/A
4. Water Quality Criterion: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes, based on Human Health Organism Consumption from R.61-68
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL: 0.0005 µg/l; EPA Method 1669/1631C
9. Conclusion: As stated in Section II.G.2.d.iii.1.b of the rationale, if the permittee uses a detection level that is

greater than the PQL, then the reported "less than" value for a given sample is assumed to be a discrete value equal to the detection level used by the permittee. The reported value for mercury was  $<0.2 \mu\text{g/l}$  and the practical quantitation limit is  $0.0005 \mu\text{g/l}$ . Due to the fact that there is insufficient data to do a reasonable potential calculation, the limit for mercury shall be monitor and report. A reopener clause will be added to Part V.A in order to evaluate the monitoring data for reasonable potential. Reasonable potential may be evaluated after each sample using the guidelines established in the permit rationale. (In accordance with Part II.J.4.b.(1), zero may be used in the calculation when the PQL stated above is achieved.) At any time reasonable potential is determined not to exist, the permittee may submit a written request that mercury monitoring be discontinued.

Monthly average: Monitor and Report

Daily maximum: Monitor and Report

Sampling Frequency: 1/Month

Sample type: Grab

#### Aluminum

1. Previous permit limits: N/A
2. NPDES Application (2C & 2E):  $416 \mu\text{g/l}$
3. DMR Data: N/A
4. Water Quality Criterion: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes, based on Aquatic Life from 53 FR 33178, 8/30/88
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL:  $0.05 \text{ mg/l}$
9. Conclusion: Due to the fact that there is no state standard, there shall be no limit for aluminum.

#### Iron

1. Previous permit limits: N/A
2. NPDES Application (2C & 2E):  $443 \mu\text{g/l}$
3. DMR Data: N/A
4. Water Quality Criterion: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes, based on Human Health Water/Organism Consumption from R.61-68

7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL: 0.02 mg/l
9. Conclusion: In a letter dated September 24, 2002, the permittee stated that the level of iron in the discharge is equal to the amount of iron in the intake. As explained in Section II.G.2.b.i.2, if the background concentration is equal to or greater than the applicable stream standard for the parameter of concern, then the derived concentration limit ( $C_{aqile}$ ) for that parameter and for the protection of that stream standard, is established equal to the stream standard. The Department does not have any intake data to compare to the discharge data. However, due to the fact that there is insufficient data to do a reasonable potential calculation, the limit for iron shall be monitor and report. A reopener clause will be added to Part V.A in order to evaluate the monitoring data for reasonable potential. Reasonable potential may be evaluated after each sample using the guidelines established in the permit rationale. (In accordance with Part II.J.4.b.(1), zero may be used in the calculation when the PQL stated above is achieved.) At any time reasonable potential is determined not to exist, the permittee may submit a written request that iron monitoring be discontinued. In addition, the permittee may conduct a dilution study, mixing zone study, recalculation procedure, water-effect ratio procedure, resident species procedure or other EPA-approved procedure in order to either eliminate the monitoring requirement for iron or obtain a site-specific limit.

Daily maximum: Monitor & Report  
Monthly Average: Monitor & Report  
Sampling Frequency: 1/Month  
Sample type: Grab

#### Manganese

1. Previous permit limits: N/A
2. NPDES Application (2C & 2E): 51.5 µg/l
3. DMR Data: N/A
4. Water Quality Criterion: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes, based on Human Health Water/Organism Consumption from R.61-68
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL: 0.01 mg/l
9. Conclusion: In a letter dated September 24, 2002, the permittee stated that the level of manganese in the discharge is equal to the amount of manganese in the intake. As explained in Section II.G.2.b.i.2, if the background concentration is equal to or greater than the applicable stream standard for the parameter of concern, then the derived concentration limit ( $C_{aqile}$ ) for that parameter and for the protection of that stream standard, is established equal to the stream standard. The Department does not have any intake data to compare to the discharge data. However, due to the fact that there is insufficient data to do a reasonable potential calculation, the limit for manganese shall be monitor and report. A reopener clause will be added to Part V.A in order to evaluate the monitoring data for reasonable potential. Reasonable potential may be evaluated after each sample using the guidelines established in the permit rationale. (In accordance with Part II.J.4.b.(1), zero may be used in the calculation when the PQL stated above is achieved.) At any time reasonable potential is determined not to exist, the permittee may submit a written request that manganese

monitoring be discontinued. In addition, the permittee may conduct a dilution study, mixing zone study, recalculation procedure, water-effect ratio procedure, resident species procedure or other EPA-approved procedure in order to either eliminate the monitoring requirement for manganese or obtain a site specific limit.

Daily maximum: Monitor & Report

Monthly Average: Monitor & Report

Sampling Frequency: 1/Month

Sample type: Grab

#### Total Residual Chlorine (TRC)

1. Previous Permit Limits (effective 10/1/1997): N/A
2. NPDES Application (2C & 2E): Believed Absent
3. DMR Data: N/A
4. Water Quality Data:
  - a. Aquatic Life  
Water Quality Criteria from Reg. 61-68, Appendix:  
Freshwater:  
CCC = 11 µg/l  
CMC = 19 µg/l
  - b. Human Health: none
5. Effluent limitation guidelines: 0.20 mg/l Maximum Concentration
6. Other information: There is a prohibition statement on the limitations page for Outfall 001 stating that there shall be no addition of chlorine to the main condenser cooling water.
7. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
8. PQL: 0.05 mg/l; EPA Method SM4500C1 B, C, D, F OR G
9. Conclusion: There shall be no limit for Total Residual Chlorine due to the fact that the permittee is not permitted to chlorinate the main condenser cooling water.

#### Outfall 003

Outfall 003 consists of low level radiological wastes including reactor grade water, non-reactor grade floor drains and laundry and hot shower drains. Wastewaters are treated in the Liquid Waste Processing System by evaporation and ion exchange. The wastewater is then held in Waste Monitor Tank #'s 1 & 2 for monitoring to check that the wastewater is within NPDES & NRC limits prior to discharging. Applicable guidelines for this outfall are the Steam Electric Point Source Category for existing sources.

#### Flow

1. Previous permit limits:  
Monthly average: MR

Daily maximum: MR  
Sampling frequency: 1/Occurrence  
Sample type: Estimate

2. NPDES Application (2C & 2E):  
Long Term Average: 0.004258 MGD  
Maximum Daily Value: 0.004950 MGD
3. DMR Data: The highest value was reported on 1/97 as 0.005 MGD
4. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 1/Occurrence  
Sample type: Estimate

**Total Suspended Solids (TSS)**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l
2. NPDES Application (2C & 2E): (No. of TSS analyses: 295)  
Long Term Average Value: 0.25 mg/l  
Maximum Daily Value: 12.2 mg/l
3. DMR Data: The highest value reported was 20 mg/l on 2/02
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: 30 mg/l monthly average; 100 mg/l daily max (low volume waste)
6. Other information: N/A
7. PQL: 1000 µg/l
8. Conclusion:  
Daily maximum: 100 mg/l  
Monthly Average: 30 mg/l  
Sampling Frequency: 1/Occurrence  
Sample type: Grab

**Oil & Grease**

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sample Frequency: 1/Occurrence  
Sample Type: Grab
2. NPDES Application (2C):  
Maximum Daily Value: <5 mg/l

3. DMR Data: 17.5 mg/l (7/98)
4. Governing Water Quality Criterion: N/A
5. Other Information: Reg. 61-68.E.5.b states that all surface waters shall be free from floating debris, oil, grease, scum, and other floating material attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance or interfere with classified water uses or existing water uses.
6. Effluent Guidelines Limitations: 15 mg/l monthly average; 20 mg/l daily max (low volume waste)
7. Conclusion:
  - Monthly average: 15 mg/l
  - Daily maximum: 20 mg/l
  - Sampling Frequency: 1/Occurrence
  - Sample type: Grab

#### pH

1. Previous Permit Limits (effective 10/1/1997): N/A
2. NPDES Application (2C & 2E): (No. of pH analyses: 295)
  - Minimum: 6.1 standard units.
  - Maximum: 8.9 standard units.
3. DMR Data: The highest pH was reported on 9/97 as 8.3 s.u. and the lowest pH was reported on 7/97 as 6.0 s.u.
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: 6.0 – 9.0 s.u.
6. Other information:
7. PQL: Not applicable
8. Conclusion: Due to the high dilution of the Broad River, the pH limit shall be based on effluent guidelines. Therefore, the limits for pH shall be between 6.0 s.u. and 9.0 s.u.
  - Sampling Frequency: 1/Occurrence
  - Sample type: Grab

#### Outfall 004

Outfall 004 consists of steam generator blowdown discharged at an average rate of 0.144 MGD. The wastewater is discharged via Outfall 001 to the Monticello Reservoir. Applicable guidelines for this outfall are the Steam Electric Point Source Category for existing sources.

#### Flow

1. Previous permit limits:
  - Monthly average: MR
  - Daily maximum: MR



Sampling frequency: 1/Occurrence  
Sample type: Continuous

2. NPDES Application (2C & 2E):  
Long Term Average: 0.021312 MGD  
Maximum Daily Value: 0.061245 MGD
3. DMR Data: The highest value was reported on 4/020 as 0.589167 MGD
4. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 1/Occurrence  
Sample type:

**Total Suspended Solids (TSS)**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l
2. NPDES Application (2C & 2E): (No. of TSS analyses: 3)  
Long Term Average Value: 0.3 mg/l  
Maximum Daily Value: 0.6 mg/l
3. DMR Data: The highest value reported was 8.7 mg/l on 4/97
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: 30 mg/l monthly average; 100 mg/l daily max (low volume waste)
6. Other information: N/A
7. PQL: 1000 µg/l
8. Conclusion:  
Daily maximum: 100 mg/l  
Monthly Average: 30 mg/l  
Sampling Frequency: 1/Occurrence  
Sample type: Grab

**Oil & Grease**

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sample Frequency: 1/Occurrence  
Sample Type: Grab
2. NPDES Application (2C):  
Maximum Daily Value: <5 mg/l

3. DMR Data: 3 mg/l (9/98)
4. Governing Water Quality Criterion: N/A
5. Other Information: Reg. 61-68.E.5.b states that all surface waters shall be free from floating debris, oil, grease, scum, and other floating material attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance or interfere with classified water uses or existing water uses.
6. Effluent Guidelines Limitations: 15 mg/l monthly average; 20 mg/l daily max (low volume waste)
7. Conclusion:
  - Monthly average: 15 mg/l
  - Daily maximum: 20 mg/l
  - Sampling Frequency: 1/Occurrence
  - Sample type: Grab

#### pH

1. Previous Permit Limits (effective 10/1/1997): N/A
2. NPDES Application (2C & 2E): (No. of pH analyses: 1)
  - Minimum: 9.61 standard units.
  - Maximum: 9.61 standard units.
3. DMR Data: N/A
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: 6.0 – 9.0 s.u.
6. Other information:
7. PQL: Not applicable
8. Conclusion: This outfall is internal to Outfall 001. Therefore, a pH limit shall be placed on the final outfall (Outfall 001).

#### Outfall 005

Outfall 005 is an internal outfall consisting of treated sanitary sewage with an average discharge flow of 0.0037 MGD. The wastewater is treated in an aeration pond, followed by a stabilization pond. Effluent is chlorinated in a chlorine contact chamber prior to commingling with other wastewaters and discharging via Outfall 014 to the Monticello Reservoir.

#### Flow

1. Previous permit limits (effective 10/1/1997):
  - Monthly average: Monitor & Report
  - Daily Maximum: Monitor & Report
  - Sampling Frequency: 1/Month
  - Sample Type: Instantaneous

2. NPDES Application (2C & 2EE): (No. of flow analyses: 69)  
Average Daily Value: 0.0037 MGD  
Maximum Daily Value: 0.0165 MGD
3. DMR Data: The highest flow was reported on 4/99 as 0.0289 MGD
4. Conclusion:  
Monthly average: MR  
Daily maximum: MR  
Sampling Frequency: 1/Month  
Sampling Type: Instantaneous

**Biochemical Oxygen Demand (BOD<sub>5</sub>)**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 30 mg/l  
Daily maximum: 45 mg/l  
Sampling frequency: 1/Month  
Sample type: 24 Hr Composite
2. NPDES Application (2C & 2EE): (# of analyses: 7)  
Average Daily Value: 22.2 mg/l  
Maximum Daily Value: 74 mg/l
3. DMR Data: The highest BOD<sub>5</sub> was reported on 3/01 as 74 mg/l
4. Effluent limitations guidelines: N/A
5. PQL: 2 mg/l (EPA Standard Method 5210B)
6. Waste Load Allocation: N/A
7. Other information: Reg 61-9.133, Secondary Treatment Regulation gives a monthly average of 30 mg/l and a weekly average of 45 mg/l. The daily maximum is calculated as twice the monthly average limit.
8. Conclusion: Based on R.61-9.133  
Monthly average = 30 mg/l  
Daily maximum = 45 mg/l  
Sampling Frequency: 1/Month  
Sampling Type: 24 Hr Composite

**Total Suspended Solids (TSS)**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 30 mg/l  
Daily Maximum: 45 mg/l  
Sampling frequency: 1/Month  
Sample Type: 24 Hr Composite
2. NPDES Application (2C & 2EE): (No. of TSS analyses: 12)  
Average Daily Value: 12.1 mg/l  
Maximum Daily Value: 24.5 mg/l

3. DMR Data: The highest TSS was reported on 3/00 as 26.5 mg/l
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: N/A
6. Other information: Reg 61-9.133, Secondary Treatment Regulation gives a monthly average of 30 mg/l and a weekly average of 45 mg/l. The daily maximum is calculated as twice the monthly average limit.
7. PQL: 0.50 mg/l
8. Conclusion: The limits for TSS shall be based on Reg. 61-9.133 Secondary Treatment Standards to demonstrate that proper treatment has been provided.  
Monthly average: 30 mg/l  
Daily maximum: 45 mg/l  
Sampling Frequency: 1/Month  
Sample type: 24 Hr Composite

#### pH

1. Previous Permit Limits (effective 10/1/1997): N/A
2. NPDES Application (2C & 2EE): (No. of pH analyses: 1)  
Minimum:  
Maximum: 6.37 standard units.
3. DMR Data: N/A
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class **Fresh Water** this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: N/A
6. Other information: Reg 61-9.133, Secondary Treatment Regulation states that pH shall be maintained between 6.0 to 9.0 s.u.
7. PQL: Not applicable
8. Conclusion: Due to the fact that this is an internal outfall, pH will be limited at the final discharge point (Outfall 014).

#### Fecal Coliform

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 200/100 ml  
Daily maximum: 400/100 ml  
Sampling frequency: 2/Month  
Sample type: Grab
2. NPDES Application (2C & 2EE): (No. of analyses: 24)  
Average Daily Value: 4.3/100 ml

Maximum Daily Value: 49/100 ml

3. DMR Data: The highest value was reported on 5/99 as 280/100 ml.
4. Water Quality Data: Fecal Coliform Limits are established in accordance with Reg. 61-68.G.10.e For Class **Fresh Water** these values are: not to exceed 200/100 ml based on five consecutive samples in a 30 day period and no more than 10% of the samples in the 30 day period shall exceed 400/100 ml.
5. Other Information:
6. Wasteload Allocation: N/A
7. Effluent Guidelines Limitations: N/A
8. PQL: 1/100 ml (EPA Standard Method 9221 C, 9221 E, or 9221 D)
9. Conclusion: Based on Reg 61-68.  
Monthly average: 200/100 ml  
Daily maximum: 400/100 ml  
Sampling Frequency: 1/month  
Sample type: Grab

**Total Residual Chlorine (TRC)**

1. Previous Permit Limits (10/1/1997): N/A
2. NPDES Application (2E): (No. of analyses: 1)  
Maximum Daily Value: <0.05 mg/l
3. DMR Data: N/A
4. Water Quality Data:
  - a. Aquatic Life  
Water Quality Criteria from Reg. 61-68, Appendix:  
Freshwater:  
CCC = 11 µg/l  
CMC = 19 µg/l
  - b. Human Health: None
5. Effluent limitation guidelines: Not applicable.
6. Other information: N/A
7. PQL: 0.05 mg/l
8. Conclusion: Due to the fact that this is an internal outfall, TRC shall be monitored at the final discharge point (Outfall 014).

**Outfall 06A**

Outfall 06A is an internal outfall consisting of low volume wastes discharging at an average rate of 0.08 MGD. Low volume wastes discharged through this outfall include condensate polisher backwash, clarifier blowdown, carbon filter backwash, gravity filter backwash, and steam generator blowdown. Treatment consists of sedimentation for the reduction of suspended solids content before the effluent combines with Outfalls 005, 06B, and 008 for release to the Monticello Reservoir via Outfall 014.

#### Flow

1. Previous permit limits:  
Monthly average: MR  
Daily maximum: MR  
Sampling frequency: 1/Month  
Sample type: Instantaneous
2. NPDES Application (2C & 2E):  
Long Term Average: 0.056221 MGD  
Maximum Daily Value: 0.289 MGD
3. DMR Data: The highest value was reported on 5/00 as 0.4506 MGD
4. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 1/Month  
Sample type: Instantaneous

#### Total Suspended Solids (TSS)

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l
2. NPDES Application (2C & 2E): (No. of TSS analyses: 12)  
Long Term Average Value: 1.3 mg/l  
Maximum Daily Value: 5.7 mg/l
3. DMR Data: The highest value reported was 5.7 mg/l on 5/01
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: 30 mg/l monthly average; 100 mg/l daily max (low volume waste)
6. Other information: N/A
7. PQL: 1000 µg/l
8. Conclusion:  
Daily maximum: 100 mg/l  
Monthly Average: 30 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

#### **Oil & Grease**

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sample Frequency: 1/Month  
Sample Type: Grab
2. NPDES Application (2C):  
Maximum Daily Value: <5 mg/l
3. DMR Data: 14.8 mg/l (9/01)
4. Governing Water Quality Criterion: N/A
5. Other Information: Reg. 61-68.E.5.b states that all surface waters shall be free from floating debris, oil, grease, scum, and other floating material attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance or interfere with classified water uses or existing water uses.
6. Effluent Guidelines Limitations: 15 mg/l monthly average; 20 mg/l daily max (low volume waste)
7. Conclusion:  
Monthly average: 15 mg/l  
Daily maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

#### **pH**

1. Previous Permit Limits (effective 10/1/1997): N/A
2. NPDES Application (2C & 2E): (No. of pH analyses: 1)  
Minimum: 9.35 standard units.  
Maximum: 9.35 standard units.
3. DMR Data: N/A
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: 6.0 – 9.0 s.u.
6. Other information:
7. PQL: Not applicable
8. Conclusion: This outfall is internal to Outfall 001. Therefore, a pH limit shall be placed on the final outfall (Outfall 014).

#### **Outfall 06B**

Outfall 06B is an internal outfall consisting of low volume wastes discharging at an average rate of 0.05 MGD. Low

volume wastes discharged through this outfall include wastewater from various sumps, storm water from transformer areas and fuel oil storage and handling areas, and boiler house drains. Treatment consists of a 6,000 gallon common collection sump, oil skimming and sedimentation for the reduction of suspended solids content before the effluent combines with Outfalls 005, 06A, and 008 for release to the Monticello Reservoir via Outfall 014.

#### Flow

1. Previous permit limits:  
Monthly average: MR  
Daily maximum: MR  
Sampling frequency: 1/Month  
Sample type: Instantaneous
2. NPDES Application (2C & 2E):  
Long Term Average: 0.056074 MGD  
Maximum Daily Value: 0.289 MGD
3. DMR Data: The highest value was reported on 5/02 as 0.2856 MGD
4. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 1/Month  
Sample type: Instantaneous

#### Total Suspended Solids (TSS)

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 30 mg/l  
Daily Maximum: 98 mg/l
2. NPDES Application (2C & 2E): (No. of TSS analyses: 12)  
Long Term Average Value: 5.0 mg/l  
Maximum Daily Value: 11.7 mg/l
3. DMR Data: The highest value reported was 15 mg/l on 8/99
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: 30 mg/l monthly average; 100 mg/l daily max (low volume waste)
6. Other information: N/A
7. PQL: 1000 µg/l
8. Conclusion: The previous permit limits are more stringent than the effluent guideline limits for low volume waste. The permittee has been meeting the previous permit limits, therefore, due to antibacksliding, the previous permit limits shall apply.  
Daily maximum: 98 mg/l  
Monthly Average: 30 mg/l  
Sampling Frequency: 1/Month



Sample type: Grab

**Oil & Grease**

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sample Frequency: 1/Month  
Sample Type: Grab
2. NPDES Application (2C):  
Maximum Daily Value: 7 mg/l
3. DMR Data: 53 mg/l (12/00)
4. Governing Water Quality Criterion: N/A
5. Other Information: Reg. 61-68.E.5.b states that all surface waters shall be free from floating debris, oil, grease, scum, and other floating material attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance or interfere with classified water uses or existing water uses.
6. Effluent Guidelines Limitations: 15 mg/l monthly average; 20 mg/l daily max (low volume waste)
7. Conclusion:  
Monthly average: 15 mg/l  
Daily maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

**pH**

1. Previous Permit Limits (effective 10/1/1997): N/A
2. NPDES Application (2C & 2E): (No. of pH analyses: 1)  
Minimum: 9.07 standard units.  
Maximum: 9.35 standard units.
3. DMR Data: N/A
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: 6.0 – 9.0 s.u.
6. Other information:
7. PQL: Not applicable
8. Conclusion: This outfall is internal to Outfall 014. Therefore, a pH limit shall be placed on the final outfall (Outfall 014).

**Outfall 007**

Outfall 007 is an internal outfall consisting of low volume wastes discharging at an average rate of 0.08 MGD. Low volume wastes discharged through this outfall include wastewater from ion exchange regeneration, and sumps in the chemical feed equipment area, caustic tank area, and "D" battery room. Treatment consists of a flow equalization and neutralization in a 100,000 gallon wastewater treatment tank before the effluent is discharged into the Circulating Water System discharge piping for release to the Monticello Reservoir via Outfall 001.

#### **Flow**

1. Previous permit limits:  
Monthly average: MR  
Daily maximum: MR  
Sampling frequency: 1/Month  
Sample type: Estimate
2. NPDES Application (2C & 2E):  
Long Term Average: 0.079108 MGD  
Maximum Daily Value: 0.185 MGD
3. DMR Data: The highest value was reported on 10/00 as 0.27 MGD
4. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 1/Month  
Sample type: Estimate

#### **Total Suspended Solids (TSS)**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l
2. NPDES Application (2C & 2E): (No. of TSS analyses: 12)  
Long Term Average Value: 6.9 mg/l  
Maximum Daily Value: 26.5 mg/l
3. DMR Data: The highest value reported was 26.5 mg/l on 2/01
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: 30 mg/l monthly average; 100 mg/l daily max (low volume waste)
6. Other information: N/A
7. PQL: 1000 µg/l
8. Conclusion:  
Daily maximum: 100 mg/l  
Monthly Average: 30 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

**Oil & Grease**

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sample Frequency: 1/Month  
Sample Type: Grab
2. NPDES Application (2C):  
Maximum Daily Value: <5 mg/l
3. DMR Data: 9.3 mg/l (6/99)
4. Governing Water Quality Criterion: N/A
5. Other Information: Reg. 61-68.E.5.b states that all surface waters shall be free from floating debris, oil, grease, scum, and other floating material attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance or interfere with classified water uses or existing water uses.
6. Effluent Guidelines Limitations: 15 mg/l monthly average; 20 mg/l daily max (low volume waste)
7. Conclusion:  
Monthly average: 15 mg/l  
Daily maximum: 20 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

**pH**

1. Previous Permit Limits (effective 10/1/1997): N/A
2. NPDES Application (2C & 2E): (No. of pH analyses: 1)  
Minimum: 6.1 standard units.  
Maximum: 8.9 standard units.
3. DMR Data: The highest pH was reported on 10/99 as 9.0 s.u. and the lowest pH was reported on 4/02 as 6.1 s.u.
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: 6.0 – 9.0 s.u.
6. Other information:
7. PQL: Not applicable
8. Conclusion: pH should be between 6.0 s.u. and 9.0 s.u.  
Sampling Frequency: 1/Month  
Sample type: Grab

**Outfall 008**

Outfall 008 is an internal outfall consisting of low volume wastes and chemical metal cleaning wastes and discharges approximately 1-2 times per year. Low volume wastes discharged through this outfall include oil waste collection sump, and clarifier blowdown sump. Treatment consists of neutralization (metal cleaning waste only) and sedimentation for the reduction of suspended solids content before the effluent combines with Outfalls 005, 06A, and 06B for release to the Monticello Reservoir via Outfall 014.

**Flow**

1. Previous permit limits:  
Monthly average: MR  
Daily maximum: MR  
Sampling frequency: 1/Day  
Sample type: Instantaneous
2. NPDES Application (2C & 2E):  
Long Term Average: 0 MGD  
Maximum Daily Value: 0 MGD
3. DMR Data: The highest value was reported on 3/98 as 2.3936 MGD
4. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 1/Day  
Sample type: Instantaneous

**Total Suspended Solids (TSS)**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 30 mg/l  
Daily Maximum: 100 mg/l
2. NPDES Application (2C & 2E): (No. of TSS analyses: 12)  
Maximum Daily Value: 4.1 mg/l
3. DMR Data: The highest value reported was 5.7 mg/l on 3/98
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: 30 mg/l monthly average; 100 mg/l daily max (metal cleaning waste)
6. Other information: N/A
7. PQL: 1000 µg/l
8. Conclusion:  
Daily maximum: 100 mg/l  
Monthly Average: 30 mg/l  
Sampling Frequency: 1/Occurrence  
Sample type: Grab

#### Oil & Grease

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 15 mg/l  
Daily Maximum: 20 mg/l  
Sample Frequency: 1/Occurrence  
Sample Type: Grab
2. NPDES Application (2C):  
Maximum Daily Value: <5 mg/l
3. DMR Data: 6.5 mg/l (11/98)
4. Governing Water Quality Criterion: N/A
5. Other Information: Reg. 61-68.E.5.b states that all surface waters shall be free from floating debris, oil, grease, scum, and other floating material attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance or interfere with classified water uses or existing water uses.
6. Effluent Guidelines Limitations: 15 mg/l monthly average; 20 mg/l daily max (metal cleaning waste)
7. Conclusion:  
Monthly average: 15 mg/l  
Daily maximum: 20 mg/l  
Sampling Frequency: 1/Occurrence  
Sample type: Grab

#### pH

1. Previous Permit Limits (effective 10/1/1997): N/A
2. NPDES Application (2C & 2E): (No. of pH analyses: 1)  
Minimum: 9.75 standard units.  
Maximum: 9.75 standard units.
3. DMR Data: N/A
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class **Fresh Water** this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: 6.0 – 9.0 s.u.
6. Other information:
7. PQL: Not applicable
8. Conclusion: This outfall is internal to Outfall 014. Therefore, a pH limit shall be placed on the final outfall (Outfall 014).

#### Iron

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 1.0 mg/l

Daily Maximum: 1.0 mg/l  
Sample Frequency: 1/Occurrence  
Sample Type: Grab

2. NPDES Application (2C & 2E): 2130 µg/l
3. DMR Data: 0.466 (4/99)
4. Water Quality Criterion: from Reg. 61-68, Appendix  
Aquatic Life: monthly average = 1000 µg/l  
Human Health: Water & Organism Consumption: monthly average: 300 µg/l
5. Other Information:
6. Effluent limitations guidelines (ELGs): 1.0 mg/l monthly average and daily max
7. PQL: 0.02 mg/l
8. Conclusion: Based on effluent limitation guidelines  
Daily maximum: 1.0 mg/l  
Monthly Average: 1.0 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

#### Copper

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 1.0 mg/l  
Daily Maximum: 1.0 mg/l  
Sample Frequency: 1/Occurrence  
Sample Type: Grab
2. NPDES Application (2C & 2E): 5.88 µg/l
3. DMR Data: 0.01 mg/l (4/99)
4. Water Quality Criterion: : from Reg. 61-68, Appendix  
Aquatic Life: monthly average = 5.7 µg/l; daily max = 7.4 µg/l  
Human Health: Water & Organism Consumption: monthly average = 1,300 µg/l; daily max = 1,900 µg/l  
Organoleptic Data: monthly average = 1000 µg/l; daily max ≈ 1500 µg/l
5. Other Information:
6. Effluent limitations guidelines (ELGs): 1.0 mg/l monthly average and daily max
7. PQL: 0.010 mg/l
8. Conclusion: Based on effluent limitations guidelines  
Daily maximum: 1.0 mg/l  
Monthly Average: 1.0 mg/l  
Sampling Frequency: 1/Occurrence

Sample type: Grab

**Outfall 012**

Outfall 012 consists of storm water runoff in the north/north east area of the plant from yard drains, roof drains, refueling water storage tank pit drains, industrial & CDRM coolers and drainage from the Turbine Building Closed Cycle Cooling System Cooling Towers.

**Flow**

1. Previous permit limits:  
Monthly average: MR  
Daily maximum: MR  
Sampling frequency: 1/Month  
Sample type: Estimate
2. NPDES Application (2C & 2E):  
Long Term Average: 0.025575 MGD  
Maximum Daily Value: 0.0456 MGD
3. DMR Data: The highest value was reported on 7/99 as 0.4506 MGD
4. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 1/Month  
Sample type: Estimate

**Total Suspended Solids (TSS)**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: 26 mg/l  
Daily Maximum: 70 mg/l
2. NPDES Application (2C & 2E): (No. of TSS analyses: 12)  
Long Term Average Value: 1.5 mg/l  
Maximum Daily Value: 8.78 mg/l
3. DMR Data: The highest value reported was 44.9 mg/l on 7/99
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: 30 mg/l monthly average; 100 mg/l daily max (low volume waste)
6. Other information: Outfall 012 consists of storm water runoff and low volume waste. Based on Steam Electric Effluent Guidelines, low volume wastes have total suspended solids limits of 30 mg/l monthly average and 100 mg/l daily max. The procedures for flow weighted averaging calculations when regulated waste streams are commingled are taken from the August 22, 1985 memo entitled "Guidance for NPDES Permits Issued to Steam Electric Power Plants". The TSS values of 20 mg/l monthly average and 30 mg/l daily maximum for the yard drain component of the discharge comes from this memo. The storm water runoff provides dilution, and is accounted for as follows:

	Flow	Monthly Avg Limit	Daily Max Limit
Low Volume Waste	0.008 MGD	30 mg/l	100 mg/l
Yard Drains	0.006 MGD	20 mg/l	30 mg/l

The limitations for TSS are calculated as follows:

Monthly Average

$$\frac{0.008(30) + 0.006(20)}{0.014} = 25.7 \text{ mg/l}$$

Daily Maximum

$$\frac{0.008(100) + 0.006(30)}{0.014} = 70 \text{ mg/l}$$

7. PQL: 1000 µg/l
8. Conclusion: The permittee has requested that the monitoring frequency be changed from 1/Month to 2/Year. A review of the DMR data for this outfall shows that the levels of TSS have been consistently low. Therefore, the Department agrees with the permittee's request for a reduction in sampling frequency.
  - Daily maximum: 70 mg/l
  - Monthly Average: 26 mg/l
  - Sampling Frequency: 2/Year
  - Sample type: Grab

#### Oil & Grease

1. Previous permit limits (Effective 10/1/1997):
  - Monthly Average: 9 mg/l
  - Daily Maximum: 11 mg/l
  - Sample Frequency: 1/Month
  - Sample Type: Grab
2. NPDES Application (2C):
  - Maximum Daily Value: <5 mg/l
3. DMR Data: 8.7 mg/l (8/01)
4. Governing Water Quality Criterion: N/A
5. Other Information: Reg. 61-68.E.5.b states that all surface waters shall be free from floating debris, oil, grease, scum, and other floating material attributable to sewage, industrial waste, or other waste in amounts sufficient to be unsightly to such a degree as to create a nuisance or interfere with classified water uses or existing water uses.
6. Effluent Guidelines Limitations: 15 mg/l monthly average; 20 mg/l daily max (low volume waste).
7. Other Information: Outfall 012 consists of storm water runoff and low volume waste. Based on Steam Electric Effluent Guidelines, low volume wastes have oil and grease limits of 15 mg/l monthly average and 20 mg/l daily max. The procedures for flow weighted averaging calculations when regulated waste streams are commingled are taken from the August 22, 1985 memo entitled "Guidance for NPDES Permits Issued to Steam Electric Power Plants". The O&G values of 0 mg/l monthly average and 0 mg/l daily maximum for the yard drain component of the discharge



comes from this memo. The storm water runoff provides dilution, and is accounted for as follows:

	<u>Flow</u>	<u>Monthly Avg Limit</u>	<u>Daily Max Limit</u>
Low Volume Waste	0.008 MGD	15 mg/l	20 mg/l
Yard Drains	0.006 MGD	0 mg/l	0 mg/l

The limitations for TSS are calculated as follows:

Monthly Average

$$\frac{0.008(15) + 0.006(0)}{0.014} = 8.6 \text{ mg/l}$$

Daily Maximum

$$\frac{0.008(20) + 0.006(0)}{0.014} = 11.4 \text{ mg/l}$$

7. Conclusion:

Monthly average: 9 mg/l

Daily maximum: 11 mg/l

Sampling Frequency: 1/Month

Sample type: Grab

**pH**

1. Previous Permit Limits (effective 10/1/1997): 6.0 – 8.5 standard units.

Sampling Frequency: 1/Month

Sample type: Grab

2. NPDES Application (2C & 2E): (No. of pH analyses: 12)

Minimum: 7.0 standard units.

Maximum: 8.0 standard units.

3. DMR Data: The highest pH was reported on 9/00 as 8.1 s.u. and the lowest pH was reported on 3/99 as 6.1 s.u.

4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.

5. Effluent limitation guidelines: 6.0 – 9.0 s.u.

6. Other information:

7. PQL: Not applicable

8. Conclusion: Based on R.61-9, pH should be between 6.0 s.u. and 8.5 s.u.

Sampling Frequency: 1/Month

Sample type: Grab

**Outfall 013**

Outfall 013 consists of storm water runoff in the south east area of the plant from the yard drains, roof drains, water storage tank sumps, and miscellaneous building floor drains. No treatment is provided before is discharge to the Broad River via Mayo Creek.

**Flow**

1. Previous permit limits:  
Monthly average: MR  
Daily maximum: MR  
Sampling frequency: 2/Year  
Sample type: Estimate
2. NPDES Application (2C & 2E):  
Long Term Average: 0.0005 MGD  
Maximum Daily Value: 0.0005 MGD
3. DMR Data: The highest value was reported on 9/98 as 0.0222 MGD
4. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 2/Year  
Sample type: Estimate

**Total Suspended Solids (TSS)**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: MR  
Daily Maximum: MR
2. NPDES Application (2C & 2E): (No. of TSS analyses: 2)  
Long Term Average Value: 1.05 mg/l  
Maximum Daily Value: 2.00 mg/l
3. DMR Data: The highest value reported was 2.8 mg/l on 3/99
4. Water Quality Data: N/A
5. Effluent Limitation Guidelines: N/A
6. Other information:
7. PQL: 1000 µg/l
8. Conclusion:  
Daily maximum: MR  
Monthly Average: MR  
Sampling Frequency: 2/Year  
Sample type: Grab

**pH**

1. Previous Permit Limits (effective 10/1/1997): MR  
Sampling Frequency: 2/Year  
Sample type: Grab
2. NPDES Application (2C & 2E): (No. of pH analyses: 2)  
Minimum: 7.08 standard units.  
Maximum: 7.32 standard units.
3. DMR Data: The highest pH was reported on 3/01 as 8.0 s.u. and the lowest pH was reported on 9/00 as 6.2 s.u.
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: N/A
6. Other information:
7. PQL: Not applicable
8. Conclusion: There have been no excursions of pH, therefore, the limit for pH shall remain monitor and report  
Sampling Frequency: 2/Year  
Sample type: Grab

**Outfall 014**

Outfall 014 represents the combined internal outfalls 005, 06A, 06B and 008. It consists of sanitary sewage and low volume wastes and discharges to the Monticello Reservoir via the Circulating Water Discharge Canal. Outfall 014 will be used to apply water quality-based limitations prior to discharge to the Monticello Reservoir.

**Flow**

1. Previous permit limits (effective 10/1/1997):  
Monthly average: Monitor and Report, MGD  
Daily Maximum: Monitor and Report, MGD  
Sampling Frequency: Continuous  
Sample Type: Continuous
2. NPDES Application (2C & 2E): (No. of flow analyses: 365)  
Long Term Average Value: 0.106304 MGD  
Maximum Daily Value: 1.7 MGD
3. DMR Data: The highest flow was reported on 10/98 as 5.46 MGD
4. Conclusion:  
Monthly average: MR  
Daily maximum: MR  
Sampling Frequency: Continuous  
Sampling Type: Continuous

pH

1. Previous Permit Limits (effective 10/1/1997):  
October – April: 6.0 – 8.5 standard units  
May – September: 6.0 – 9.0 s.u.  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application (2C & 2E): (No. of pH analyses: 12)  
Minimum: 6.9 standard units.  
Maximum: 9.0 standard units.
3. DMR Data: The highest pH was reported on 10/01 as 9.0 s.u. and the lowest pH was reported on 11/97 as 6.3 s.u.
4. Water Quality Data: Effluent Limits for pH are established in accordance with Reg. 61-68.G. 10. For Class Fresh Water this value is 6.0 – 8.5 standard units.
5. Effluent limitation guidelines: N/A
6. Other information: On December 6, 1999, VC Summer requested an alternate limit for pH of 6.0 - 9.5 s.u. during the months of May - September. The request was a result of permit violations for pH, which the permittee attributed to an algae growth problem due to high temperatures and dry weather during the summer. The Watershed Water Quality Management Strategy for the Broad Basin (Technical Report No. 001-98) issued by SCDHEC shows an increasing trend for pH in Lake Monticello and classified uses are being maintained. The Department therefore concludes that there is not an anthropogenic cause for the algal growth. VC Summer requested that the pH variance months be changed to April – October. The algae blooms have been starting earlier and lasting longer due to the extreme drought and heat.
7. PQL: Not applicable
8. Conclusion:  
November – March: 6.0 – 8.5 standard units  
April – October: 6.0 – 9.0 s.u.  
Sampling Frequency: 1/Month  
Sample type: Grab

Copper

1. Previous permit limits:  
Daily maximum: 0.028 mg/l  
Monthly Average: 0.039 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application (2C & 2E): 3.38 µg/l
3. DMR Data: 0.035 mg/l (10/97)
4. Water Quality Criterion: see spreadsheet
5. Other Information:

6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes, based on Aquatic Life from R.61-68
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL: 0.010 mg/l
9. Conclusion: Based on reasonable potential, limit shall be imposed for copper. A schedule of compliance shall be included to allow time to comply with the limit.  
Daily maximum: 0.007 mg/l  
Monthly Average: 0.009 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab

#### Mercury

1. Previous permit limits: N/A
2. NPDES Application (2C & 2E): <0.200 µg/l
3. DMR Data: N/A
4. Water Quality Criterion: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes, based on Human Health Organism Consumption from R.61-68
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL: 0.0005 µg/l; EPA Method 1669/1631C
9. Conclusion: As stated in Section II.G.2.d.iii.1.b of the rationale, if the permittee uses a detection level that is greater than the PQL, then the reported "less than" value for a given sample is assumed to be a discrete value equal to the detection level used by the permittee. The reported value for mercury was <0.2 µg/l and the practical quantitation limit is 0.0005 µg/l. Due to the fact that there is insufficient data to do a reasonable potential calculation, the limit for mercury shall be monitor and report. A reopener clause will be added to Part V.A in order to evaluate the monitoring data for reasonable potential. Reasonable potential may be evaluated after each sample using the guidelines established in the permit rationale. (In accordance with Part II.J.4.b.(1), zero may be used in the calculation when the PQL stated above is achieved.) At any time reasonable potential is determined not to exist, the permittee may submit a written request that mercury monitoring be discontinued.  
Monthly average: Monitor and Report  
Daily maximum: Monitor and Report  
Sampling Frequency: 1/Month  
Sample type: Grab

#### Aluminum

1. Previous permit limits: N/A
2. NPDES Application (2C & 2E): 30.1 µg/l
3. DMR Data: N/A
4. Water Quality Criterion: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: Yes, based on Aquatic Life from 53 FR 33178, 8/30/88
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL: 0.05 mg/l
9. Conclusion: Due to the fact that there is no state standard, there shall be no limit for aluminum.

#### Zinc

1. Previous permit limits:  
Daily maximum: 0.059 mg/l  
Monthly Average: 0.065 mg/l  
Sampling Frequency: 1/Month  
Sample type: Grab
2. NPDES Application (2C & 2E): <10 µg/l
3. DMR Data: 0.058 mg/l (4/98)
4. Water Quality Criterion: see spreadsheet
5. Other Information:
6. Does the discharge cause, have the Reasonable Potential to Cause or Contribute: No
7. Effluent limitations guidelines (ELGs) and professional judgment-based limits: N/A
8. PQL: 0.010 mg/l
9. Conclusion: Based on reasonable potential, there shall be no limit imposed for zinc

#### Total Residual Chlorine (TRC)

1. Previous Permit Limits (10/1/1997):  
Monthly Average: 0.011 mg/l  
Daily Maximum: 0.019 mg/l  
Sample Type: Grab

Sampling Frequency: 1/Month

2. NPDES Application (2C): (No. of analyses: 12)  
Long Term Average: <0.05 mg/l  
Maximum Daily Value: <0.05 mg/l
3. DMR Data: The highest TRC value was reported on 6/99 as 0.20 mg/l.
4. Water Quality Data:
  - a. Aquatic Life  
Water Quality Criteria from Reg. 61-68, Appendix:  
Freshwater:  
CCC = 11 µg/l  
CMC = 19 µg/l
  - b. Human Health: None
5. Effluent limitation guidelines: Not applicable.
6. Wasteload Allocation Recommendation: 0.011 mg/l monthly average; 0.019 mg/l daily max
7. PQL: 0.05 mg/l
8. Conclusion: The TRC limit is based on Aquatic Life Criteria.  
Monthly Average: 0.011 mg/l  
Daily Maximum: 0.019 mg/l  
Sampling Frequency: 1/Month  
Sample Type: Grab

#### Ammonia

1. Previous permit limits (Effective 10/1/1997):  
Monthly Average: 2.1 mg/l  
Daily Maximum: 4.2 mg/l  
Sampling Frequency: 1 /Month  
Sample Type: Grab
2. NPDES Application (2C): (# of analyses: 1)  
Maximum Daily Value: 0.29 mg/l
3. DMR Data: The highest ammonia value was reported on 9/01 as 1.8 mg/l.
4. Waste Load Allocation, dated (04/23/01) based on dissolved oxygen modeling:  
Summer:  
Max Conc. Protecting Against Chronic Toxicity: 2.22 mg/l  
  
Winter:  
Max Conc. Protecting Against Chronic Toxicity: 4.36 mg/l
5. Water Quality Criteria for Protection of Aquatic Life from Reg. 61-68, Appendix, Attachment 3: Freshwater:

When salmonids are present, the CMC is determined by:

$$CMC = \left\{ \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}} \right\}$$

Establish the CCC when fish early life stages (ELS) are present:

$$CCC = \left\{ \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right\} \times \left\{ \min \left( 2.85, 1.45 \times 10^{0.028 \times (25 - T)} \right) \right\}$$

Note: The Department always considers fish early life stages to be present unless data is presented which demonstrates their absence.

Where:

pH = 7.5 s.u.

T = Summer: 25°C, Winter: 13°C

CCC = Summer: 2.22 mg/l, Winter: 4.36 mg/l

Monthly Average: Summer: 2.2 mg/l, Winter: 4.4 mg/l based on CCC above

6. Water Quality Data for Protection of Human Health: None
7. Water Quality Criteria based on Organoleptic Data: None
8. Other information:
9. Conclusion: Ammonia shall be limited in accordance with Aquatic Life Criteria and WLA. The limits will be the same as the previous permit.  
Monthly Average: 2.1 mg/l  
Daily Maximum: 4.2 mg/l  
Sampling Frequency: 1/Month  
Sample Type: Grab

#### Whole Effluent Toxicity (WET)

Previous permit requirements:

Outfall 001: Quarterly chronic toxicity testing at a chronic test concentration (CTC) of 100% with limitations expressed as a maximum of 50% effect and an average of 20% effect

Outfall 012: Quarterly acute toxicity testing at an acute test concentration (ATC) of 100% with limitations expressed as a maximum of 50% effect and an average of 20% effect

Outfall 014: Quarterly chronic toxicity testing at a chronic test concentration (CTC) of 100% with limitations expressed as a maximum of 50% effect and an average of 20% effect

DMR Data:



Outfall 001: 19 WET tests were performed during the last permit period. The highest reported monthly average and daily max percent increase in mortality was 20% on 9/01 and 9/00. The highest reported monthly average and daily max percent reduction in reproduction was 17.4% on 6/02.

Outfall 012: 18 WET tests were performed during the last permit period. The highest reported monthly average and daily max percent increase in mortality was 15% on 3/01.

Outfall 014: 18 WET tests were performed during the last permit period. The highest reported monthly average percent increase in mortality was 35.3% on 6/99 and the highest reported daily max percent increase in mortality was 70.6% on 6/99. The highest reported monthly average and daily max percent reduction in reproduction was 45% on 12/00.

Other Information: EPA sent a letter dated April 17, 1998 recommending that the WET testing endpoints be modified as well as the methods for statistically analyzing the toxicity endpoints.

#### Testing Requirements for this permit:

From the information described above, using the procedures in Regulation 61-9.122.44(d)(1)(ii), the Department has determined that this discharge causes, has the reasonable potential to cause or contributes to an excursion of the narrative water quality standard of "no toxics in toxic amounts" from Regulation 61-68. Therefore, limitations on WET are needed.

The Department, after review of recent EPA guidance on WET testing, has added language to the Bureau of Water document entitled "Options for Data Analysis of Whole Effluent Toxicity Testing Required by NPDES Permits," September 2001 referenced in the permit which accounts for test variability, an issue that has been raised by numerous permittees. The EPA documents "Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program," June 2000 and "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)," July 2000 list some of the ways in which variability may be addressed. The pass/fail test previously used has been replaced with a multi-dilution requirement, as recommended by EPA, which allows the permittee the ability to collect more information relative to the point where toxicity actually occurs and average test results for compliance where more than one test is conducted during a monitoring period.

Your permit has WET limitations. These limitations are expressed as a maximum of 40% effect and an average of 25% effect. These limitations are designed to protect to the narrative water quality criterion for toxicity of "no toxics in toxic amounts." A maximum likelihood regression model will be used to determine the percent effect of the test as specified in Part V of the permit. For a monitoring period where a single test is performed, the Department has determined that an average 25% effect closely corresponds to 0.05 alpha level and a maximum 40% effect is close to 0.01 alpha level under current test design and methods.

#### Outfall 001:

$$\text{Dilution Factor} = \frac{\text{Flow of Discharge}}{7Q_{10} + \text{Flow of Discharge}} = \frac{674.92 \text{ MGD}}{0.0 \text{ MGD} + 674.92 \text{ MGD}} = 1.0$$

$$\text{Instream Waste Concentration} = 1/\text{DF} \times 100 = 1/1 \times 100 = 100\%$$

A reasonable potential calculation was conducted for Outfall 001 using the DMR data from 12/97 – 6/02. The previous permit required Chronic Toxicity Testing at CTC = 100% with limitations of 20% monthly average and 50% daily maximum for percent increase in mortality and percent reduction in reproduction. The reasonable potential calculation was conducted on the overall percent reduction, which is the greater of the percent effect on survival and reproduction. The procedure for determining reasonable potential is explained in Box 3-2 on page 53 of EPA's Technical Support Document

for Water Quality-Based Toxics Control (TSD). The following table shows the DMR data that was used to calculate reasonable potential in accordance with the TSD. The Reasonable Potential Multiplying Factor (RPMF) from Table 3-2 is 1.6. The reasonable potential multiplying factor is used with the highest data point to give the 95% Confidence Level and 95% Probability Basis for the highest reasonable potential for the parameter. Multiply the RPMF by the highest value in the data set to obtain the maximum receiving water concentration.

Sample Date	TCP3B % Effect	TJP3B % Mort	Max
12/31/1997	0	0.5	0.5
03/31/1998	0	0	0
06/30/1998	6.3	0	6.3
09/30/1998	10.5	0	10.5
12/31/1998	0	0	0
03/31/1999	0	14.3	14.3
06/30/1999	0	10	10
09/30/1999	0	10	10
12/31/1999	0	10	10
03/31/2000	0	0	0
06/30/2000	6.3	0	6.3
09/30/2000	11.1	20	20
12/31/2000	15	0	15
03/31/2001	0	0	0
06/30/2001	0	0	0
09/30/2001	16.7	20	20
12/31/2001	5.3	0	5.3
03/31/2002	0	0	0
06/30/2002	17.4	10	17.4

number of samples	19
standard deviation	7.205184
mean	7.663158
CV = st.dev/mean	0.940237
max value	20
MF (from Data sheet)	1.60
RWC = MF * max	32

The RWC obtained is 32%. Compare this value to the average limitation of 25% inhibition and a maximum limitation of 40% inhibition at the test concentration as explained above. EPA recommends that permitting authorities find reasonable potential when the projected RWC is greater than an ambient criterion.

Chronic toxicity testing will be performed at the chronic test concentration (CTC) of 100% for Outfall 001.

#### Outfall 014:

$$\text{Dilution Factor} = \frac{\text{Flow of Discharge}}{7Q_{10} + \text{Flow of Discharge}} = \frac{0.106 \text{ MGD}}{0.0 \text{ MGD} + 0.106 \text{ MGD}} = 1.0$$

$$\text{Instream Waste Concentration} = 1/\text{DF} \times 100 = 1/1 \times 100 = 100\%$$

Chronic toxicity testing will be performed at the chronic test concentration (CTC) of 100% for Outfall 014.

The following calculation, as explained in the Bureau's guidance document *Options for Data Analysis of Whole Effluent Toxicity Testing Required by NPDES Permits*, September 2001, shows how the multiple concentrations are derived. To determine a geometric series of effluent concentrations given a low concentration  $L$ , a high concentration  $H$ , and  $n$  concentrations, the concentration factor is

$$F = (H/L)^{1/(n-1)} \text{ and the } i\text{th concentration is } C_i = L * F^{i-1}$$

Where,  $F$  is the concentration factor and  $n$  is the number of concentrations:

$$\text{For } n = 5, L = 50, \text{ and } H = 100, F = \frac{100}{50}^{1/(5-1)} = 2^{1/4} = 1.19$$

After determining the concentration factor the following formula is used to determine the test concentrations:

$$C_i = L * F^{(i-1)} \text{ where, } i \text{ is the number of concentrations}$$

Determining the four concentrations: Note;  $i = 1, 2, 3, 4, 5$

$$C_1 = 50 * 1.19^{(1-1)} = 50\%$$

$$C_2 = 50 * 1.19^{(2-1)} = 60\%$$

$$C_3 = 50 * 1.19^{(3-1)} = 71\%$$

$$C_4 = 50 * 1.19^{(4-1)} = 84\%$$

For this discharge situation, the concentrations are 0%, 50%, 60%, 71%, 84% and 100% for each multiple concentration test.

#### Outfall 012

The Permittee is presently required to conduct quarterly whole effluent acute toxicity testing at an ATC of 100%. In order for new toxicity limits to be drafted, the Department allows the Permittee to submit information concerning a mixing zone for the effluent discharge. A Schedule of Compliance will be written into the permit to submit this information. The Permittee will be given existing toxicity limits for a period of one year after the effective date of the permit. At the end of this interim period, final whole effluent toxicity chronic testing at a chronic test concentration (CTC) of 100% will be placed in the permit. Upon sufficient mixing demonstration, the permit will be modified to include alternate WET test requirements.

A reasonable potential calculation was conducted for Outfall 012 using the DMR data from 12/97 – 6/02. The previous permit required Acute Toxicity Testing at ATC = 100% with limitations of 20% monthly average and 50% daily maximum for percent increase in mortality. The procedure for determining reasonable potential is explained in Box 3-2 on page 53 of EPA's Technical Support Document for Water Quality-Based Toxics Control (TSD). The following table shows the DMR data that was used to calculate reasonable potential in accordance with the TSD.

Sample Date	TJP3B % Mort
12/31/1997	0
03/31/1998	5

06/30/1998	5
09/30/1998	0
12/31/1998	0
03/31/1999	5
06/30/1999	0
09/30/1999	0
12/31/1999	15
03/31/2000	0
06/30/2000	0
09/30/2000	0
12/31/2000	0
03/31/2001	15
06/30/2001	5
09/30/2001	0
12/31/2001	0
03/31/2002	0
06/30/2002	10

number of samples	19
standard deviation	5.058141489
mean	3.157894737
CV = st.dev/mean	1.601744805
max value	15
MF (from Data sheet)	1.90
RWC = MF * max	28.5

The Reasonable Potential Multiplying Factor (RPMF) from Table 3-2 is 1.9. The reasonable potential multiplying factor is used with the highest data point to give the 95% Confidence Level and 95% Probability Basis for the highest reasonable potential for the parameter. Multiply the RPMF by the highest value in the data set to obtain the maximum receiving water concentration. The RWC obtained is 28.5%. Compare this value to a maximum limitation of one percent ( $\leq 1\%$ ) lethality at the test concentration. EPA recommends that permitting authorities find reasonable potential when the projected RWC is greater than an ambient criterion.

#### Section 316(b)

Section 316(b) of the Act requires that the location, design, construction, and capacity of a cooling water intake structure reflect the best technology available for minimizing environmental impact. A determination has been made, in accordance with Section 316(b) of the Act, that the location, design, construction, and capacity of the cooling water intake structure(s) reflects the best technology available for minimizing adverse environmental impact. This determination was based on information submitted by SCE&G in a 316(b) Demonstration (March 1977).

#### Chemical Additives

Ammonia  
Hydrazine  
Methoxypropylamine  
Carbohydrazine  
Boron (Boric Acid)  
Zinc Sulfate  
Soda Ash  
Aluminum Sulfate

Gaseous Chlorine  
Clay, Polymer  
Tetrasodium Pyrophosphate  
Sodium Hydroxide  
Sulfuric Acid  
Chlorine  
Sodium Hypochlorite  
CT-2 (Betz)  
Polymer (Betz 1190)  
Sodium Metasilicate  
Betz Depositrol  
Betz Dianodic  
Betz Flowgard  
Sodium Nitrate/Sodium Borate  
Lithium Hydroxide  
Hydrogen Peroxide  
Potassium Chromate  
Potassium Hydroxide  
Potassium dichromate

#### **Sludge Disposal**

The Permittee shall be required to obtain prior approval for any sludge disposal activities at this facility

#### **Operator**

The Permittee's present treatment system consists of sedimentation and neutralization. The highest classification of the operation of all treatment equipment is usually used to determine the operator requirement. Based on the wastewater treatment system classification, an operator with a Grade C-Bio or higher certification is required to accept the responsibility of inspections made by lower grade operators.

#### **Co-Treatment**

Where various wastes are combined for treatment and discharge, 40 CFR 423.13(h) requires that the quantity of each pollutant or pollutant property not exceed the specified limitation for that waste source. Applicable effluent guidelines concentrations were flow weighted in calculating final effluent concentrations.



**Appendix I**  
**Outfall 001 Spreadsheet**

Not included