Part V. Other Requirements

A. Effluent Limitations and Monitoring 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. a. Effluent samples taken in compliance with the monitoring requirements specified in Part III, shall be taken at the following location(s): nearest accessible point after final treatment but prior to actual discharge or mixing with the receiving waters.

   b. Influent samples taken in compliance with the monitoring requirements specified in Part III, shall be taken at the following location(s): nearest accessible point prior to any primary treatment unit (e.g. after the bar screen and before primary treatment).

3. Samples shall be collected in accordance with Part I.

4. MR = Monitor and Report only.

B. Effluent Toxicity Limitations and Monitoring Requirements

1. Acute Toxicity

   Not applicable to this permit.

2. Chronic Toxicity (For the requirements identified in Part III.B):

   a. A *Ceriodaphnia dubia* three brood chronic toxicity test shall be conducted at the frequency stated in Part III.B, Effluent Toxicity Limitations and Monitoring Requirements, using the chronic test concentration (CTC) of 11% and the following test concentrations: 0% (control), 50%, 25%, 11%, 5.5 and 3% 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/821/R-02/013 (October 2002).

   c. The permittee shall use the linear interpolation method described in "Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," EPA/821/R-02/013 (October 2002), Appendix M to estimate the percent effect at the CTC according to the equations in d below.

   d. The linear interpolation estimate of percent effect is $\left(1-\frac{M_{CTC}}{M_1}\right)*100$ if the CTC is a tested

concentration. Otherwise, it is $\left(1 - \frac{M_J - \frac{M_{J+1} - M_J}{C_{J+1} - C_J} * C_J + \frac{M_{J+1} - M_J}{C_{J+1} - C_J} * CTC}{M_1}\right) * 100$.

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. On the DMR Attachment, the permittee shall also report the IC_{25} and, using the same test data, the 48-hour chronic LC_{50}.

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.

f. All valid toxicity test results shall be submitted on the DHEC Form 3710 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.

g. 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 Whole Effluent Toxicity (WET) testing requirements 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."

h. 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.

3. Biological Assessment

Not applicable to this permit.

C. Groundwater Requirements

Not applicable to this permit.

D. Sludge Disposal Requirements

1. Sludge Use and Disposal

a. The permittee shall comply with effluent standards and/or prohibitions established under Section 307(a) of the Clean Water Act (CWA) for toxic pollutants, standards for sludge use and disposal established in 40 CFR Parts 122, 123, 258, 501 and 503, under Section 405(d) of the CWA, and R.61-9.503 State Domestic Sludge Regulations, within the time provided in the regulations that establish these prohibitions or standards for sludge use or disposal, even if the NPDES permit has not yet been modified to incorporate the requirement.

b. 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.

c. This permit may be modified to address any standard for sludge use or disposal promulgated under Section 405(d) and Section 503 of the Clean Water Act and R.61-9.503 State Domestic Sludge Regulations or additional controls of a pollutant or practice not currently limited in this permit.

d. It must be noted that 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 58, No. 32, pages 9248 through 9415, dated February 19,1993, was effective March 22, 1993, and R.61-9.503 State Domestic Sludge Regulations was effective June 28, 1996 and continues in effect. The compliance with the Federal sludge regulations is directly enforceable as identified in 40 CFR Part 503.3. No person shall use or dispose of sewage sludge through any practice for which requirements are established except in accordance with 40 CFR Part 503. Any sludge disposal permits issued by the Department will remain in effect and all conditions and requirements will apply; however, this does not relieve the permittee from complying with the conditions of 40 CFR Part 503 or State Regulation 61-9.503.

1. Compliance with the standards (40 CFR Part 503 and R.61-9.503) should have been achieved by February 19,1994, and this condition continues to be in effect.

2. When compliance with the standard required construction of new pollution control facilities, compliance with the standards (40 CFR Part 503 and R.61-9.503) should have been achieved by February 19, 1995, and this condition continues to be in effect.

3. All other requirements for the frequency of monitoring, record keeping, and reporting identified in 40 CFR Part 503 or R.61-9.503, was effective on July 20, 1993 and continue to be in effect.

4. Class I sludge management facilities (includes but is not limited to all facilities with pretreatment programs, Publicly Owned Treatment Works (POTW) with a design flow rate equal to or greater than 1 Million gallons per day, and POTW's that serve 10,000 people or more) shall submit the following to EPA Region IV (USEPA Region IV, Clean Water Act Enforcement Section, Water Management Division, 61 Forsyth Street SW, Atlanta, GA 30303) with a duplicate copy to the Department:

   a. The information in 40 CFR Part 503.17(a) except the information in §503.17(a)(3)(ii), 503.17(a)(4)(ii) and 503.17(a)(5)(ii), for the appropriate requirements on February 19 of each year.

   b. The information in 40 CFR Part 503.17(a)(5)(ii)(A) through (a)(5)(ii)(G) on February 19 of each year when ninety (90) percent or more of any of the cumulative pollutant loading rates in Table 2 of §503.13 is reached at a site.

   The requirements to send information to EPA Region IV will remain in effect until the State of South Carolina is delegated the sludge program under 40 CFR Part 123 or 40 CFR Part 501. The permittee is also required to send a copy of the information to the Department under the requirements of R.61-9.503.

e. Until such time as a specific federal sludge disposal permit is issued under the provisions of 40 CFR Part 503, the direct enforceability (§503.3(b)) of the sludge standards requires that the permittee shall not use or dispose of sewage sludge through any practice for which requirements are established in 40 CFR Part 503, except in accordance with those requirements. If the Department includes State sludge permit requirements under R.61-9.503, the conditions of that permit shall apply in addition to any requirements under 40 CFR Part 503.

f. 1. The permittee must obtain prior Departmental approval of planned changes in the facility when the alteration or addition results in a significant change in the permittee's 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 of disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

   2. The sludge disposal permit may be modified or revoked and reissued if there are material and substantial alterations or additions to the permitted facility or activity (including a change or changes in the permittee's sludge use or disposal practice) which occurred after the permit issuance which justify the application of permit conditions which are different from or absent in the existing permit.

g. The sludge disposal permit may be terminated if there is a change in any condition that requires either a temporary or permanent reduction or elimination of any discharge or sludge use or disposal practice controlled by the permit.

h. Periodic inspections will be conducted by Department authorized representatives to ensure compliance with State regulations and permit stipulations. Any necessary modification to this permit may be based upon these evaluations.

i. Records of monitoring required by the permits related to sludge use and disposal activities must be kept at least five (5) years (or longer as required by 40 CFR Part 503 or R.61-9.503).

j. Sludge monitoring procedures shall be those specified in 1) R.61-9.503; 2) 40 CFR Part 503; 3) 40 CFR Part 136; or 4) other procedures specified in the sludge permit (in that order of "preference" depending on the availability and applicability of a particular method at the time the sludge permit is issued).

k. The permittee must provide sludge monitoring results on a form(s) approved by the Department.

l. The permittee shall submit the results of all sludge monitoring if done more frequently than required by the sludge permit. The permittee may be required to maintain specific records at the facility and on request may also be required to furnish them to the Department.

m. The permittee should note that under 40 CFR 122.44(*l*), the "anti-backsliding" provision applies only to surface water dischargers. The "anti-backsliding" provision does not apply to sludge use and disposal activities.

2. Odor Control Requirements

The permittee shall use best management practices normally associated with the proper operation and maintenance of a sludge wastewater treatment site, any sludge storage or lagoon areas, transportation of sludges, and all individual activities permitted under R.61-9.503 to ensure that an undesirable level of odor does not exist.

a. The permittee is required to prepare an odor abatement plan for the sewage sludge treatment sites, any sludge storage or lagoon areas, and land application or surface disposal sites. It must be noted this state regulation that went into effect on June 27, 2003, and continues in effect, required permittees that land-apply sludge to prepare the plan by December 24, 2003. Otherwise, the permittee had until June 27, 2004 to prepare the plan and this requirement remains in effect. The plan must have included the following topics:

(1) Operation and maintenance practices which are used to eliminate or minimize undesirable odor levels in the form of best management practices for odor control.

(2) Use of treatment processes for the reduction of undesirable odors;

(3) Use of setbacks.

(4) Contingency plans and methods to address odor problems for the different type of disposal/application methods used.

b. Unless otherwise requested, prior to issuance of a new or expanded land application disposal permit (either NPDES or ND), the Department may review the odor abatement plan for compliance with this Part (503.50). The Department may require changes to the plan as appropriate.

c. No permittee may cause, allow, or permit emission into the ambient air of any substance or combinations of substances in quantities that an undesirable level of odor is determined to result unless preventative measures of the type set out below are taken to abate or control the emission to the satisfaction of the Department. When an odor problem comes to the attention of the Department through field surveillance or specific complaints, the Department may determine, in accordance with section 48-1-120 of the Pollution Control Act, if the odor is at an undesirable level by considering the character and degree of injury or interference to:

(1) The health or welfare of the people;
(2) Plant, animal, freshwater aquatic, or marine life;
(3) Property; or
(4) Enjoyment of life or use of affected property.

d. After determining that an undesirable level of odor exists, the Department may require:

(1) the permittee to submit a corrective action plan to address the odor problem,
(2) remediation of the undesirable level of odor within a reasonable timeframe, and
(3) in an order, specific methods to address the problem.

e. The Department acknowledges receipt of the "Odor Abatement Plan for the City of Columbia" for the NPDES permit files. No formal DHEC review is necessary (ref. DHEC letter dated July 20, 2004).

d. In accordance with R.61-9.503.50(e), if the permittee fails to control or abate the odor problems addressed in this section within the specified timeframe, the Department may revoke disposal/application activities associated with the site or the specific aspect of the sludge management program.

E. Land Application

Not applicable to this permit.

F. Pretreatment

1. Pretreatment Regulations and Program Requirements

a. The permittee's Pretreatment Program was originally approved on October 1, 1985 and the update was approved on June 9, 1997. The Permittee shall provide a subsequent update to the approved updated pretreatment program as specified in the Schedule of Compliance in Part IV of this permit.

b. In addition to the discharge monitoring reports submitted in accordance with Part II.L.4., the Permittee shall also submit copies of the following with the discharge monitoring reports on or before the 28th of January and July.

- Any Permits to Discharge issued to, or Contracts entered into with, non-domestic dischargers during the previous quarter if said dischargers must be regulated.

- The names of any non-domestic dischargers that are in violation of any limits, either specific or general, imposed as part of the Pretreatment Program and an explanation of the action(s) being carried out to bring them into compliance.

- Any schedules of compliance agreed to by or imposed on a non-domestic discharger for the purpose of bringing said discharger into compliance with the established discharge limits.

- A report showing the number of regulated non-domestic dischargers; the number monitored and/or inspected during the calendar year; the cumulative number monitored and/or inspected during the year to date; the number in compliance and non-compliance during the calendar year and the number in compliance or non-compliance during the calendar year.

c. Permittee shall require all non-domestic dischargers into Permittee's system to comply with pretreatment provisions of the Clean Water Act (Public Law 95-217), as set forth in the General Pretreatment Regulations, 40 CFR Part 403, promulgated thereunder, and with the Permittee's State Approved Pretreatment Program (R.61-9.403).

2. Prohibited Discharges

In accordance with 24 S.C. Reg. Ann. § 61-9.403, the Permittee shall prohibit in its sewer use ordinance and pretreatment program regulations (if a pretreatment program is approved by the Department) the discharge of pollutant(s) into its treatment works by any non-domestic source(s), if such pollutant(s) may inhibit or interfere with the operation or performance of the works. Further, the Permittee shall prohibit in its sewer use ordinance and pretreatment program regulations (if a pretreatment program is approved by the Department) the introduction of the following pollutants into its treatment works:

a. Pollutant(s) which create a fire or explosion hazard in the POTW, including, but not limited to, wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21.

b. Pollutant(s) which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, unless the works is specifically designed to accommodate such discharges.

c. Solid or viscous pollutant(s) in amounts which will cause obstruction to the flow in the POTW resulting in interference.

d. Any pollutant, including oxygen demanding pollutants, (BOD, etc.), released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.

e. Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40°C (104°F) unless the Department, upon request of the POTW, approves alternate temperature limits.

f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.

g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

h. Any trucked or hauled pollutants, except at discharge points designated by the POTW.

Upon development of specific limits for these pollutant categories, either in an approved POTW Pretreatment Program or otherwise, such limits shall be deemed prohibitions for the purpose of Section 307(d) of the Act and shall be enforceable in lieu of the general prohibitions set forth above.

G. Additional Operational Requirements

1. The wastewater treatment plant is assigned a classification of Group IV-B (Biological) in the Permit to Construct which is issued by the Department. This classification corresponds to an operator with a grade of A.

2. The wastewater treatment plant is assigned a Reliability Classification of Class 3, in accordance with Section 67.400 "Reliability Classifications" of the Standards for Wastewater Facility Construction: R.61-67.

3. For parameters with a sample frequency of once per month or greater, the Permittee shall monitor (at least one sample) consistent with conditions established by this Permit on the second (2nd) Wednesday of every calendar month, unless otherwise approved by the Department. (For example; with a once per week (01/07) sampling frequency, the permittee shall monitor one weekly sample on the day of the week noted during the monthly DMR reporting period.)

   For parameters with a sampling frequency of less than once per month (if any), the permittee shall monitor these parameters on specific date noted above on any of the months during the appropriate reporting period unless otherwise approved by the Department. (For example, with a once per quarter (1/90) sampling frequency, the permittee may monitor on the day of the week noted in either the first, second or third month in the quarterly reporting period.)

   For parameters requiring multiple samples for a single test the Permittee may collect the samples on any date during the reporting period, unless otherwise approved by the Department. The permittee must notify the Department of the planned sampling dates upon request.

   In accordance with R.61-9.122.41(j)(1)(iii), the Department may waive compliance with the permit requirement for a specific sampling event for extenuating circumstances. Additional monitoring, as necessary to meet the frequency requirements of this Permit (Part III.A., III.B., and III.C., if applicable) shall be performed by the Permittee.

4. [Reserved]

5. For the parameters listed that are not quantifiable using EPA-approved analytical methods, the practical quantitation limit (PQL) using the analytical method stated below shall be considered as being in compliance with the limit provided. In cases where the limit is not quantifiable using EPA approved analytical methods, appropriate biological monitoring requirements are incorporated into the permit.

   For purposes of reporting, the Permittee shall use the reporting threshold equivalent to the PQL listed below and conduct analyses in accordance with the method specified below:

Parameter	Analytical Method	PQL
Total Copper	200.7, 200.8, 200.9, SM3113B	0.010 mg/l
Total Mercury	1669/1631E	0.0000005 mg/l
Total Residual Chlorine	SM4500Cl B, C, D, F or G	0.050 mg/l
Total Phosphorus	365.1, 365.3 or 365.4	0.050 mg/l
Total Kjeldahl Nitrogen (TKN) as N	351.1 or 351.2∂	0.100 mg/l
Nitrate-Nitrite as N	353.2 or 353.3∂	0.020 mg/l

∂ Since there is no EPA accepted method to directly measure total nitrogen, total nitrogen should be reported as a sum of the values of TKN and Nitrate-Nitrite Nitrogen sampling.

   The Permittee can however use another analytical method (40 CFR Part 136 approved) from a SCDHEC certified laboratory with a PQL equal to or lower than the PQL listed above. If the permittee is using a PQL below the PQL listed above, then for purposes of reporting, the lower PQL shall be used in accordance with Part II.J.4.b.

H. Secondary Treatment - Percent Removal (BOD_5, $CBOD_5$ and TSS)

1. In accordance with R.61-9.133.102,103 and 105, the 30 day average percent removal for BOD_5, $CBOD_5$ (if applicable) and TSS have been identified in Part III.A, "Effluent Limitations and Monitoring Requirements". For purposes of reporting the 30-day average percent removal for BOD_5, $CBOD_5$ (if applicable) and TSS across the treatment plant, the permittee shall conduct <u>influent</u> and <u>effluent</u> sampling for BOD_5, $CBOD_5$ (if applicable) and TSS during a 30-day reporting as follows:

   <u>Influent Sampling</u>:
   - At a minimum during any 30-day reporting period, collect grab or composite influent sample(s) at a frequency identified in Part III.A. The procedure to collect a composite sample shall be in accordance with Part I.D and a grab sample shall be in accordance with Part I.I.
   - If only one influent sample is collected during any 30-day reporting period (provided this meets the minimum frequency specified in Part III.A), then that sample shall be considered as the 30-day average influent concentration for a given parameter.
   - If more than one influent samples are collected during the 30-day reporting period, then all individual values for a given parameter shall be averaged to determine the 30-day average influent concentration.

Effluent Sampling:

- Effluent data collected for permit compliance can be used, provided sufficient samples are collected to meet the frequency specified in Part III.A.
- If more than one effluent samples are collected during the 30-day reporting period, then all individual values for a given parameter shall be averaged to determine the 30-day average effluent concentration.

Percent Removal Determination:

- Determine the 30-day average percent removal for a given parameter using the formula below:

$$30\text{-}day\ average\ percent\ removal = \frac{C_{influent} - C_{effluent}}{C_{influent}} \times 100$$

Where:

$C_{influent}$ = Average of all influent samples collected during the 30-day reporting period in (mg/l).
$C_{effluent}$ = Average of all effluent samples collected during the 30-day reporting period in (mg/l).

2. The Department may substitute either a lower percent removal requirement or a mass loading limit for the percent removal requirements set forth in section 133.102(a)(3), section 133.102(a)(4)(iii), section 133.102(b)(3), section 133.105(a)(3), section 133.105(b)(3) and section 133.105(e)(1)(iii) provided that the permittee satisfactorily demonstrates that:

   (a) The treatment works is consistently meeting, or will consistently meet, its permit effluent concentration limits but its percent removal requirements cannot be met due to less concentrated influent wastewater,

   (b) To meet the percent removal requirements, the treatment works would have to achieve significantly more stringent limitations than would otherwise be required by the concentration-based standard. In accordance with R.61-9.133.101(j), "Significantly more stringent limitation" means BOD_5 and TSS limitations necessary to meet the percent removal requirements of at least 5 mg/l more stringent than the otherwise applicable concentration-based limitations (e.g., less than 25 mg/l in the case of the secondary treatment limits for BOD5 and TSS), or the percent removal limitations in section 133.102 and section 133.105, if such limits would, by themselves, force significant construction or other significant capital expenditure.

   (c) The less concentrated influent wastewater is not the result of excessive I/I. The determination of whether the less concentrated wastewater is the result of excessive I/I will use the definition of excessive I/I in 40 CFR 35.2005(b)(16) plus the additional criterion that inflow is non-excessive if the total flow to the POTW (i.e., wastewater plus inflow plus infiltration) is less than 275 gallons per capita per day.

I. Wastewater Design Flow

   a. For the purposes of identification of the treatment capacity (under R.61-67.300.A.8) and for a determination of whether or not a POTW is required to develop a pretreatment program (under R.61-9.403.a), the design flow(s) is 60 MGD.

b. For NPDES billing (under R.61-30.2.b), the "actual flow" limit for this wastewater treatment facility shall be identified as the design flow of 60 MGD.

J. Water Treatment Plant Notification

If the proposed Santee Cooper Intake (Lake Marion) is constructed, the permittee shall notify this downstream water treatment plants of any emergency condition, plant upset, bypass or other system failure, which has the potential to affect the quality of water withdrawn for drinking purposes.

This notification should be made as soon as possible and in anticipation of such event, if feasible, without taking away any response time necessary to attempt to alleviate this situation.

K. Specific Test Procedure of the EPA Method 1631 (Mercury Only)

Analyzing for mercury under the clean technique may be allowed to subtract any field blank contamination off the final recorded analysis of an effluent compliance sample. These procedures are as follows:

1. Subtraction of field or equipment blank results from results for samples.

   a. If blank correction is requested or required, the permittee (laboratories) may subtract the results from field or equipment blanks (but not both) provided that the results for the blanks meet the requirements in Section 9.4 of Method 1631.

   b. If the result from a field or equipment blank is subtracted, the permittee (laboratories) may not additionally subtract the reagent blank result because the reagents also are used for the determination of mercury in the field and/or equipment blanks; i.e., subtraction of one blank only, among the **reagent blank, field blank, or equipment blank** is allowed.

   c. The results for all blanks must meet the specifications in Section 9.4 of Method 1631 before blank subtraction may be performed.

   d. If the results for all blanks meet the respective specifications, the choice of which blank to subtract is at the discretion of the discharge/permittee and its laboratory.

   e. The procedures are specified in "Guidance for Implementation and Use of EPA Method 1631for the Determination of Low-Level Mercury (40 CFR part 136)", (EPA 821-R-01-023).

2. Reporting of the sample results

   a. The laboratory must report results for the sample and the reagent, field, and equipment blanks separately so that the data user can judge the appropriateness of blank subtraction, if blank subtraction was preformed.

   b. Laboratories should follow the guidelines established in 12.4 of the EPA method 1631 for reporting both sample and blank results.

c. If mercury concentrations in the field blanks exceed the concentrations stated, associated sample results may not be reported or otherwise used for regulatory compliance purposes as specified in 9.4.3 of the EPA method 1631.

L. Incinerator Limitations and Monitoring Requirements

Final Limits

1. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to incinerate sludge. Such incineration shall be limited and monitored by the permittee as specified below:

SLUDGE CHARACTERISTICS	PARAMETER LIMITATIONS	MONITORING REQUIREMENTS	
PARAMETER	Daily Maximum	Measurement Frequency	Sample Type
Total Arsenic	16.19 mg/kg	1/Quarter	24 Hr. Comp.
Total Cadmium	23.48 mg/kg	1/Quarter	24 Hr. Comp.
Total Lead	2,954.78 mg/kg	1/Quarter	24 Hr. Comp.
Total Chromium	6,618.72 mg/kg	1/Quarter	24 Hr. Comp.
Total Nickel	77,000 mg/kg	1/Quarter	24 Hr. Comp.

INCINERATOR CHARACTERISTICS	CHARACTERISTICS REPORTING REQUIREMENTS	MONITORING REQUIREMENTS	
PARAMETER		Measurement Frequency	To Be Reported
Control Efficiency	MR	*	Calculated Value
Dispersion Factor	MR	*	Calculated Value
Sewage Sludge Feed Rate	MR	*	Measured Value

MR = Monitor and Report
* Measurement frequency will be in reference to Air Operate Permit #1900-0021.

2. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: after the centrifuge and prior to being fed to the incinerator.

3. The above metals limits may be adjusted by the Department to compensate for the actual feed rate of the sewage, but the maximum feed rate that will be used in the computation is 47.17 dry metric tons per day.

3. The above metals limits may be revised or adjusted by the Department using actual Control Efficiencies and Dispersion Factors that will be calculated using data from incinerators.

M. Sewer Overflow Identification

The permittee shall identify all wastewater discharges, at locations not authorized as permitted outfalls, that occur prior to the headworks of the wastewater treatment plant covered by this permit. The permittee shall submit, with the scheduled DMR Form, the following information for each discharge event at each source that occurs during the reporting period covered by the DMR Form:

a. the cause of the discharge;
b. duration and volume (estimate if unknown);
c. description of the source, e.g., manhole cover, pump station;
d. type of collection system that overflowed, i.e., combined or separate;
e. location by street address, or any other appropriate method;
f. date(s) of event;
g. the ultimate destination of the flow, e.g., surface water body, land use location, via municipal separate storm sewer system to a surface water body (show location on a USGS map or copy thereof); and
h. corrective actions or plans to eliminate future discharges.

The permittee shall refer to Part II.L.5 of this permit which contains information about reporting unpermitted discharge events. Submittal or reporting of any of this information does not provide relief from any subsequent enforcement actions for unpermitted discharges to waters of the State.

RATIONALE

Permitting Engineer: Weijia Hu

Name of Facility: City of Columbia
NPDES Permit No.: SC0020940
Facility Rating: Major: ☒ (EPA review required, POTW 1.0 MGD or more)
Minor: ☐ (EPA review may be required; see below)

Facility Description (include SIC code): 4952(SIC)
Facility Location: 1200 Simon Tree Lane @ the intersection of I-77 and Congaree River, South Carolina.
County: Richland
Watershed: Basin 02 (Saluda-Edisto River Basin)

Permit based on NPDES Permit Application: 2A
Application Received Date: 02/26/2009

Issuance (New) ☐ Reissuance ☒ Modification ☐ Expansion of existing facility ☐

If this application is for a new or expansion of an existing facility, is the anti-degradation assessment completed, per the requirements of R.61-68.D: No

Number of Outfalls: 1
For Outfall 001 Effluent Comprised of: Domestic and Indurstrial WW

Receiving Water: Congaree River
Receiving Water Classification (see R.61-68 for receiving water uses): Fresh Water (FW)
Does this discharge(s) have the potential to adversely affect waters in another state based on the county/waterbody in which it discharges? No (if yes, EPA review required)

Discharge to Impaired Waters: Yes
If Yes, the parameter(s) impaired from 303(d) list: FC, Copper, HG (Fish Consumption Advisories C-007A & C-007F)

Enter the appropriate Design Flow: (Q_d) (MGD): 60 (EPA review required for any private facility (average discharge 0.5 MGD or greater, or any POTW 1 MGD or greater)

Does this permit include site-specific limits for any parameter(s)? No (if yes, EPA review required)

Stream Data from Wasteload Allocation dated (02/24/2009)

Receiving Stream Flow Data:

7Q10 at discharge point (Q_{7Q10})	1630.000 cfs	1051.613 mgd
Average Annual Flow at discharge point (AAF_d)	8872.000 cfs	5723.871 mgd

Is the discharge above a drinking water intake? Yes.

Map showing the SWP area and the discharge point included: No

7Q10 at source water protection area boundary (Q_{7Q10})	1234.560 cfs	796.490 mgd
Average Annual Flow at source water protection area boundary (AAF_s)	45433.000 cfs	29311.610 mgd

Data from Discharge Monitoring Reports (DMRs) and NPDES permit application (including all subsequent data presented) from 09/30/2006 - 12/31/2008 has been used to evaluate permit limitations.

I. GENERAL INFORMATION

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

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

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

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

II. RATIONALE GUIDANCE PROCEDURES

A. 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, drinking water MCLs 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.14.c.(5). The Department defines the source water protection (SWP) area to be the primary SWP area delineated by the Source-Water Assessment and Protection (SWAP) Program initiated by the EPA and required by the states to identify SWP areas to protect drinking water sources. Using the procedure described in the document entitled, "Determination of the Primary and Secondary Source-Water Protection Areas for Selected Surface-Water Public-Supply Systems in South Carolina, 1999," USGS Water Resource Investigations Report 00-4097, the primary SWP area for an intake is the area which encompasses all 14-digit Hydrologic Unit Code basins that adjoin streams, tributaries, and reservoirs between an intake and the upstream 10-percent exceedance, 24-hour travel distance (TOT_{10}). The entire basin above a drinking water intake has been designated as the SWP area where the drainage area is equal to or less than one HUC basin or is estimated to have less than 24-hours of instream travel time between the intake and the HUC basin in the headwaters of the drainage basin.

C. Application of numeric criteria to protect human health: If separate numeric criteria are given for organism consumption, water and organism consumption (W/O), and drinking water Maximum Contaminant Levels (MCLs),

they shall be applied as appropriate. The most stringent of the criteria shall be applied to protect the existing and classified uses of the waters of the State. See R.61-68.E.14.b.(1).

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

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

F. Compliance Schedules:

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

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

G. Procedure for establishing effluent limitations:

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

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

Effluent limits for conventional oxygen demanding constituents (BOD_5, UOD and DO) are established to protect in-stream water quality and uses, while utilizing a portion of the assimilative capacity of the receiving water. The ability of a water body to assimilate oxygen-demanding substances is a function of its physical and chemical characteristics above and below the discharge point. Various mathematical techniques, called models, have been developed to estimate this capacity. The Department follows the procedures as outlined in the "State/EPA Region IV Agreement on the Development of Wasteload Allocations/Total Maximum Daily Loads and NPDES Permit Limitations" dated October 30, 1991 (as updated) for determining the assimilative capacity of a given water body. Mathematical models such as QUAL2E and QUAL2E-UNCAS are used in accordance with "Enhanced Stream Water Quality Models QUAL2E and QUAL2E-UNCAS: Documentation and Users Manual" (EPA/600/3-87/007; dated May 1987) as updated. BOD_5 limit based on the Wasteload Allocation is considered to be the monthly average limit. The weekly average limit is established by multiplying the monthly average limit by 1.50. This multiplier (1.50) is equal to the ratio between weekly average and monthly average BOD_5 limits for secondary treatment (R.61-9.133.102). For facilities subject to secondary treatment regulation the BOD_5 limits will be in accordance with Regulation R.61-9.133.102. 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 weekly average will be determined by multiplying the monthly average derived limit by 1.50. These values will be compared with the ammonia water quality criteria for protection of aquatic life from Regulation 61-68, as shown below. 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.

Ammonia limits based on the 1999 Update of Ambient Wate Quality Criteria for Ammonia (1999 Ammonia Update). The 1999 Ammonia Update contains EPA's most recent freshwater aquatic life criteria for Total Ammonia Nitrogen (as N), superseding all previous EPA recommended freshwater criteria for ammonia. The 1999 Ammonia Update pertains to Fresh Waters. EPA has issued a Federal Register notice of availability for the 1999 Update, which summarizes changes in the 1999 Update and describes EPA's recommendations for implementing the criteria. The full text of the Federal Register Notice is available at http://www.epa.gov/ost/standards/ammonia/ on the Internet. The thirty-day (monthly) average, and weekly average limits for Total Ammonia Nitrogen (as N) are calculated using the following equations (R.61.68; Attachment 3 "Calculation of Freshwater Ammonia Criteria"):

(i) Determining the Criterion Concentration:

Step 1: (1) Establishing the CCC (Criterion Continuous Concentration) when fish early life stages (ELS) are present:

$$CCC\ (\text{in mg N/L}) = \left\{\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right\} \times \left\{\min\left(2.85, 1.45\times10^{0.028\times(25-T)}\right)\right\}$$

(2) Establishing the CCC (Criterion Continuous Concentration) when fish early life stages (ELS) are absent:

$$CCC\ (\text{in mg N/L}) = \left\{\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right\} \times \left\{1.45\times10^{0.028\times(25-\max(7,T))}\right\}$$

Step 2: (11) Establishing the CMC (Criterion Maximum Concentration) when salmonids are present:

$$CMC\ (\text{in mg N/L}) = \left\{\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}\right\}$$

(2) Establishing the CMC (Criterion Maximum Concentration) when salmonids are absent:

$$CMC\ (\text{in mg N/L}) = \left\{\frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}\right\}$$

Where:
CCC: Criterion Continuous Concentration in mg N/L
CMC: Criterion Maximum Concentration in mg N/L
pH: pH of receiving stream provided by WLA Section in standard units (typically assumed to be 7.5 standard units)

T: Critical Summer and Winter temperature of the receiving stream in °C, provided by WLA Section.

max (T, 7): Critical Summer and Winter temperature of the receiving stream in °C, provided by WLA Section, or 7°C whichever is higher.

Step 3: Calculating the Dilution Factor based on 7Q10 of the receiving stream (R.61-68.C.4.a)

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

Where:

Q_{7Q10} 7Q10 for the receiving stream in mgd

Q_d Wastewater Treatment Plant Discharge in mgd

Step 4: Calculating Limits for Total Ammonia Nitrogen (as N):

For protection of aquatic life:

(1) Monthly Average Limit (C_{avg}):

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

(2) Weekly Average Limit (C_{wk}):

C_{wk} (mg/l) = $1.5 \times C_{avg}$

The multiplier used will be consistent with secondary treatment multipliers for weekly average values under R.61-9.133.

(3) Daily Maximum Limit (C_{max}):

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

Where:

C_b Background Total Ammonia Nitrogen (as N) Concentration in mg/l, provided by WLA Section

Q_{7Q10} 7Q10 for the receiving stream in mgd

Q_d Wastewater Treatment Plant Discharge in mgd

The most restrictive of either limits calculated to protect aquatic life or oxygen demand will be used . See Part III for description of the controlling limit.

Note: For receiving stream flow data, see table provided earlier.

Note: Regulation R.61-68 Attachment 3 "Calculation of Freshwater Ammonia Criteria" provides equations for establishing the CMC (Criterion Maximum Concentration) for determining the daily maximum permit limit for Total Ammonia Nitrogen (as N). Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia (dated December 22, 1999) requires the use of stream 1Q10 or 1B3 as the design flow for calculating the daily maximum limits using the CMC. Since 1Q10 or 1B3 are not available, the Department will establish only the monthly average and weekly average effluent limits for Total Ammonia Nitrogen (as N) using the procedures stated above.

c. Discharges of Nutrients:

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

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

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

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

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

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

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

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

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

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

Following information to be used (where applicable) for establishing effluent concentration limits:

Q_{7Q10}	7Q10 of the receiving stream at the discharge point in mgd.
AAF_d	Stream Average Annual Flow (AAF) at the discharge point in mgd.
Q_{7Q10i}	7Q10 for the receiving stream at water treatment plant (WTP) intake downstream of the discharge in mgd.
AAF_i	Stream Average Annual Flow at water treatment plant (WTP) intake downstream of the discharge in mgd.
Q_d	Design Wastewater Treatment Plant 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 aquatic life, 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.14.c(5) to protect for short-term health effects when the discharge is above any drinking water intake. Protection of human health relative to drinking the water from the stream and consuming aquatic organisms from the same stream is provided by this criterion, but drinking the water withdrawn from the stream likely 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.

a. For discharges except those to lakes 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. For discharges to lakes affecting the primary SWP area, dilution will be determined using the sum of the TOT_{10} flow(s) along the SWP area boundary upstream of the drinking water intake of concern. If multiple drinking water intakes are present below the discharge, the SWP area of the intake closest to the discharge will be protected. If the entire basin is designated as the SWP area, the boundary will be the 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.14.c(5) to protect for short-term health effects when the discharge is above any drinking water intake. Protection of human health relative to drinking the water from the 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.

a. For discharges except those to lakes 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. For discharges to lakes affecting the primary SWP area, dilution will be determined using the sum of the TOT_{10} flow(s) along the SWP area boundary upstream of the drinking water intake of concern. If multiple drinking water intakes are present below the discharge, the SWP area of the intake closest to the discharge will be protected. If the entire basin is designated as the SWP area, the boundary will be the 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.14.c(5) to protect for long-term health effects due to cancer when the discharge is above any drinking water intake. Protection of human health relative to drinking the water from the 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.

a. For discharges except those to lakes 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. For discharges to lakes affecting the primary SWP area, dilution will be determined using the sum of the TOT_{10} flow(s) along the SWP area boundary upstream of the drinking water intake of concern. If multiple drinking water

intakes are present below the discharge, the SWP area of the intake closest to the discharge will be protected. If the entire basin is designated as the SWP area, the boundary will be the 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.14.c(5) to protect for long-term health effects due to cancer when the discharge is above any drinking water intake. Protection of human health relative to drinking the water from the 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.

a. For discharges except those to lakes 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. For discharges to lakes affecting the primary SWP area, dilution will be determined using the sum of the TOT_{10} flow(s) along the SWP area boundary upstream of the drinking water intake of concern. If multiple drinking water intakes are present below the discharge, the SWP area of the intake closest to the discharge will be protected. If the entire basin is designated as the SWP area, the boundary will be the TOT_{10} 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	18.5269
DF_2	96.3978
DF_3, if applicable	10.2748
DF_4, if applicable	489.5269

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

WQS_{HW} Freshwater 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} Freshwater 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.

WQSd: Freshwater Stream Standard (based on an established criteria or other published data per R.61-68), based on Organoleptic Data.

C_{aq} Concentration limit derived from aquatic life data

C_{hh} Concentration limit derived from human health data as determined from organism (COD), water/organism ($C_{w/o}$) and MCL (C_{mcl}) data

C_b Background concentration of the concerned parameter in mg/l determined from ambient monitoring data or data provided by applicant. The 90th percentile of ambient monitoring data for aquatic life protection for the parameters identified in the Appendix (Water Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used 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.

C_{ol} Concentration limit derived from organoleptic data

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 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 95th percentile occurrence probability.

   c. If only an acute toxicity effect concentration for a number of species for a particular pollutant is given as an LC_{50}, the lowest concentration should be divided by an acute-to-chronic ratio (ACR) of 10 and a sensitivity factor of 0.3, for an acceptable instream concentration in order to protect against chronic toxicity effects (from R.61-68.E.1.G.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 95th 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.16.a(2)). Other chronic toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD considering an assumed coefficient of variation (CV) of 0.6 and 95th percentile occurrence probability.

e. If both acute and chronic data are available for a particular pollutant, monthly average derived limits 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 95th 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_{efflim}) 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 (See R.61-68.E.14.c.2).

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.14.c.(4) provides for the use of the EPA Office of Water Policy and "Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria", October 1, 1993. A subsequent revision published in the Federal Register (60 FR 22229) on May 4, 1995

updated the data in the original report. See R.61-68 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.14.d(3) for evaluation of ambient water quality.

TSS_e	Effluent Total Suspended Solids (TSS) concentration in mg/l as determined from actual long term average data 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_{mz}	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.14.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. The effluent hardness is assumed to be 25 mg/l in the absence of actual effluent data or based on the 10th percentile of actual effluent hardness data.
K_{po}	Metal-specific equilibrium constant
a	Metal-specific constant
K_p	Linear partition coefficient
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 and the recommended values of the conversion factor (CF)

Table A:

Parameter	k_{po}	a	CMC (µg/l)	CF_{CMC}	CCC (µg/l)	CF_{CCC}
Arsenic	0.48×10^6	-0.7286	340	100	150	100
Cadmium	4.00×10^6	-1.1307	0.95*	100*	0.83*	96.7*
Chromium+3	3.36×10^6	-0.9304	580*	31.6	68*	86
Chromium+6	3.36×10^6	-0.9304	16	98.2	11	96.2
Copper	1.04×10^6	-0.7436	3.8*	96	2.9*	96
Lead	0.31×10^6	-0.1856	14*	99.3*	0.54*	99.3*
Mercury	2.91×10^6	-1.1356	1.6	85	0.091	85
Nickel	0.49×10^6	-0.5719	150*	99.8	16*	99.7
Zinc	1.25×10^6	-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 1and 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 $CaCO_3$).

Effluent TSS concentration (TSS_e) (mg/l) (based on monthly average permit limit)	30
Background or In-stream TSS concentration (TSS_b) (mg/l)	1
Calculated In-stream Average TSS concentration after mixing (TSS_{avg}) (mg/l)	2.57

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_{al}), use S and the equation for C_d above and the following equations:

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

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

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

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

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

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

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

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

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:

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

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 ($C_{HH\text{-}avg}$). Exceptions exist based on EPA criteria and are indicated for specific parameters. No limits on human health based on water and organism consumption or drinking water MCLs will be imposed if there is no potential to affect 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 derived value from (a) above and a multiplier (*M*) determined using a statistical procedure recommended in Section 5.5 using average = 95th percentile from Table 5-3 in the TSD. The permitted or proposed number of samples per month (n) is used with the coefficient of variation (CV) to determine *M*. CV is assumed to be 0.6 as a default value if information is not known.

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

where:

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

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

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

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 99th percentile basis)

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

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

2. Consider the background concentration (*Cb*) 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 ($C_{HH\text{-}max}$) 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 (Sec R.61-68.E.1-1.c.2).

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:

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

   b. For Non-carcinogens
   The Monthly Average is calculated as follows:

$$C_{wo} = (DF_1 \times WQS_{wo}) - \left\{ C_b \times \left(\frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

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. Human Health - 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:

$C_{effluent}$ = minimum of (C_{wqlfo}, C_{cvq}, C_{wo}, C_{mcl}, C_{ol}, C_{ulo})

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, 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 <u>cause</u> an excursion above a narrative or numeric water quality criterion.

ii. A discharge will be determined to <u>contribute</u> 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. <u>Reasonable potential to cause</u> 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, under certain circumstances.

   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 practical quantitation limits (PQL) please refer to NPDES permit application supplement "Practical Quantitation Limits (PQL) and Acceptable Analytical Methods" dated July 2001.

   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.

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

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

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

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

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

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

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

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

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

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

Z_p is the standardized Z-score for the pth 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 is less than or equal to the derived monthly average limit (C_{effm}) implies that a reasonable potential does not exist.

RWC > Derived monthly average limit (C_{effm}) 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.

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, 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 (C_{wla}), and

a. no CMC exists, the water quality limits are

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

b. a CMC exists, (for ammonia), the water quality limits are

monthly average = C_{wla} and the daily maximum is the most stringent of
daily maximum = 2 x C_{wla} or
daily maximum = $C_{effd-chr}$ 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 = $C_{effm-ac}$ using CCC as WQS in G.2.b.i.3 or 4
daily maximum = $C_{effd-chr}$ 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 = $C_{effm-ac}$ using CCC as WQS in G.2.b.i.3 or 4
daily maximum = $C_{effd-chr}$ 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 = $C_{aq/c}$
   daily maximum = 2 x $C_{aq/c}$

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

   monthly average = C_{hh}
   daily maximum = M x C_{hh} using the calculation for M from G.2.b.ii.1.b

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

   monthly average = C_{hh} and the daily maximum will be the most stringent of
   daily maximum = M x C_{hh} using the calculation for M from G.2.b.ii.1.b, or
   daily maximum = $C_{aq/c-dm}$ 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

   monthly average = C_{o}
   daily maximum = M x C_{o} using the calculation for M 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

   monthly average = C_{o} and the daily maximum will be the most stringent of
   daily maximum = M x C_{o} using the calculation for M from G.2.b.ii.1.b, or
   daily maximum = $C_{aq/c-dm}$ 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

   daily maximum = $C_{aq/c-dm}$ using CMC as WQS in G.2.b.i.3 or 4

ii. [Reserved]

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 (Categorical guidelines)

The more stringent of the effluent limitations guidelines average and maximum 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 per the notes below:

H. Other considerations

1. When the derived permit effluent limitation based on aquatic life numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be

considered as being in compliance with the limit. Appropriate biological monitoring requirements shall be incorporated into the permit to determine compliance with appropriate water quality standards. (R.61-68.E.14.c(2))

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

   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, categorical standards).

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

   *Mass (lb/day) = Flow (mgd) * Concentration (mg/l) * 8.34*

   Note 3: Final Limitations will be typically 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 5, the digit of interest remains the same.
   b. If the digit of interest is odd and the number following it is a 5, the digit is rounded up.
   c. If the digit of interest is odd or even and the number following it is between 0-4, the digit remains the same.
   d. If the digit of interest is odd or even and the number following it is between 6-9, the digit is rounded up.

3. Fecal Coliform: Effluent Limits for Fecal Coliform are established in accordance with Regulation R.61-68.E.14.c.9.

   In order to protect recreational uses for all freshwaters of the State, the stated value of 200/100 ml for fecal coliform shall be used as a monthly average number for calculating permit effluent limitations and the stated value of 400/100ml for fecal coliform shall be used as daily maximum number for calculating permit effluent limitations. (Unless otherwise identified in Part III below)

4. pH and DO: In accordance with Reg. 61-68.G.9 & 10 the in-stream DO and pH requirements are as follows:

Stream Classification	pH Requirement	D.O. Requirement
Trout Waters; Natural (TN) Put, Grow and Take (TGPT)	Between 6.0 and 8.0	Not less than 6 mg/l
Freshwater (FW) Put and Take (TPT)	Between 6.0 and 8.5	Daily average not less than 5.0 mg/l with a low of 4.0 mg/l

5. The calculations for the assessment of effluent limits has been compiled using a Microsoft Excel spreadsheet. This spreadsheet is attached for documentation of individual calculations. The limits noted in Part III reflect the most restrictive conditions that apply.

6. The wasteload allocation (WLA) completed by the Wasteload Allocation Section is incorporated into this rationale by reference. A copy of the WLA is attached.

III. PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall 001 (Congaree River Discharge – diffuser)

Biological Assessment (if applicable): NA

Whole Effluent Toxicity (From 09/01/2006-08/31/2009, Columbia Metro has a EPA issued permit.):

In order to address the toxicity issues, the City of Columbia has elected to construct an in-stream diffuser. On December 13, 2002, the City has submitted a "Design Report/Calculations for City of Columbia-Metro WWTP Effluent Diffuser & Pump Station Phase I" by its consultant, American Engineering Inc. The Department has completed its review of the provided report and finds this report is acceptable. (See the Department's approval letter dated February 27, 2003)

Mixing Zone Data:
Outfall description: In-stream effluent Diffuser

Width of the receiving stream: 95 meters
Length of the Mixing Zone: 190 meters
Width of the Mixing Zone: 40 meters

Based on CORMIX model, the results indicate that the rapid mixing can be achieved in the zone of initial dilution at diffuser site and adequate protection of existing and classified uses of the water body have been provided from acute toxicity impact. Therefore an acute toxicity test will not be included in the permit when diffuser is installed and operated.

A chronic test concentration of 11% was identified in the CORMIX model. Therefore, the permit will be modified to include the chronic testing at CTC of 11% when the diffuser is installed.

Note: This approval is for phase I construction and permitted discharge flow up to 60 MGD only.

Based on the Department's approval dated February 27, 2003, the CTC of 11% could be established in the permit upon approval to place in operation to the effluent diffuser for 60 MGD is issued.

The following is a DMR for this facility

Sample Date	TJM3B - %mortality 48hr Acute Ceirod	TJM3C- %mortality 48hr Pime	TRP3B - IC25 Statre 7day Chrceiod	TRP3B - IC25 Statre 7day Chrpime
09/30/2006	0	0	>11	>11
11/30/2006	0	0	>11	>11
01/31/2007	0	0	>11	>11
03/31/2007	0	0	>50	>50
05/31/2007	0	0	>11	>11
07/31/2007	0	0	>11	>11
10/31/2007	0	0	>50	>50
01/31/2008	0	0	>11	>11
06/30/2008	0	0	>11	>11
12/31/2008	0	0	>11	>11

Conclusion: This is largest discharge of the State. It is recommended that existing toxicity limits will remain in the permit.

Chronic Toxicity at CTC = 11%
Chronic Toxicity Testing frequency: 1/Quarter

Flow:

1. Previous permit limits (effective 09/01/2006):
   Monthly average: 60 MGD
   Weekly average: 60 MGD
2. NPDES Application (2A): (No. of flow analyses: 1340)
   Long Term Average Value: 35.5 MGD
   Maximum Daily Value: 52.51 MGD
3. DMR Data: The highest flow was reported in: 54.75 mgd
4. Water Quality Data: Not applicable.
5. Categorical Limitation: Not applicable
6. Other information: None
7. Detection Limit: Not applicable.
8. Proposed Flow Conditions (Monthly/Weekly Average): MR MGD
9. Conclusion: Based on the use of a MR for flow, in addition to mass limits for conventional pollutants, mass limitations for toxic pollutants (e.g. TRC and metals) will be specified for monthly average and daily maximum based on the design flow noted on the effluent limits page of the permit. In addition a condition in Part V. has been added to identify the design flow for the purposes of identification of the treatment capacity (under R.61-67.300.A.8); for a determination of whether or not a POTW is required to develop a pretreatment program (under R.61-9.403.a) and for the annual NPDES fees (under R.61-30.2.b).

Five Day Biochemical Oxygen Demand (BOD_5):

1. Previous permit limits (effective 09/01/2006):
   Monthly average: 30 mg/l
   Weekly average: 45 mg/l
   Sampling frequency: Daily
   Sample type: 24 Hour Composite

2. Governing Water Quality Criterion: Not applicable

3. Other Information:
   NPDES Application (2A): (No. of BOD_5 measurements analyses: 1340)
   Long Term Average Value: 15.7 mg/l
   Maximum Daily Value: 52.9 mg/l
   DMR Data: The highest BOD_5 was reported in: 52.9 mg/l
   Based on Waste Load Allocation dated (02/24/2009)
   Monthly Average: 30 mg/l
   Weekly Average: 45 mg/l

4. Cause, Reasonable Potential to Cause or Contribute to excursions of instream Dissolved Oxygen Criteria, based on Water Quality Regulation R.61-68.

5. Effluent Guidelines Limitations: Secondary Limitation: In accordance with R.61-9.133.102, 103 or 105.
   30-day average not to exceed: 30 mg/l
   7-day average not to exceed: 45 mg/l
   30-day average percent removal not to be less than: 85%

6. Conclusion: BOD5 limits will be as following
   Monthly average: 30 mg/l
   Weekly Average: 45 mg/l
   Sampling Frequency: Daily
   Sample type: 24 Hour Composite

Total Suspended Solids (TSS):

1. Previous permit limits (effective 09/01/2006):
   Monthly average: 30 mg/l
   Weekly average: 45 mg/l
   Sampling frequency: Daily
   Sample type: 24 Hour Composite

2. Governing Water Quality Criterion: Not applicable

3. Other Information:
   NPDES Application (2A): (No. of TSS measurements analyses: 1340)
   Long Term Average Value: 14.6 mg/l
   Maximum Daily Value: 75.4 mg/l
   DMR Data: The highest TSS was reported in: 75.4 mg/l

4. Cause, Reasonable Potential to Cause or Contribute to excursions of Secondary Treatment Regulation R.61-9.133.

5. Effluent Guidelines Limitations: Secondary Limitation: In accordance with R.61-9.133.102, 103 or 105.
   30-day average not to exceed: 30 mg/l
   7-day average not to exceed: 45 mg/l
   30-day average percent removal not to be less than: 85%

6. Conclusion: TSS limits will be as following:
   Monthly average: 30 mg/l
   Weekly average: 45 mg/l
   Sampling frequency: Daily
   Sample type: 24 Hour Composite

Total Ammonia Nitrogen (as N):

1. Previous permit limits (effective 09/01/2006):
   a. March - October:
      Monthly average: 16.75 mg/l
      Weekly average: 25.13 mg/l
      Sampling frequency: Daily
   b. November - February:
      Monthly average: MR mg/l
      Weekly average: MR mg/l
      Sampling frequency: Daily
   c. Sample type: 24 Hour Composite

2. Governing Water Quality Criterion: Not applicable

3. Other Information:
   NPDES Application (2A): (No. of Ammonia measurements analyses: 1340)
   Long Term Average Value: 15.06 mg/l
   Maximum Daily Value: 30.84 mg/l
   DMR Data: The highest Ammonia was reported in: 30.84 mg/l
   Proposed Total Ammonia Nitrogen (as N) Limitation: Based on Waste Load Allocation dated (02/24/2009)
   a. Critical:
      Monthly Average: 15.48 ~ 20mg/l
   b. Seasonal:
      Monthly Average: 20 mg/l

4. Cause, Reasonable Potential to Cause or Contribute to excursions of either Aquatic Life or Dissolved Oxygen, based on Water Quality Regulation R.61-68.

5. Effluent Guidelines Limitations: See R.61-9.133 (Not applicable to this parameter)

6. Conclusion: The Ammonia Nitrogen (N) limit is based on dissolved oxygen calculations and will be:.
   a. March - October:
      Monthly average: 16.75 mg/l
      Weekly average: 25.13 mg/l
      Sampling frequency: Daily

   b. November - February:
      Monthly average: 20 mg/l
      Weekly average: 30 mg/l
      Sampling frequency: Daily

   c. Sample type: 24 Hour Composite

Fecal Coliform:

1. Previous permit limits (effective 09/01/2006):
   Monthly average: 200/100 ml
   Daily maximum: 400/100 ml
   Sampling frequency: Daily
   Sample type: Grab

2. Governing Water Quality Criterion: Not applicable

3. Other Information:
   NPDES Application (2A): (No. of Fecal Coliform measurements: 1340)
      Monthly Average Value: 26/100 ml
      Maximum Daily Value: 11500/100 ml
   DMR Data: The highest Fecal Coliform was reported in: 11500/100ml

4. Cause, Reasonable Potential to Cause or Contribute to excursions of either Aquatic Life Criteria, based on Water Quality Regulation R.61-68.

5. Effluent Guidelines Limitations: See R.61-68.E.14.c.(9).

6. Conclusion: Fecal Coliform limits will be:
   Monthly average: 200/100 ml
   Daily maximum: 400/100 ml
   Sampling Frequency: Daily
   Sample type: Grab

Total Residual Chlorine (TRC):

1. Previous permit limits (effective 09/01/2006):
   Monthly average: 0.10 mg/l
   Daily Maximum: 0.17 mg/l
   Sampling frequency: Daily
   Sample type: Grab

2. Governing Water Quality Criterion: Water Classifications and Standards (R.61-68).

3. Other Information:
   NPDES Application (2A): (No. of TRC measurements: 1340)
      Monthly Average Value: 0.002 mg/l
      Maximum Daily Value: 0.24 mg/l
   DMR Data: The highest TRC was reported in: 0.24 mg/l
   Proposed TRC Limitation:
      Monthly Average: 0.1 mg/l
      Weekly Average: 0.17 mg/l

4. Cause, Reasonable Potential to Cause or Contribute to excursions of either Aquatic Life Criteria, based on Water Classifications and Standards R.61-68.

5. Effluent Guidelines Limitations: See R.61-9.133 (Not applicable to this parameter)

6. Conclusion: The TRC limit will be:
   Monthly average: 0.10 mg/l
   Weekly Average: 0.17 mg/l
   Sampling Frequency: Daily
   Sample type: Grab

Dissolved Oxygen (DO):

1. Previous permit limits (effective 09/01/2006):
   Minimum at all times: 5.0 mg/l
   Sampling frequency: Daily
   Sample type: Grab

2. Governing Water Quality Criterion: Effluent Limits for D.O. are established in accordance with Reg. 61-68.G.9 & 10. For Water Classification Fresh Water (FW) this value is: Daily average not less than 5.0 mg/l with a low of 4.0 mg/l. Site Specific D.O. Standards applicable to Receiving Waters; See (R.61-69): No

3. Other Information:
   NPDES Application (2A): (No. of DO measurements: 1340)
      Monthly Average Value: 6.7 mg/l
      Maximum Daily Value: 8.56 mg/l
   DMR Data: The lowest DO was reported in: 3.4 mg/l
   Proposed DO Limitation: Based on Waste Load Allocation dated (02/24/2009)
      Minimum at all times: 5.0 mg/l

4. Cause, Reasonable Potential to Cause or Contribute to excursions of Water Quality Criteria, based on Water Classifications and Standards R.61-68.

5. Effluent Guidelines Limitations: See R.61-9.133 (Not applicable to this parameter)

6. Conclusion: The DO limit will be:
   Minimum at all times: 5.0 mg/l
   Sampling Frequency: Daily
   Sample type: Grab

pH:

1. Previous permit limits (effective 09/01/2006): 6.0 – 8.5 Standard Units

   DMR Data: The highest and lowest pH was reported in: 8.45/6.06 s.u.
2. Governing Water Quality Criterion: Effluent Limits for pH are established in accordance with Reg. 61-68.G.9 & 10. For Water Classification Fresh Water (FW) this value is: Between 6.0 and 8.5 Standard Units
   Site Specific pH. Standards applicable to Receiving Waters; See (Classified Waters: R.61-69): No

3. Other Information:
   NPDES Application (2A): (No. of pH measurements:—)
   Minimum Daily Value: 5.99 Standard Units
   Maximum Daily Value: 8.4 Standard Units

4. Cause, Reasonable Potential to Cause or Contribute to excursions of Water Quality Criteria, based on Water Classifications and Standards R.61-68.

5. Effluent Guidelines Limitations: 6.0 - 9.0 standard units. [R.61-9.133.102(c)]

6. Conclusion: The pH limit will be:
   6.0 – 8.5 Standard Units
   Sampling Frequency: Daily
   Sample type: Grab

UOD

1. Previous Permit Limits (effective 09/01/2006)
   Monthly Average: 57,914 mg/l
   Weekly Average: MR mg/l

2. NPDES Application (): (No. Of UOD analyses: NA)

3. DMR Data: The highest UOD was reported in: 52096 lbs/day

4. Proposed UOD Limitation:based on Waste Load Allocation #Basin Review, dated (02/24/2009)
   Monthly Average: 57,914 mg/l
   Weekly Average: — mg/l

5. Other information: The (f) ratio for BOD_5 is shown on the wasteload allocation and it is . 1.5:1

   UOD is the oxygen consumed by aquatic microbes in metabolizing the remaining organic and nitrogenous matter in the effluent from the permittee's wastewater treatment plant. This demand is expressed in pounds per day and is calculated by multiplying the effluent biochemical oxygen demand (BOD_5) concentration by f-ratio and adding that to 4.57 times the effluent ammonia (NH_3-N) concentration and multiplying the sum by the NPDES permitted flow and the constant 8.34.

   $$U.O.D.(lbs/day) = [\{BOD_5(mg/l) * (f\text{-}ratio)\} + \{NH_3\text{-}N(mg/l) * 4.57\}] * Flow(MGD) * 8.34$$

6. Conclusion: Based on WLA, the UOD limits would be as follows:
   Monthly Average: 57,914 mg/l
   Weekly Average: MR mg/l
   Sampling Frequency: Daily
   Sample type: Calculated

Total Phosphorus

1. Previous Permit Limits (effective 09/01/2006):
   Monthly average: MR mg/l
   Daily Maximum: M/R mg/l
   Sample type: 24 hrs. Comps.
   Sampling Frequency: 1/Month.

2. NPDES Application (2A): (No. of analyses: 25)
   Long Term Average: 1.56 mg/l
   Maximum Daily Value: 9.2 mg/l

3. DMR Data: The highest TP was reported in: 10 mg/l

4. Water Quality Data: See Section II.G.1.c of this rationale.

5. Effluent limitation guidelines: not applicable

6. Other information: NA

7. PQL: 50 µg/l (EPA Method 365.1 - 365.4 or 300)

8. Conclusion: Lake Marion is listed on the 2002 303(d) list for impaired waterbodies based on the in lake phosphorus concentration. In order to address the phosphorus concerns, we have determined monitoring & report on phosphorus will be utilized until a comprehensive phosphorus model is developed and the TMDL is completed. This approach is considered to adequately address the concerns since the Department has a limited amount of data to evaluate directly calculated limitations. The completion of the TMDL will adequately address the current unknowns (including the rate and transport of the phosphorus loading and the total loading from all sources to this system). Since there is no expansion issue related to the permit reissuance, monitoring & report for phosphorus is as follows:

   Monthly average: MR mg/l
   Daily Maximum: M/R mg/l
   Sample type: 24 hrs. Comps.
   Sampling Frequency: 1/Month.

Total Nitrogen:

1. Previous Permit Limits (effective 09/01/2006):
   Monthly average: MR mg/l
   Daily Maximum: M/R mg/l
   Sample type: 24 hrs. Comps.
   Sampling Frequency: 1/Month.

2. NPDES Application (2A): (No. of analyses: 25)
   Long Term Average: 30 mg/l
   Maximum Daily Value: 112 mg/l

3. DMR Data: The highest TN was reported in: 48.4 mg/l

4. Water Quality Data: See Section II.G.1.c of this rationale.

5. Effluent limitation guidelines: not applicable

6. Other information: NA

7. PQL: See permit

8. Conclusion: TN limits will be as follows:
   Monthly average: M/R
   Daily Maximum: M/R
   Sample type: 24 hr. composite
   Sampling Frequency: once every month.

Copper, Total

(CAS #7440-50-8)

1. Previous permit limits (effective 09/01/2006):
   Monthly average: 0.20 mg/l
   Daily maximum: 0.26 mg/l
   Sampling frequency: 1/month
   Sample type: 24 hr. composite

2. Governing Water Quality Criterion: Aquatic Life

3. Other Information: Stream is on 303(d) list for Copper at station: S-967

4. Cause, Reasonable Potential to Cause or Contribute based on, **NPDES Application Information and/or Reasonable Potential Calculations, and/or NPDES Effluent Data and/or Water Quality Data such as 303(d) list and/or STORET Data.**
   A Streamlined Water-Effect Ratio Procedure for Copper for City of Columbia WWTP has been received on January 2006 and we have reviewed WER study report (ref. Vernon Beaty's Memo dated 02/06/2006). Based on this WER report, The WER-adjusted CCC of 20.1 ug/l and CMC of 26.33 ug/l are accepted.

   We have evaluated reasonable potential for copper by including copper sample data collected from 09/01/2006 to 12/31/2008 and using the WER-adjusted CCC and CMC. Based on this reasonable potential analysis, there is a reasonable potential for copper to cause, or contribute to or exceed the water quality criterion of copper.

   Note that since 09/01/2006, EPA has owned the permit and placed total recoverable copper limits (0.020 mg/l, monthly average and 0.026 mg/l, daily maximum) in the permit.

   Based on DMR from this facility (09/01/2006 – 03/31/2009), total recoverable copper sample of 0.040 mg/l has been reported on February 2008. Therefore, RP of copper exists.

   This permit will be reissued by SCDHEC in 2009. We will place total copper limits in the permit.

5. Effluent Guidelines Limitations: See R.61-9.133 (Not applicable to this parameter)

6. Conclusion: Based on the reasonable potential analysis spreadsheet, Copper limits will be as following.
   Monthly average: 0.045 mg/l
   Daily Maximum: 0.058 mg/l
   Sampling Frequency: 1/Month
   Sample type: 24 hr. composite

Mercury

(CAS # 7439-97-6) PQL: 0.0005 µg/l (EPA Method 1669/1631C)

1. Previous permit limits: None
   Daily Maximum: MR mg/l
   Sampling Frequency: 1/year

2. Governing Water Quality Criterion: NA

3. Other Information: The receiving stream is on 303(d) list for Mercury (fish tissue sample) at station: C-007A and C-oo7F.

4. Cause, Reasonable Potential to Cause or Contribute based on **NPDES Application Information and/or Reasonable Potential Calculations.**
   There is no reasonable potential for Mercury based on effluent testing data.
5. Effluent Guidelines Limitations: See R.61-9.133 (Not applicable to this parameter)

6. Conclusion: The existing yearly monitoring of mercury will remain in the permit in order to identifying the mercury source and bio-accumulative effect of mercury on the fish tissues.

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