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NRC071



**HITACHI**

**GE Hitachi Nuclear Energy  
 Global Laser Enrichment, LLC**

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Letter number MFN-09-690  
 November 5, 2009

Global Laser Enrichment  
 Docket Number 70-7016

Document Control Desk  
 ATTN: Andrea Kock, Chief  
 Environmental Review Branch  
 Division of Waste Management and Environmental Protection  
 Office of Federal and State Materials and Environmental Management Programs  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555-0001

**SUBJECT: GE-HITACHI GLOBAL LASER ENRICHMENT RESPONSE TO REQUEST FOR  
 ADDITIONAL INFORMATION RELATED TO NRC REVIEW OF GLE  
 ENVIRONMENTAL REPORT**

Dear Ms. Kock,

GE-Hitachi Global Laser Enrichment LLC (GLE) hereby submits the response to the Nuclear Regulatory Commission's Request for Additional Information dated October 7, 2009.

If you have any questions, or require additional information, please contact Julie Olivier of my staff at 910-819-4799, or at [Julie.Olivier@ge.com](mailto:Julie.Olivier@ge.com); or myself at 910-819-1925 or at [Alberte.Kennedy@ge.com](mailto:Alberte.Kennedy@ge.com).

Sincerely,

*Albert Kennedy for AEK*

Albert Kennedy  
 Environmental Health and Safety Manager, GLE

Enclosures:

1. Enclosure 1 – Response to Request for Additional Information
2. Enclosure 2 – Draft NPDES permit that includes GLE operations
3. Enclosure 3 – GE Forest Management Summary Report

NMSSDI

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**Enclosure 1**  
**GLE Response to Environmental RAIs**

*The responses to the Requests for Additional Information (RAIs) are given in italics and the figures are located at the end of the document.*

**SECTION 1 – INTRODUCTION**

**1-4 Applicable Regulatory Requirements, Permits, and Required Consultations:**

- A. Provide, as available, an update on the status of required permits, licenses, and approvals for the construction and operation of the proposed GE-Hitachi Global Laser Enrichment (GLE) facility since the ER was submitted to NRC.

*The applicable permits, licenses, and consultations are described in Section 1.4 of the GLE Environmental Report (ER) and are summarized in Table 1-6. The information provided in the GLE ER is still applicable.*

*As for progress on the licenses, permits, and consultations, GLE has contacted most of the State and County agencies to provide a status on the project, and in a few cases as described below, begun working on the approach for submitting an application for a license or permit. GLE continues to work closely with the North Carolina Department of Transportation to optimize the location and design of the new facility entrance to facilitate the new driveway permit. GLE has worked with the North Carolina Division of Water Quality to develop expanded NPDES permit levels that would go into effect once the Proposed GLE Facility is operational. The draft NPDES permit, including the GLE permit levels, is included as Enclosure 2. GLE has discussed the project with the North Carolina Division of Air Quality and will continue to work with them to apply for an air permit. GLE has determined that it is unlikely that a Coastal Area Management Act (CAMA) permit would be required, as the facility is not expected to be conducted within or affect an Area of Environmental Concern (AEC).*

**SECTION 2 – ALTERNATIVES**

**2-1 No-Action Alternative**

- A. Provide the additional information specified below regarding the intended use of the site if NRC does not grant a license to construct and operate the proposed GLE facility.
1. Indicate which site preparation activities are expected to be completed before NRC determines whether to grant a license to construct and operate the proposed facility.

*Tentatively, the Early Construction work would begin in the second or third quarter of calendar year 2011. The work would include the following activities:*

- *Clearing of 100 acres for the Proposed GLE Facility<sup>1</sup>*

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<sup>1</sup> Note that due to minor adjustments in the facility layout, the Proposed GLE Facility is currently estimated to be approximately 117 acres, but for consistency with the ER, continues to be referred to as the approximately 100-acre Proposed GLE Facility.

- *Site grading and erosion control*
- *Installation of stormwater wet detention basin*
- *Construction of main access roadways and guardhouse(s)*
- *Placement of utilities (electricity, potable water, process water, water for fire suppression, sanitary sewer, natural gas)*
- *Construction of parking lots and minor roadways.*

*The actual work to be completed and the schedule are uncertain at this time, due to various business factors. One scenario would be that the above activities would be in the final phase of completion (>75%) by the fourth quarter of 2011. If the commencement of the work were delayed, another scenario would be that the first four activities listed above would be in their early stages (~10% complete) by the fourth quarter of 2011. Please note that the above responses are conjecture in nature and do not commit GLE to a specific schedule for completing Early Construction activities.*

2. Indicate whether all of the land cleared prior to the licensing decision would be expected to remain cleared if NRC does not grant a license to construct and operate the proposed facility.

*If for any reason the GLE Commercial Facility project does not come to fruition, the decision to continue to develop the area referred to as the 100-acre Proposed GLE Facility in the GLE ER would be made by GE senior management. GE may continue to develop the land to construct administrative facilities (i.e., office space) if there is a future expansion of the Wilmington workforce. If the land would not be used in the immediate future following the decision to cancel the GLE Commercial Facility project, GE would consider replanting all or a portion of the area with native trees, in accordance with current Wilmington Site forest management activities. For example, in the past, large-scale plantings of native species (such as loblolly and longleaf pines) were done to increase habitat and improve habitat quality on the Site.*

## **SECTION 3 – DESCRIPTION OF AFFECTED ENVIRONMENT**

### **3-1 Ambient Air Radiation Level:**

- A. Provide a summary table or chart that compares recent ambient air radiation level measurements taken at on-site and off-site locations on the General Electric Wilmington Site. Specifically, provide on-site ambient air radiation data for 2005 to 2008 and off-site ambient air radiation data for 1999 to 2008.

*Tables 3.1(A-1) through 3.1(A-6) provide data from the six onsite sampling locations from 2005 to 2008. While GE has performed some offsite sampling in the past (split samples with the State), offsite samples have not been taken since 1999. The offsite sampling is done in coordination with the State, and the State has not chosen to collect offsite samples since 1999. The offsite sampling data from 1995-1999 are shown in Figure E-18 of the GNF 2005 Site Environmental Report Supplement. The locations of the six onsite ambient air samplers (AANE, AASE, AASS, AASW, AADK, and AAFE) are shown on Figure 3.11-1 of the GLE ER.*



Table 3.1(A-1). Onsite Air Quality Measurements Northeast (AANE)

Year	Gross Alpha ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-234 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-235 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-238 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )	
	Ave	Max	Ave	Max	Ave	Max	Ave	Max
2005	4.1	13.8	0.03	0.06	<0.01	0.02	0.02	0.04
2006	2.8	5.9	0.03	0.07	<0.01	0.02	0.02	0.03
2007	2.4	4.6	0.05	0.07	<0.01	0.01	0.04	0.07
2008	2.5	5.2	0.04	0.09	<0.01	0.02	0.03	0.06

Table 3.1(A-2). Onsite Air Quality Measurements Southeast (AASE)

Year	Gross Alpha ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-234 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-235 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-238 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )	
	Ave	Max	Ave	Max	Ave	Max	Ave	Max
2005	4.2	13.0	0.02	0.03	<0.01	0.02	0.02	0.03
2006	3.0	5.9	0.02	0.05	<0.01	0.02	0.01	0.03
2007	2.6	5.2	0.05	0.11	<0.01	0.01	0.04	0.06
2008	2.6	6.3	0.04	0.11	<0.01	0.01	0.03	0.09

Table 3.1(A-3). Onsite Air Quality Measurements South (AASS)

Year	Gross Alpha ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-234 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-235 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-238 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )	
	Ave	Max	Ave	Max	Ave	Max	Ave	Max
2005	4.1	10.5	0.03	0.05	<0.01	0.01	<0.01	0.02
2006	3.0	5.9	0.03	0.06	<0.01	0.02	0.01	0.04
2007	2.5	5.6	0.04	0.06	<0.01	0.02	0.04	0.05
2008	2.6	5.2	0.04	0.07	<0.01	0.03	0.03	0.05

Table 3.1(A-4). Onsite Air Quality Measurements Southwest (AASW)

Year	Gross Alpha ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-234 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-235 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-238 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )	
	Ave	Max	Ave	Max	Ave	Max	Ave	Max
2005	4.5	12.0	0.02	0.05	<0.01	0.02	<0.01	0.02
2006	2.9	7.5	0.03	0.05	<0.01	0.01	0.02	0.03
2007	2.6	4.9	0.05	0.06	<0.01	0.01	0.03	0.06
2008	2.5	5.3	0.04	0.07	<0.01	0.01	0.03	0.07

Table 3.1(A-5). Onsite Air Quality Measurements Site Dock (AADK)

Year	Gross Alpha ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-234 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-235 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )		U-238 ( $\times 10^{-15}$ $\mu\text{Ci/cc}$ )	
	Ave	Max	Ave	Max	Ave	Max	Ave	Max
2005	4.4	8.6	0.02	0.04	0.02	0.02	0.02	0.04
2006	2.9	4.9	0.02	0.04	0.02	0.02	0.02	0.03
2007	2.9	6.5	0.03	0.07	<0.01	0.01	0.03	0.05
2008	2.6	6.3	0.03	0.06	<0.01	0.04	0.03	0.06

Table 3.1(A-6). Onsite Air Quality Measurements Northeast of FET (AAFE)

Year	Gross Alpha ( $\times 10^{15}$ $\mu\text{Ci/cc}$ )		U-234 ( $\times 10^{15}$ $\mu\text{Ci/cc}$ )		U-235 ( $\times 10^{15}$ $\mu\text{Ci/cc}$ )		U-238 ( $\times 10^{15}$ $\mu\text{Ci/cc}$ )	
	Ave	Max	Ave	Max	Ave	Max	Ave	Max
2005	3.8	9.7	0.06	0.10	0.9	12	19	250
2006	2.9	6.4	0.02	0.02	9.8	44	23.	120
2007	9.9	5.4	0.07	0.08	<0.01	0.01	0.07	0.2
2008	2.5	6.0	0.06	0.08	6.1	24	15	60.0

### 3-3 Geology and Soils:

- A. Provide any available data for soil chemical and radiological characteristics at the proposed facility in the north-central sector of the Wilmington site. If there are plans to take soil samples at the proposed site to establish the baseline soil conditions, provide a description of the plans.

*No data regarding soil chemical and radiological characteristics within the Proposed GLE Facility are available. As presented in GLE ER Section 2.2.4, GLE assessed that cultivation is likely the only prior land use of the Main portion of the GLE Study Area, and no industrial activities are known to have occurred within that area. Groundwater quality data collected from existing wells, as presented in GLE ER Section 3.4.1.2.4, supports the absence of soil impacts within the Main portion of the GLE Study Area.*

*As stated in GLE ER Section 6.0, baseline shallow soil uranium concentrations across the 100-acre (40-hectare [ha]) GLE Facility site would be assessed through implementation of a statistically designed sampling program in advance of GLE Facility site preparation and construction. A Sampling and Analysis Plan would be prepared to establish the field and laboratory methods and quality assurance protocol for the assessment. The sampling design to be established in the Plan would be constructed using one or more applicable statistical sampling designs (see Guidance on Choosing a Sampling Design for Environmental Data Collection, EPA QA/G-5S, December 2002, EPA/240/R-02/005) such as:*

- *Simple Random Sampling*
- *Systematic and Grid Sampling*
- *Adaptive Cluster Sampling*
- *Composite Sampling.*

*This sampling program would also extend to areas outside the 100-acre GLE Facility site where ancillary support structures would be constructed. It is anticipated that the sampling design would result in the collection of a soil sample, on average, for each acre, or possibly smaller subdivisions, of the construction areas.*

*Either separate to or combined with the soil sampling program described above, GLE would implement a radiological survey across the construction areas that is consistent with the procedures established in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM; Revision 1, August 2000, and June 2001 updates).*

### 3-4 Water Resources:

- A. Provide a reference regarding any remedial excavation at the Fuel Components Operation, including the date, purpose, and approximate volume of excavated soil. This information is needed to provide an accurate description of the affected environment.

*In September 1996, a breach of an acid process solution containment structure was identified and repaired in the Fuel Containment Operation (FCO) Cleanroom. GE held a series of meetings with the NC DENR Division of Water Quality, Groundwater Section, to review the results of subsequent site characterization and groundwater monitoring activities. In July 1999, GE replaced the previously repaired containment structure. With the previously repaired structure removed, GE took the opportunity to excavate for off-site disposal visually impacted soil and to conduct confirmatory soil sampling. The visually impacted soil was excavated by manually digging 10 pits approximately 3 feet in diameter, ranging in depth from approximately 0.5 to 2 feet. The soil volume excavated is estimated from field notes to be approximately 72 cubic feet. Analytical results of confirmatory soil samples collected from the base of each of the 10 pits were found to be below then existing North Carolina Remediation Goals (15A NCAC 13C.0300 Implementation Guidance, June 1998), and GE then installed the new containment structure.*

- B. Provide the information specified below regarding the procedures for managing effluents when high pH is detected through continuous monitoring at the site dam.
1. Indicate the site processes responsible for potentially elevated pH effluent and the pH level that causes the alarm.

*The water flowing into the Site Final Process Lagoons is typically alkaline. The FCO facility onsite uses alkaline cleaners in the process; this is the source of elevated pH levels flowing into the lagoons. The optimum pH of the lagoons is 8-10 (to facilitate settling of solids). The pH of the outflow from the lagoons is adjusted with sulfuric acid to reach 6.0-9.0 (the NPDES permit range) just prior to release to the outfall.*

2. Indicate when the site dam has been closed because of elevated effluent pH and any applicable reporting requirements.

*In the last ten years, there have been no pH excursions that are reportable to the State. It is worth noting that per 40 CFR 401.17, GE is allowed to exceed the 6-9 pH range for 60 minutes in one event or 7.2 hours in a month (excursions that exceed these limits are reportable to the State).*

3. Describe what is done to mitigate high pH in the effluent channel prior to re-opening the dam's gate, and how quickly this mitigation can be accomplished.

*When the pH monitor at the outfall alarms, the Site procedure instructs an operator to close the Site dam within 5 minutes (can be performed remotely) and manually check the pH at the outfall with pH paper and a handheld pH meter. If the pH is out of spec, the operator closes the Site Final Process Lagoons and the pH is retested within 60 minutes. If the pH is still out of spec, an investigation into the cause of the issue would begin and a remediation plan would be*

*developed (most likely the addition of acid or base to get the pH adjusted, and corrective action(s) to prevent a reoccurrence). This situation has not occurred at the GE Site. The times that the pH has been out of spec, it has either been a meter error (from the continuously-measuring probe at the site dam), or the system recovered within the allotted 60-minute timeframe.*

*Overflow at the GE-Wilmington Site dam could occur if the gate is closed for retention purposes and the Effluent Channel receives more than 8.6 million gallons of water (equivalent to a 25-year storm event). Under low precipitation conditions, this retention capacity would allow sufficient time (on the order of a few weeks) to make necessary pH adjustments. Under heavy precipitation conditions, out-of-spec pH would be mitigated by the dilution from the storm water.*

## **SECTION 4 – ENVIRONMENTAL IMPACTS**

### **4-1 Public Health Impacts from Liquid Effluent Releases:**

- A. Provide the information specified below to support an analysis the dose contributions of liquid effluents from the proposed Global Laser Enrichment (GLE) facility.
1. Provide estimated doses to the maximally exposed member of the public and the collective dose to the population in the region of influence from liquid effluent releases attributable to the proposed GLE facility.

*GLE will provide the response to this question by November 11, 2009.*

2. Provide the estimated radionuclide concentration in the liquid effluent releases from the proposed GLE facility, dilution factors at the receiving water bodies where humans may be exposed, and applicable exposure pathways.

*GLE will provide the response to this question by November 11, 2009.*

### **4-2 Transportation Impacts:**

- A. Clarify whether pre-construction has an impact on the 815 additional daily trips during the construction phase. Specifically, indicate whether the 815 additional daily trips are still anticipated during the construction phase.

*As stated in the GLE ER Supplement 1, the Early Construction activities would be expected to generate approximately 200 daily trips to the construction site. This number should be subtracted from the approximately 815 trips presented in the ER, as these activities were included in the calculation of the value of 815.*

### **4-4 Water Resource Impacts:**

- A. Provide the information specified below regarding the GLE liquid effluent treatment system.
1. Provide the acceptable levels of uranium after pre-treatment.

In accordance with the requirements of 10 CFR 20.1302(b)(2)(i) "Compliance with dose limits for individual members of the public", licensees must demonstrate compliance with the annual dose limit for the public specified in § 20.1301 (i.e., 100 mrem). This is accomplished in part by demonstrating that, "The annual average concentrations of radioactive material released in gaseous and liquid effluents at the boundary of the unrestricted area do not exceed the values specified in table 2 of appendix B to part 20..." For uranium isotopes present in commercial grade uranium hexafluoride (i.e.,  $^{234}\text{U}$ ,  $^{235}\text{U}$ , and  $^{238}\text{U}$ ) the Appendix B concentration limit for water effluent is  $3.0 \times 10^{-7} \mu\text{Ci/cc}$ .

The specific activity of natural uranium is approximately  $0.67 \mu\text{Ci/gU}$  and can be calculated as a function of enrichment using the following formula specified in Appendix B of 10CFR 20.

$$SA = 0.4 + 0.38 \cdot E + 0.0034 \cdot E^2$$

Using this formula the specific activity of uranium at 8 wt%,  $^{235}\text{U}$  enrichment is  $3.66 \mu\text{Ci/g}$ . This is a very conservative estimate for a laser enrichment process, which is anticipated to produce enriched product with lower specific activity (i.e., lower  $^{234}\text{U}$  enrichment). Using this enrichment the specific activity can be estimated and the concentration can be converted to mass per unit volume. The following is therefore a conservative estimate of the lower bound on the "acceptable" level of uranium concentration at the process lagoons outfall.

$$C_U = \frac{3.0 \times 10^{-7} \mu\text{Ci/cc}}{3.66 \mu\text{Ci/g}} = 8.2 \times 10^{-8} \text{ g/cc} \quad (\text{Approximately } 0.08 \text{ ppm U})$$

GLE intends to implement an Administrative Limit on the GLE liquid effluent treatment system as 80% of the Part 20 Appendix B concentration limit for water effluent.

2. Describe the treatment equipment and process. Provide justification for the conclusion that the treatment steps would produce an effluent with concentrations similar to those of current process wastewaters.

The sources of liquid effluents that would be treated at the Proposed GLE Facility originate from processes similar to those at the existing GNF facility. In addition, the types of uranium compound to be processed and the anticipated concentrations would be similar. The GNF liquid effluent treatment system was designed for removal of both insoluble and soluble uranium compounds through various steps of chemical treatment, precipitation of uranium, agglomeration of solids, and solids removal (e.g., filtration). The GLE liquid effluent treatment system design is premised on the same types of process steps for removal of uranium with some enhancements. Although not exactly the same treatment process, the uranium removal steps of the GLE process are anticipated to achieve similar (or lower) effluent concentrations at the process wastewater discharge. The following provides a step-by-step description of the GLE Radioactive Liquid Effluent Treatment System (RLETS).

1. The front end of the RLETS process consists of a number of collection tanks used for accumulating and monitoring of liquid effluent. The main liquid effluent streams include



a) solutions of citric acid and rinse water for the decontamination area, b) solutions from degreasing operations in the decontamination area, c) condensate from HVAC systems, and d) water collected from laboratory drains and process sumps throughout the facility. The different types of effluent are segregated in different collection tanks, which are physically agitated and sampled.

Note: The HVAC condensate wastewater stream is clean under normal operating conditions. For this wastewater stream the collection tank contents is monitored for uranium, the concentration is verified "acceptable", and the contents is transferred directly to the treated condensate tanks described below in Step 6 of the process. If the concentration is not "acceptable" then further processing is performed as described in Steps 2 through 5.

2. When a sufficient quantity of wastewater is accumulated in a collection tank the contents is pumped into a separate precipitation tank for chemical treatment (e.g., pH adjustment), precipitation of uranium, and agglomeration of particles. Precipitation of uranium cations is accomplished through addition of a small quantity of caustic solution, such as sodium hydroxide (NaOH). The solution is then agitated to promote mixing and precipitation of the solids. This is followed by addition of a small quantity of coagulate solution to promote agglomeration of the precipitated solids into larger solids or semi-solids.

Note: The exact chemical agent and quantities selected for precipitation and coagulation will be determined based on laboratory testing prior to operation of the facility. The use of other chemicals such as metal scavengers and flocculants may also be considered for use if necessary.

3. Following chemical treatment, the precipitated uranium bearing solids are removed from the solution by circulating the precipitation tank contents through a filter press. The uranium bearing solids are trapped in the filter press and the liquids are pressed out and returned to the precipitation tank. Most of the uranium present in the wastewater is removed in this step of the process.
4. Following solids removal the concentration of uranium in the treated wastewater is greatly reduced however some fine uranium particulate will have passed through the filter press and will thus remain in the solution. The contents of the precipitate tank are then pumped to an effluent holding tank in preparation for a second solids removal step to extract the fine uranium particulate from the wastewater stream.
5. When a sufficient quantity of wastewater is collected in the holding tank the contents are pumped into a heated vaporizer/dryer to separate the remaining solids from the solution. The solution is evaporated in this step of the process leaving solids in the vaporizer/dryer while the water vapor is removed through a separate stream. The water vapor passes a demister to remove suspended water droplets, which return to the vaporizer/dryer, and then through a condenser to convert the vapor back to a liquid.
6. The condensate liquid drains to the treated condensate tanks where it is accumulated and monitored prior to release to the process lagoons. The contents of the tank are re-

*circulated to facilitate mixing and the uranium concentration is actively monitored. If the monitoring indicates the uranium concentration is at an "acceptable" level the tanks contents are to the onsite process lagoons. If it is not at an "acceptable" level the tanks contents are pumped back to the precipitation tank for further treatment.*

*The process described above is very close to that of GNF with the exception of Step 5. This process step was selected in place of the second filtration step used at the GNF facility because it was determined to be a more efficient means of solids removal. The fact that the GLE and GNF wastewater streams and treatment processes are similar, as well as the fact that the main difference is actually an enhancement, is the basis for the conclusion that the GLE process would produce similar or lower concentrations than the existing process. In addition, active monitoring assures that the concentrations discharged to the process lagoons are "acceptable" as described above.*

- B. Provide information on the design and construction of the stormwater wet detention basin, including size, materials of construction (e.g., composition of liners), discharge structure, and storm design.

*The details of the facility to treat stormwater runoff from the Proposed GLE Facility have not been finalized; however Stormwater runoff from the Proposed GLE Facility would be designed to meet North Carolina State water quality treatment regulations and New Hanover County quantity control. State regulations require treatment of the first 1.5-inch of rain to remove 85% of total suspended solids. New Hanover County requires peak control of the 2-, 10-, and 25-year storms with analysis for the 50- and 100-year events to determine emergency overflow weir elevations. Stormwater treatment and peak control can be accomplished in various stormwater treatment facilities including, but not limited to, wet detention ponds, dry infiltration basins, sand filters, bioretention, etc. Treatment facilities are delineated in the July 2007 North Carolina State BMP manual created by the Division of Water Quality (NCDWQ) for which excerpts are provided below.*

*For the assessment of environmental impacts in the ER, it was assumed the stormwater treatment facility would be a stormwater wet detention basin that would have a liner (probably clay) to minimize infiltration to groundwater. However, final decisions on the stormwater treatment facility would be made during final design of the Proposed Action and would meet federal, state, and local rules and guidelines. The following information is summarized from the North Carolina Department of Environment and Natural Resources' Stormwater Best Management Practice Manual (2007; Chapter 10 revised June 2009). The entire document can be found at [http://h2o.enr.state.nc.us/su/bmp\\_updates.htm](http://h2o.enr.state.nc.us/su/bmp_updates.htm).*

*A wet detention basin is a stormwater management facility that includes a permanent pool of water for removing pollutants and additional capacity above the permanent pool for detaining stormwater runoff. The permanent pool of standing water is maintained by the riser which is an elevated outlet of the basin. Wet detention basins fill with stormwater and release the water over 2 to 5 days, returning the basin to its normal depth. As a result, suspended particles settle out of the water and dissolved pollutants (i.e. nutrients) are consumed by plants, algae and bacteria in the water.*

*North Carolina requires that a wet detention basin must be designed by a licensed professional and it must meet all of the following Major Design Elements:*



1. Sizing shall take into account all runoff at ultimate build-out, including off-site drainage.
2. Vegetated slopes shall be no steeper than 3:1.
3. The basin shall be located in a recorded drainage easement with a recorded access easement to a public right-of-way.
4. Basin discharge shall be evenly distributed across a minimum 30 feet long vegetative filter strip unless the basin is designed to remove 90% TSS.
5. If any portion of the basin is used for sediment and erosion control during construction, it must be cleaned out and returned to design state.
6. The design storage shall be above the permanent pool.
7. Discharge rate of the treatment volume shall completely draw down between 2 and 5 days.
8. The average depth of the permanent pool shall be a minimum of 3 feet.
9. Permanent pool surface area shall be determined using Table 10-2.
10. The flow within the pond shall not short-circuit the pond.
11. The basin shall be designed with a forebay.
12. Basin side slopes shall be stabilized with vegetation above the permanent pool level.
13. The basin shall be designed with side slopes below the 10-foot shelf stabilized per what soils will support and per the Professional Engineer's judgment.
14. The basin shall be designed with sufficient sediment storage to allow for proper operation between scheduled cleanouts (i.e., regular maintenance).
15. The basin shall not be located to produce adverse impacts on water levels in adjacent wetlands.
16. A minimum 10-foot wide vegetated shelf shall be installed around the perimeter. The inside edge of the shelf shall be 6-inches below the permanent pool elevation; the outside edge of the shelf shall be 6-inches above the permanent pool elevation.
17. The forebay volume should be about 20% of the total permanent pool volume, leaving about 80% of the design volume in the main pool.
18. Freeboard shall be a minimum of 1 foot above the maximum stage of the basin.
19. The permanent pool elevation shall be within 6-inches (plus or minus) of the seasonal high water table (SHWT).

**Table 10-2** Surface Area to Drainage Area Ratio for Permanent Pool Sizing to Achieve 85 Percent TSS

Pollutant Removal Efficiency in the Coastal Region, Adapted from Driscoll, 1986

Percent Impervious Cover	Permanent Pool Average Depth (ft)									
	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
10%	0.9	0.8	0.7	0.6	0.5	0	0	0	0	0
20%	1.7	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5
30%	2.5	2.2	1.9	1.8	1.6	1.5	1.3	1.2	1.0	0.9
40%	3.4	3.0	2.6	2.4	2.1	1.9	1.6	1.4	1.1	1.0
50%	4.2	3.7	3.3	3.0	2.7	2.4	2.1	1.8	1.5	1.3
60%	5.0	4.5	3.8	3.5	3.2	2.9	2.6	2.3	2.0	1.6
70%	6.0	5.2	4.5	4.1	3.7	3.3	2.9	2.5	2.1	1.8
80%	6.8	6.0	5.2	4.	4.2	3.7	3.2	2.7	2.2	2.0
90%	7.5	6.5	5.8	5.3	4.8	4.3	3.8	3.3	2.8	1.3
100%	8.2	7.4	6.8	6.2	5.6	5.0	4.4	3.8	3.2	2.6

**Forebay:** Forebays are required on all inlets to a wet detention basin. Forebays are designed to dissipate incoming flow energy and cause larger particle-size sediment to settle out of the water

column. The forebay is designed to prevent re-suspension of materials and erosion in the main portion of the basin. NC DENR requires that the design volume for the forebay be approximately 20% of the total calculated permanent pool volume.

**Main Portion of the Basin:** NCDENR uses Driscoll's model (US EPA, 1986) to determine the appropriate surface area of the permanent pool for wet detention basins to achieve the required TSS removal rate. The surface area required can be determined using the permanent pool Surface Area to Drainage Area ratio (SA/DA) for given levels of impervious cover and basin depths as outlined in Tables 10-2. North Carolina regulations establish 3 feet as the minimum average depth. An average pool depth of 3 feet to 7.5 feet is recommended as optimal. Further, DWQ requires that the engineering design include a minimum freeboard of one foot above the maximum stage of the basin. Also, DWQ requires that the engineering design incorporate a minimum additional depth of one foot for sediment storage. The engineering design of a wet detention basin must include a 10-foot-wide (minimum) vegetated shelf around the full perimeter of the basin. The inside edge of the shelf shall be no deeper than 6 inches below the permanent pool level, and the outside edge shall be 6 inches above the permanent pool level. Short-circuiting of the stormwater must be prevented. The most direct way of minimizing short-circuiting is to maximize the length of the flow path between the inlet and the outlet: basins with long and narrow shapes can maximize the length of the flow path. If local site conditions prohibit a relatively long, narrow facility, baffles may be placed in the wet detention basin to lengthen the stormwater flow path as much as possible.

In addition to the permanent pool volume, the basin must also have temporary pool storage to provide volume control during storm events. This temporary pool storage volume is located above the permanent pool, and below the 1-foot minimum freeboard requirement. North Carolina rules require that the wet detention basin shall be sized with an additional volume to account for sediment deposition between clean-out intervals (typically 5 to 15 years). NC DENR requires that engineering designs for wet detention basins include at least one additional foot of depth for sediment storage in addition to the permanent pool volume. This additional one foot of depth shall be provided in both the main area and in the forebay.

The design of a wet detention basin is not complete without a detailed landscaping plan. The planting plan must be prepared by a qualified design professional licensed in North Carolina. The landscaping plan for a stormwater wet detention basin should provide specifications for the selection of vegetation, its installation, and the post-installation care for the vegetated shelf, the 3:1 side slopes, the vegetative filter strip, and the immediately surrounding areas.

**Liner:** The permanent pool elevation shall be at approximately the same elevation as the seasonal high water table (SHWT) elevation. When a wet detention basin is to be located in highly permeable soils like gravelly sands or when the permanent pool elevation proposed is greater than six (6) inches above the SHWT, the designer may need to incorporate a liner to sustain a permanent pool of water. [An in-situ soil test determines if the liner is needed.] A liner shall be constructed or compacted such that the infiltration rate is no more than 0.01 in/hr. Acceptable options can include: 6 to 12 inches of clay soil (minimum 15 percent passing the #200 sieve and a maximum permeability of  $1 \times 10^{-5}$  cm/sec), a 30 mil poly-liner, or a bentonite liner. When a liner is proposed, topsoil for vegetation must be placed on top of the liner.

**Outlet structure:** Under most circumstances North Carolina rules require a vegetative filter strip on the discharge from a wet detention basin, along with a level spreader or other engineered device to ensure even, non-erosive distribution of the flow. Wet detention ponds designed for 85% TSS removal are required to discharge through a 30 foot vegetated filter to minimize erosion and to provide additional pollutant removal.

**Operations and Maintenance:** After the wet detention basin is established, it should be inspected once a month and within 24 hours after every storm event greater than 1.5 inches. Records of operation and maintenance should be kept in a known set location and must be available upon request. Inspection activities include but are not limited to the following:

- Areas of bare soils and/or erosive gullies on the perimeter of the basin or in drainage swales
- Clogging, cracking or other damage to inlet and outlet pipes
- Accumulation of sediment in the forebay greater than the design depth.
- Plants on the vegetated shelf that are dead, diseased or dying or weed are present.
- Algal growth or undesired plants that cover 50% of the basin surface
- Once a year, a dam safety expert should inspect the embankment of the basin.

Any problems that are found shall be repaired immediately. Additional qualitative assessments of stormwater outlets from the Proposed GLE Facility may be required by the NPDES stormwater permit.

**Reference:**

Driscoll, E. *Methodology for Analysis of Detention Basins for Control of Urban Runoff Quality*. EPA440/5-87-001. U. S. Environmental Protection Agency, Office of Water, Nonpoint Source Branch, Washington, DC: 1986.

- C. Provide information on the design and construction of the UF<sub>6</sub> storage pad stormwater holding pond, including its size, discharge structure, storm design, and details of the liner.

*The UF<sub>6</sub> storage pad stormwater holding pond would be constructed in accordance with the guidance contained in the above response for RAI 4.4-B. The current design of this pond is approximately 3 acres, based on rough calculations of the impervious surface area of the cylinder pads. The water from the cylinder pads would be routed to this pond via trenches. The pads would be sloped to allow runoff to flow to the trenches that surround the pads. The liner would likely be clay. The final design of this pond would be done in consultation with NC State Division of Water Quality.*

- D. Provide a monitoring plan for the UF<sub>6</sub> storage pad stormwater holding pond, including any planned treatment steps for the water in the pond. Indicate sample quantities and frequencies under normal conditions and for rainfall events.

*As stated in Chapter 6 of the ER, Stormwater runoff from the UF<sub>6</sub> storage area first would be routed to a holding pond for monitoring before the stormwater is released to the Proposed GLE Facility stormwater wet detention basin. This stormwater would be analyzed for uranium, gross alpha activity, and gross beta activity.*

*There would not be any pre-treatment of this stormwater. The purpose of the holding pond is to be able to detain stormwater runoff in the event of an incident on the storage pads that would result in a release of uranium. If there were an event, the water would be held in this pond and continued to be sampled until uranium levels are stabilized (due to precipitation). If the levels fail to stabilize in a reasonable timeframe, GLE would consider active treatment to remove U (such as pH adjustment or addition of a coagulant). The pond liner would then be*

*sampled and an analysis would be performed to determine if and when the liner needed to be remediated.*

*Currently, the Wilmington Site stormwater ponds are not sampled during rainfall events. The stormwater NPDES permit stipulates that if the detention pond discharges only in response to a storm event exceeding a ten-year design storm, then no analytical monitoring is required, and only qualitative monitoring shall be performed. The current assumption is that this pond would be operationally similar to the other ponds on Site, and therefore qualitative monitoring shall be performed. GLE would consult with the State to develop procedures for this pond, but it is anticipated that this pond would not fall under the NPDES permit. The wet detention basin system described in the above response to RAI 4.4-B would be the NPDES permitted stormwater system for the Proposed GLE Facility, whereas the UF6 cylinder holding pond was conceived as an extra safety measure to ensure that there would be no unanticipated releases to the environment from the cylinder pads.*

- E. Provide copies of notices of violation of the National Pollutant Discharge Elimination System (NPDES) permits issued during the last ten years.

*GLE has not located any files, nor obtained any historical information, indicating that Notices of Violation (NOVs) were issued against the Site NPDES permits in the past five years. GLE contacted the State of North Carolina Division of Water Quality to confirm this.*

*In 2001, there were 2 reporting violations (one for weekly ammonia, one for weekly coliform), but GLE was unable to locate any written documentation from the State on these issues. The State is checking their archived records to determine if they have written documentation of these violations. This process is expected to take a few weeks from the date of this response. GLE will submit any information to the NRC once the results from the State's search are received.*

#### **4-5 Ecological Resource Impacts:**

- A. Provide a figure that shows the location of various components and ancillary facilities associated with the GLE facility and the footprint of land that would be disturbed to install the facilities. This figure should include components such as the stormwater wet detention basin, guard stations, lift stations, and the transmission line that would be located outside of the 100-acre area that would be cleared.

*ER Section 2.1.2 4.2 states, "To the east of the 100-acre (40-ha) Proposed GLE Facility and within the Main portion of the GLE Study Area (see **Figure 1-3**) would be several additional features that cumulatively would require approximately 13 additional acres (5 ha) to be cleared: access driveways connecting the Proposed GLE Facility to the North Road portion of the GLE Study Area; guard houses; a 300,000-gallon (1.1-millionliter) aboveground water-storage tank for fire protection; a sanitary wastewater lift station; a process wastewater lift station; an approximately 1-acre (0.4-ha) electric substation that would tie into existing high-voltage electrical power lines that already transect the Site through the transmission line corridor easement; and an 8-acre (3.2-ha) stormwater wet detention basin designed to capture and treat the runoff from the entire 100-acre (40-ha) Proposed GLE Facility and its supporting facilities for the purposes of removing water pollutants and attenuating peak runoff volumes."*



The reader is referred to Figure 3-1 in the GLE ISA Summary for the current facility footprint. The current facility design has the guardhouses, the water storage tank, and the electrical substation located within the approximately 100 acres. That leaves the access driveways, sanitary and process wastewater lift stations, and the stormwater wet detention basin outside the approximately 100 acres.

**Proprietary/Security-Related/Export-Controlled Information is withheld from public disclosure per 10 CFR 2.390.**

- B. Section 4.3.1 of ER Supplement 1 states that 175 acres of land would be cleared and graded. Describe what the 75 acres that are not part of the 100-acre GLE site include. In addition, provide an updated version of ER Table 4.5-1 to reflect the 75 acres (rather than the 45.8 acres now listed for the proposed utility structures and original location of the proposed north access road). As feasible, summarize the components and habitats that would be affected by the recent addition of 34 acres to the GLE study area.

A total of 222 acres (98 ha) would be cleared for the Proposed Action. Approximately 82 acres (33 ha) would be disturbed outside of the 100-acre Proposed GLE Facility to accommodate the stormwater wet detention basin, access roads, and utilities. Approximately 23 acres (9 ha) would be cleared for a security fence. These impacts are summarized below in a revision of ER Table 4.5-1. (Note that due to minor adjustments in the facility layout, the Proposed GLE Facility is currently estimated to be approximately 117 acres, but for consistency with the ER, continues to be referred to as the approximately 100-acre Proposed GLE Facility). These revised impacts will be discussed in ER Supplement 2.

**Table 4.5-1. Biotic Community Impacts (revised November 2009)**

Proposed Action <sup>a</sup>	Biotic Community	Area		Percent of that Community Impacted on Site
		Acres	Hectares	
Approximately 100-Acre Proposed GLE Facility (now ~117 acres)	Pine Forest	51	21	17%
	Pine Plantation	48	19	15%
	Pine-Hardwood Forest	16	7	7%
	Operations Area (includes roads)	2	1	N/A
Proposed North Access Road <sup>b</sup> (~55 acres)	Alluvial Forest	0.6	0.3	15%
	Canal Corridor	0.4	0.1	2%
	Pine-Hardwood Forest	4.4	1.8	2%
	Pine Forest	2.7	1.1	1%
	Pine Plantation	17.9	7.3	6%
	Pocosin/Bay Forest	2.3	1.0	5%
	Power Line Corridor	0.5	0.2	3%
	Swamp Forest	0.1	0.03	0%

	<i>Operations Area</i>	25.8	10.5	N/A
<i>Proposed Utility Structures<sup>c</sup> (~27 acres)</i>	<i>Pine-Hardwood Forest</i>	3	1	1%
	<i>Pine Forest</i>	5	2	2%
	<i>Pine Plantation</i>	12	5	3%
	<i>Power Line Corridor</i>	2	1	11%
	<i>Operations Area</i>	5	2	N/A
<i>Proposed Fence (~23 acres)</i>	<i>Alluvial Forest</i>	0.4	0.2	10%
	<i>Canal Corridor</i>	0.2	0.1	1%
	<i>Longleaf Pine/Scrub</i>	2	1	5%
	<i>Pine-Hardwood Forest</i>	4	2	2%
	<i>Pine Forest</i>	3	1	1%
	<i>Pine Plantation</i>	2	1	1%
	<i>Pocosin/Bay Forest</i>	1	0	2%
	<i>Power Line Corridor</i>	0.1	0.1	1%
	<i>Swamp Forest</i>	<0.1	<0.1	<1%
	<i>Operations Areas</i>	9	4	N/A

N/A - No impacts from converting existing operational areas to another operational area.

<sup>a</sup> The Proposed Action could result in clearing or altering of an additional 10 to 15 acres of forested areas. These specific locations and acreages cannot currently be determined; therefore, they are not included in this table. These additional impacts are anticipated to result from the Proposed Action creating isolated patches of forest between proposed utility structures that either would no longer have the same function as the existing habitat or otherwise would end up being cleared.

<sup>b</sup> Biotic Community impacts are listed for the entire 200-foot (61-meter) wide corridor. Exact impacts can not be determined until final design of the road is complete. Therefore, the impacts are listed for the entire corridor width.

<sup>c</sup> Proposed utility structures, include access driveways, sanitary and process wastewater lift stations, clearings for utility lines, and a stormwater wet detention basin.

- C. Provide a figure that shows the land that would be disturbed to install potable water, process water, water for fire suppression, sanitary sewer, and natural gas utilities; and specify the method(s) by which they would be installed.

***The response contains Proprietary/Security-Related/Export-Controlled Information and is withheld from public disclosure per 10 CFR 2.390.***

- D. Provide the additional information specified below regarding special status species on the Wilmington site.
1. Describe any ecological resource surveys that will be conducted prior to the start of site preparation (pre-construction) activities, especially for special status species, including, but not limited to, the rough-leaved loosestrife and red-cockaded woodpecker.

*The conclusion reached in the ER was that there would be no affect for all federally listed threatened and endangered species with the exception of rough-leaved loosestrife (*Lysmiachia asperulaefolia*). As stated in Section 3.5.8.1.2.1 of the ER, suitable habitat for rough-leaved loosestrife does not exist within the Study Area of the Proposed Action. In concurrence with the letter from the USFWS dated June 8, 2009, surveys are not required for this species. Based upon the age and the condition of the vegetative communities observed during the 2007 field surveys, suitable foraging or nesting habitat for red-cockaded woodpecker (*Picoides borealis* [RCW]) was not present within the GLE Study Area. However, in 2009, GE-Wilmington Facilities implemented a Forestry Management Plan to "thin all planted and nature stands" to reduce hazardous fire potential, increase stand yields, and improve wildlife habitat. A Hazard Reduction Burning Program is also planned by GE. Implementation of these activities has created the potential for foraging habitat for the RCW to exist within the GLE Study Area. Prior to Early Construction, in consultations with the USFWS, GLE would conduct additional surveys for the presence of suitable foraging habitat. If suitable foraging habitat were present within the GLE Study Area, additional surveys would be conducted to locate potential cavity trees. Surveys would be conducted in accordance with the USFWS's RCW Survey Protocol.*

2. Describe the procedures used during the July and September 2007 field surveys.

*The 2007 field surveys were conducted to map the existing vegetative communities on the Wilmington Site, identify the potential habitat for wildlife (with an emphasis on federally and state protected species), and delineate surface waters. Surveys were conducted on-foot and observations were made of existing habitats, major plant assemblages, landscape features, signs of past human activities, and wildlife occurrences. Soil conditions and hydrologic conditions were noted as encountered. No attempt was made to systematically search for individual species; however, when potential habitat for protected species was identified within the study area, efforts were made to actively look for potential species. Ecological surveys were conducted using the 2006 aerial photography from New Hanover County and USGS topographic maps. An ecological survey of the entire Wilmington Site was conducted, however, more intensive surveys were conducted within the Study Area of the Proposed GLE Facility.*

E. Provide the most recent dates and areas where logging has occurred in the area proposed for the GLE facility. Also, provide whatever similar summary data is available for logging on the Wilmington site since 1980 (approximately). This information is needed to support conclusions about the suitability of the site for red-cockaded woodpecker habitat.

*In February 2009, GE-Wilmington implemented a Forest Management Plan (see Enclosure 3 for the Plan Summary with proprietary information redacted) to thin all planted and natural stands that were biologically ready and economically feasible. The plantations were treated via a third-row thinning to favor saw-timber production. Due to the very high initial stand densities, it was found that most of the natural stands required thinning to residual row spacing approximately the same as the plantations. The wider residual row spacing originally prescribed for the natural stands would not have accomplished the objectives of these thinning.*

*The next thinning in approximately 5-7 years will not include all the stands treated. The thinned plantation should be examined then as well as those plantations that were too young to thin at this time. A Hazard Reduction Burning Program including the thinned stands will be*



initiated where possible. This is considered the best management prescription to perform on thinned Pine stands – between thinning – to maintain the benefits.

Prior to the 2009 activity, the most recent activities occurred in 1999 and 2000 with the apparent implementation of a Forest Stewardship Plan (prepared by the NC Forest Service – note that GE does not have a copy of this plan onsite and was unable to obtain one from the NC Forest Service). During that time period, several areas were cleared and planted with loblolly and longleaf pine. In 1991, some areas were thinned, but there is no written documentation of this activity.

Figure 4.5(E) illustrates the age of the forest communities based on the 2009 GE Forest Management Plan; however, this scale is not at a fine enough resolution to identify areas that were planted versus naturally regenerated. The area within or adjacent to the GLE Study Area was observed in October 2009 to verify which areas had received thinning treatments. In addition to being thinned, some areas received additional reduction of sub-canopy vegetation within the rows.

- F. Provide a figure similar to ER Figure 1-2 that shows the “30-acre” area outlines for the proposed ATC II complex and the Tooling and Development Center. This information is needed for the cumulative impacts analysis.

Figure 4.5(F) illustrates the location of the proposed ATC II Complex and the Tooling Development Center on the Wilmington Site. The ATC II complex in the southeastern portion of the Eastern Site Sector near the South Gate has impacted approximately 20.66 acres (8.36 ha) consisting of 11.30 ac (4.57 ha) of Pine Forest and less than 0.01 acres (0.01 ha) Pine-Hardwood Forest.

The Tooling and Development Center would impact approximately 16.31 acres (6.60 ha), consisting of 0.28 ac (0.13 ha) of Pine Forest, 7.27 ac (2.94 ha) of Pine-Hardwood Forest, and 6.45 ac (2.61 ha) of Pine Plantation habitat in the western portion of the Eastern Site Sector. The cumulative effect from both of these projects would be the loss of approximately 24.3 acres (9.8 ha) of habitat in conjunction with the loss of approximately 177 acres (72 ha) of habitat from the Proposed Action. Total loss of available habitat would be approximately 202 acres (82 ha), comprising 16% of the forest habitat currently on the Wilmington Site.

#### **4-6 Air Quality Impacts:**

- A. Provide additional information, specified below, on air emission inventories expected during road construction, site preparation (pre-construction), construction, and operation of the proposed GLE facility.
1. Provide anticipated PM<sub>2.5</sub> emissions expected during road construction, site preparation (pre-construction), construction, and operation of the proposed GLE facility.

GLE will provide the response to this question by November 25, 2009.

2. To facilitate the evaluation of impacts on global climate change, provide greenhouse gas emissions (e.g., CO<sub>2</sub>) associated with the site preparation (pre-construction), construction, and operation activities for the proposed GLE facility.

*GLE will provide the response to this question by November 25, 2009.*

3. Provide emissions of criteria pollutants, including both PM<sub>10</sub> and PM<sub>2.5</sub>, during facility operation from: (1) the GLE mechanical-draft cooling tower; (2) cylinder-handling activities (e.g., diesel-powered gantry or fork lift) between the main GLE buildings and cylinder pads; and (3) hauling traffic of product cylinders between the GLE facility and other facilities at the Wilmington Site.

*GLE will provide the response to this question by November 25, 2009.*

4. Provide air emissions of criteria pollutants, including both PM<sub>10</sub> and PM<sub>2.5</sub>, by pollutant and by source category (similar to ER Table 4.6-1) along with emission factors, activity levels, and control efficiencies for road construction, site preparation (pre-construction), construction, and operation of the proposed GLE facility.

*GLE will provide the response to this question by November 25, 2009.*

- B. Provide air dispersion modeling for operational emission sources such as auxiliary diesel generator units, cooling tower, and onsite traffic. No air dispersion modeling during facility operation was included in the ER.

*GLE will provide the response to this question by November 25, 2009.*

- C. Provide additional information, specified below, to justify AERMOD modeling choices or provide updated AERMOD analyses taking into account the comments and recommendations listed below. The AERMOD model was used to estimate potential air quality impacts as reported in the ER, but independent analyses conducted by NRC noted discrepancies that diverge from typical air impact modeling practices.

1. Clarification is needed of the unit emission rates that were multiplied by actual emissions. For example, the emission rate for site preparation was estimated to be  $1.15 \times 10^{-4}$  lb/ft<sup>2</sup>/work hour (in GLE\_construction\_phase\_emission\_factor.xls) but the value is listed as  $1.15 \times 10^{-4}$  lb/ft<sup>2</sup>/work day in the summary worksheet which, in turn, was used for the final results. Clarify which unit emission rate is correct and revise the results if necessary.

*GLE will provide the response to this question by November 25, 2009.*

2. In reporting model results, include background concentrations representative of the Wilmington Site.

*GLE will provide the response to this question by November 25, 2009.*

3. Provide additional justification of the use of meteorological data from the Wilmington Airport in the AERMOD model or revise the model using data from a site with surface conditions representative of both the measurement and application sites.

*GLE will provide the response to this question by November 25, 2009.*

4. Provide a justification for the dry and wet deposition used in the PM<sub>10</sub> modeling or provide an air dispersion modeling analysis with 1) PM<sub>10</sub> conservatively assumed to act as a gas and 2) no dry and wet deposition.

*GLE will provide the response to this question by November 25, 2009.*

5. Provide a justification as to why the most recent five years of data from the Wilmington International Airport and Morehead City/Newport, North Carolina stations were not used in the analysis or re-perform the analysis using more recent data.

*GLE will provide the response to this question by November 25, 2009.*

6. Clarify which settings were used to obtain both 24-hour and annual average concentrations and revise the model input parameters to use information representing conditions from 7 a.m. to 4 p.m. of weekends as well as weekdays if necessary.

*GLE will provide the response to this question by November 25, 2009.*

7. Determine surface moisture conditions used to calculate the Bowen ratio based on the 30-year climatological data for the Wilmington airport (e.g., 1971-2000 normals if 2004-2008 meteorological data are used) or provide additional justification for the use of wet surface moisture conditions to calculate the ratio.

*GLE will provide the response to this question by November 25, 2009.*

- D. With a typical control efficiency of 50% from water spraying for fugitive dust emissions, preliminary independent analysis conducted by NRC indicates that the total (background plus modeled) 24-hour concentration at the northern site boundaries could exceed the ambient air quality standard during site preparation. Reexamine the assumptions and modeling parameters used to estimate the air quality impacts at these locations and specify the dust control measures that will be used to mitigate the impacts.

*GLE will provide the response to this question by November 25, 2009.*

#### **4-7 Noise Impacts:**

- A. Provide the additional information specified below regarding the impacts of auxiliary diesel generator units during facility operation.
  1. Provide modeled noise levels at the nearest subdivision assuming that units are operating for a 24-hour period.

The addition of two diesel generators was modeled at the location BOP-311 shown on Figure 3-1 in the GLE ISA Summary. The generators were modeled as Caterpillar C9 300 kW stand-by generators with the Caterpillar Sound Attenuated housing operating at 100% electrical load (sound level data for this model generator are available at: <http://www.miltoncat.com/products/NewGenerators/Documents/C9/C9%20300KW%20Sound%20Data.pdf>). This revised modeling also reflects the current designed placement of the road connecting the Proposed GLE Facility to Castle Hayne Road, plus the current Proposed GLE Facility cooling-tower design.

It is assumed for the purposes of the model that both generators are operating for a 24-hour period, although this is not an anticipated operating condition for the Proposed GLE Facility. ER Tables 4.7.3-1 and 4.7.3-2 have been updated (4.7[A-1] and 4.7[A-2], respectively) to include the new sound levels during operations with the emergency generators operating.

**Table 4.7(A-1). Estimated Sound Levels (dBA) around Proposed GLE Facility**

Site/Use	Location	Average Day L <sub>eq</sub>	Average Night L <sub>eq</sub>	Average 24 Hr. L <sub>eq</sub>	L <sub>dn</sub>
New Hanover County Ordinance	Residential	65	50	N/A	N/A
US EPA Guidelines	Residential	N/A	N/A	55	55
Existing Ambient (Measured)	Position A	46	41	44	48
	Position M	N/A	N/A	N/A	N/A
	Position N	N/A	N/A	N/A	N/A
Road Construction (Modeled)	Position A	61	Ambient	59	58
	Position M	68	Ambient	66	66
	Position N	46	Ambient	43	43
Site Preparation (Modeled)	Position A	42	Ambient	40	40
	Position M	47	Ambient	45	45
	Position N	61	Ambient	58	58
Facility Operations (Modeled)	Position A	38	34	37	42
	Position M	44	39	43	47

Site Use	Location	Average Day $L_{eq}$	Average Night $L_{eq}$	Average 24 Hr. $L_{eq}$	$L_{dn}$
	Position N	47	47	47	54

The "day" time period is between 7:00 a.m. and 10:00 p.m., while the "night" period is between 10:00 p.m. and 7:00 a.m.

"Ambient" is the existing sound levels that were documented in Chapter 3.7 of the ER.

[New Hanover, 2007 and US EPA, 1978]

**Table 4.7(A-2). Estimated Cumulative Sound Levels (dBA) at Position A (Residential Monitor)**

Site Use	Location	Average Day $L_{eq}$	Average Night $L_{eq}$	Average 24 Hr. $L_{eq}$	$L_{dn}$
New Hanover County Ordinance	Residential	65	50	N/A	N/A
US EPA Guidelines	Residential	N/A	N/A	55	55
Existing Ambient (Measured)	Position A	46	41	44	48
Road Construction (Modeled + Ambient)	Position A	61	41	59	59
Site Preparation (Modeled + Ambient)	Position A	48	41	46	49
Facility Operations (Modeled + Ambient)	Position A	47	42	45	49

The "day" time period is between 7:00 a.m. and 10:00 p.m., while the "night" period is between 10:00 p.m. and 7:00 a.m.

In this table, the estimated sound levels from the computer model were logarithmically added to the existing sound levels that were documented in Chapter 3.7 of the ER.

[New Hanover, 2007 and US EPA, 1978]

The updated analysis indicates that the sound levels during operations, including the operating emergency generators, would produce little additional noise along the north Wilmington Site property line. Only one of the previously reported sound levels (the  $L_{dn}$  of the Facility Daily Operations Modeled at Position A) changes with the addition of the emergency generators. This quantity changes by less than 1 dBA and is the result of the  $L_{dn}$  sound levels being round up to the next integer. This very small change in sound level (less than 1 dB) would be imperceptible for most people. As a result, the operation of both generators is estimated to have no additional noise impact on the residential community.



2. Provide general information about auxiliary diesel generator units, including the source of the noise, noise level and whether the units are in enclosures or not.

*As indicated in the above response, the source of the noise from two diesel generators would be at the location BOP-311 (Figure 3-1 in the GLE ISA Summary). The generators were modeled as Caterpillar C9 300 kW stand-by generators with the Caterpillar Sound Attenuated housing operating at 100% electrical load. It is assumed for the purposes of the model that both generators are operating for a 24-hour period, although this is not an anticipated operating condition.*

*Updated information on the cooling tower equipment was also included in the noise model described in the above response. The change consisted of modeling the cooling tower sources as two 8-cell towers, as opposed to two 3-cell towers. The sound levels associated with these modifications to the cooling tower equipment are included in the above results.*

#### **4-8 Impacts to Historical and Cultural resources:**

- A. Provide information on how unexpected discoveries of artifacts or human remains would be addressed if they were encountered during site preparation (pre-construction) and construction activities. Provide information on how site 31NH801 will be protected.

*For discovery of human remains, the basic procedure is as follows:*

- 1. If human skeletal remains are an accidental discovery (not as part of an archaeological investigation), all disturbance in the immediate area of the discovery would cease, and Site security would notify the local law enforcement immediately (local law enforcement would then contact a medical examiner to examine the remains).*
- 2. If the county medical examiner determines that the remains are not under their jurisdiction (as part of a criminal investigation) GE would contact the State Archaeologist.*
- 3. GE would work with the State Archaeologist to determine the appropriate next steps. The North Carolina Office of State Archaeology has a formal procedure in place for the accidental discovery of human remains, GE would cooperate with them in implementing this procedure.*

*For discovery of artifacts, the basic procedure is as follows:*

- 1. If artifacts are an accidental discovery (not as part of an archaeological investigation), disturbance in the immediate area of the discovery would cease and GE would contact a licensed archaeologist to review the discovery. Note that GE would work with our archaeological contractor to develop a definition of an artifact to assist in implementing this procedure.*
- 2. GE would work with the licensed archaeologist to determine the significance of the discovery, and assess the next steps.*

3. GE (or a contractor representing GE) would contact the State Archaeologist, as appropriate, to verify the significance determination of the discovery, and discuss any follow-up steps, such as mitigation of impacts on the archaeological site.

GE will prepare a procedure (or multiple procedures) to capture the above information. The procedure(s) will apply to activities involving soil disturbance related to the GLE project on the Wilmington Site. This includes Early Construction and construction activities that would occur after the NRC license is issued. Once the procedure(s) is completed, GLE will provide copies to the NRC.

Site 31NH801 is located in an area on the Wilmington Site that is not anticipated to be developed or disturbed. GE has taken measures to prevent the area from being disturbed due to Site forestry maintenance or other on-site activities (i.e., logging, controlled burns). Site 31NH801 is digitally recorded and the data has been distributed to departments within the GE facility responsible for planning construction/development and approving ground disturbing activities. There are signs surrounding Site 31NH801 that indicate that digging is not permitted. If GE identifies a need to disturb the area on or near Site 31NH801, GE would work with a licensed archaeologist and NC SHPO to ensure that Site 31NH801 is either excavated or impacts to Site 31NH801 are mitigated appropriately.

- B. ER Supplement 1 noted that the footprint of the project has changed. The new footprint contains areas that have not yet been surveyed for the presence of historic properties. Provide copies of any historic and archaeological surveys and correspondence with the North Carolina SHPO concerning these portions of the GLE study area and information on any historic properties that will be affected by the project.

*The historical/cultural survey has been completed and no significant finds were identified. One archaeological site recommended not eligible for listing in the National Register of Historic Places was identified; it will be fully described in ER Supplement Number 2.*

#### **4-10 Socioeconomic Impacts:**

- A. For the region of influence, provide estimates of the indirect economic impacts of site preparation (pre-construction), construction, operation, and decommissioning. Indirect impacts could be estimated using input-output multipliers taken from the RIMS II modeling framework, or other similar framework, and should include estimates of impacts on labor income (\$ per year) and employment (number of job-years per year).

*GLE will provide the response to this question by November 11, 2009.*

#### **4-13 Waste Management Impacts:**

- A. Provide the capacity of the existing sanitary wastewater treatment system at the Wilmington Site, to assure that the system has adequate capacity to handle the additional sanitary waste from the proposed GLE facility as discussed in ER Section 4.13.2.2.1.3.

*The sanitary waste treatment facility is permitted for 75,000 gpd. The system is designed with 100% redundancy; therefore the maximum capacity is 150,000 gpd. The total projected*



flow for the Wilmington Site, including GLE and other future site expansion activities is ~62,300 gpd (as described in GLE ER Table 4.13-5).

- B. Provide the capacity of the final process lagoons for treatment of wastewater at the Wilmington Site, to assure that the wastewater system has adequate capacity to handle the additional process wastewater from the proposed GLE Facility as discussed in ER Section 4.13.4.1

*The process lagoons are permitted for 1.8 million gpd. The current instrumentation can measure up to 1.5 million gpd, so that is the maximum capacity of the system. The total projected flow for the Wilmington Site, including GLE, other future site expansion activities is ~453,900 gpd (as described in the GLE ER Table 4.13-5).*

- C. Provide the estimated annual average volume of non-compacted construction waste generated by site preparation (pre-construction) activities. Also provide the volume of anticipated hazardous waste from these activities.

*Wastes generated during Proposed GLE Facility site preparation and construction would be varied, depending on the activities in progress. The bulk of the wastes would consist of non-hazardous materials such as packing materials, paper and scrap lumber. These types of wastes would be transported off site to an approved landfill. It is estimated there would be an average of 3,058 m<sup>3</sup> (4,000 yd<sup>3</sup>) (non-compacted) per year of this type of waste, during the phase of Construction that would occur after the NRC license is issued. The bulk of the non-hazardous waste in the above estimate would come from erection of buildings and structures. For Early Construction, this number would be lower than the estimate above, approximately 10% of 3,058 m<sup>3</sup> (it equates to ~300 m<sup>3</sup> or ~400 yd<sup>3</sup>). This is due to the limited activities that would occur during Early Construction (land clearing, site grading and erosion control, installation of stormwater system, utility placement, parking lot and roadway construction). Although the NRC exemption to allow Early Construction lists erection of Administrative Buildings as an approved activity, it is unlikely that this would be an activity that GLE pursues during Early Construction. If it were to occur, the estimate of non-hazardous waste would rise to approximately 1,000 m<sup>3</sup> per year (1,310 yd<sup>3</sup>/yr) during Early Construction.*

*To summarize, based on the current plans, during year one (Early Construction), the estimate would be 300 m<sup>3</sup> (400 yd<sup>3</sup>) of non-hazardous waste. During years 2-7 (Construction after the NRC license is received), the estimate is 3,058 m<sup>3</sup>/yr (4,000 yd<sup>3</sup>/yr).*

*Hazardous wastes that may be generated during the phase of Construction that would occur after the NRC license is issued have been identified and annual quantities estimated as shown below. The bulk of this waste comes from the erection of buildings and structures. Any such generated wastes would be handled by approved methods and shipped off site to approved disposal sites. For Early Construction, these numbers would be lower, approximately 10% of the numbers shown below, due to the limited activities that would occur (land clearing, site grading and erosion control, installation of stormwater system, utility placement, parking lot and roadway construction). Although the NRC exemption to allow Early Construction lists erection of Administrative Buildings as an approved activity, it is unlikely that this would be an activity that GLE pursues during Early Construction. If it were to occur, the estimate of hazardous waste would rise to approximately 30% of the numbers shown below for that year.*

To summarize, based on the current plans, during year one (Early Construction), the estimate of hazardous waste is 10% of the numbers shown below. During years 2-7 (Construction after the NRC license is received), the annual estimate of hazardous wastes is shown below.

Paint, solvents, thinners, organics - 11,360 L (3,000 gal)  
 Petroleum products, oils, lubricants - 11,360 L (3,000 gal)  
 Sulfuric acid (battery) - 379 L (100 gal)  
 Adhesives, resins, sealers, caulking - 910 kg (2,000 lbs)  
 Lead (batteries) - 91 kg (200 lbs)  
 Pesticides - 379 L (100 gal)

*Management and disposal of wastes from the Wilmington Site is performed by staff professionally trained to properly identify, store, and ship wastes; audit vendors; direct and conduct spill cleanup; interface with state agencies; maintain inventories; and provide annual reports.*

## **SECTION 6 - ENVIRONMENTAL MEASUREMENTS AND MONITORING PROGRAMS**

Pursuant to 10 CFR Part 20, licensees are required to conduct surveys to demonstrate compliance and that radioactive material in effluent discharges is kept as low as reasonably achievable.

### **6-1 Radiological Monitoring:**

- A. Provide the locations where Thermo-Luminescent Dosimeters (TLD) would be placed for monitoring the direct radiation from the cylinder pads and other outdoor storage areas, as well as the frequency of radiation surveys that would be conducted in and around storage areas.

*Thermo-Luminescent Dosimeters (TLD) would be placed at various locations along the boundaries of the outdoor cylinder storage pads as a means of monitoring radiation levels around the area. TLDs would be located near the access gates for each of the three cylinder pads, which are the locations with the highest amount of cylinder and employee traffic. In addition, at least one TLD would be placed on each of the three fence lines that do not have access gates. These TLDs would be replaced and evaluated at a frequency of no greater than 6-months. Radiation monitoring in the general pad area of and along the fence line boundary of the pads would also be monitored by radiation protection using portable survey meters at a frequency of no greater than 1-month.*

### **6-1 Radiological Monitoring and 6-2 Physicochemical Monitoring:**

- A. Provide the effluent and surface water monitoring plans (Expanded Monitoring Program) proposed to include the GLE site, or verify that the plans described in ER Section 6.1.3 have been adopted.

*The GLE Environmental Monitoring Plan has not been developed yet. It would be developed following final design of the facility. The Plan would describe the Expanded Monitoring Program and take into account the commitments in the GLE ER, as well as commitments in Chapter 9 of*

*the GLE License Application. The Plan would also take into account vendor specifications on the monitoring equipment with respect to calibrations, maintenance, and sensitivity. Once prepared, the GLE Monitoring Plan would be available to the NRC for inspection, or it could be submitted to the NRC upon request.*

- B. Provide the groundwater monitoring plan (Expanded Monitoring Program) proposed to include the GLE site, or verify that the plan described in ER Section 6.1.4 has been adopted.

*See the response to Question 6-1-A above.*

## **SECTION 7 - COST/BENEFIT ANALYSIS**

- A. Provide information about any tax incentives provided for the project including, but not necessarily limited to, information about agreements with the State of North Carolina or New Hanover County. This information is necessary to evaluate the private and public costs and benefits of the proposed action.

*GE-Hitachi (GEH) is potentially eligible for up to \$36.6 million in grants and incentives from state and county governments, subject to achievement of specified investment and hiring goals. The incentives were granted to GEH, based on total hiring activities on the Wilmington site, the majority of which would be attributed to GLE. Some of the other projects that were accounted for when developing the incentives packages included new reactor projects, bulk isotopes generation, and nuclear fuel recycling.*

*From the State of NC, GEH is eligible to receive up to \$25.7 million in Job Development Investment Grant funds over the period 2008 to 2019, if the project invests a minimum of \$633.6 million in land, building, and infrastructure by 12/31/2012, maintains 2,262 retained positions, and creates new jobs each year (starting with 135 in 2008 and building to 810 from 2012 through 2019) with average annual wages of \$76,500.*

*From the State's One North Carolina Fund, GEH is eligible to receive up to \$900,000 if a total of 900 jobs are created and \$740 million is spent over a 5-year period. The incentives require that 2,262 retained positions are maintained, and that GEH make good faith efforts to hire 540 jobs and spend 147 million between 4/30/08 and 12/31/10. After closeout of the incentive, GEH must retain 810 jobs and \$633.6 million in investment by 12/31/12.*

*New Hanover County provided up to \$10 million in incentives, requiring that \$900 million is invested, and employment targets are met. The first million dollars is to be paid on securing permits. The second million is to be paid if 100 employees are hired as of 6/30/10. If 100 employees are added in 2011 and 2012, an additional \$1 million in incentives would be paid. Then, if 75 additional employees are added each year from 2013 through 2020, the county would pay an additional \$750,000 in incentives.*

*Note that GEH is currently in discussions with the State and the County to potentially re-negotiate the hiring milestones in the incentives packages due to the downturn of the economy and the resulting impact on the nuclear industry.*



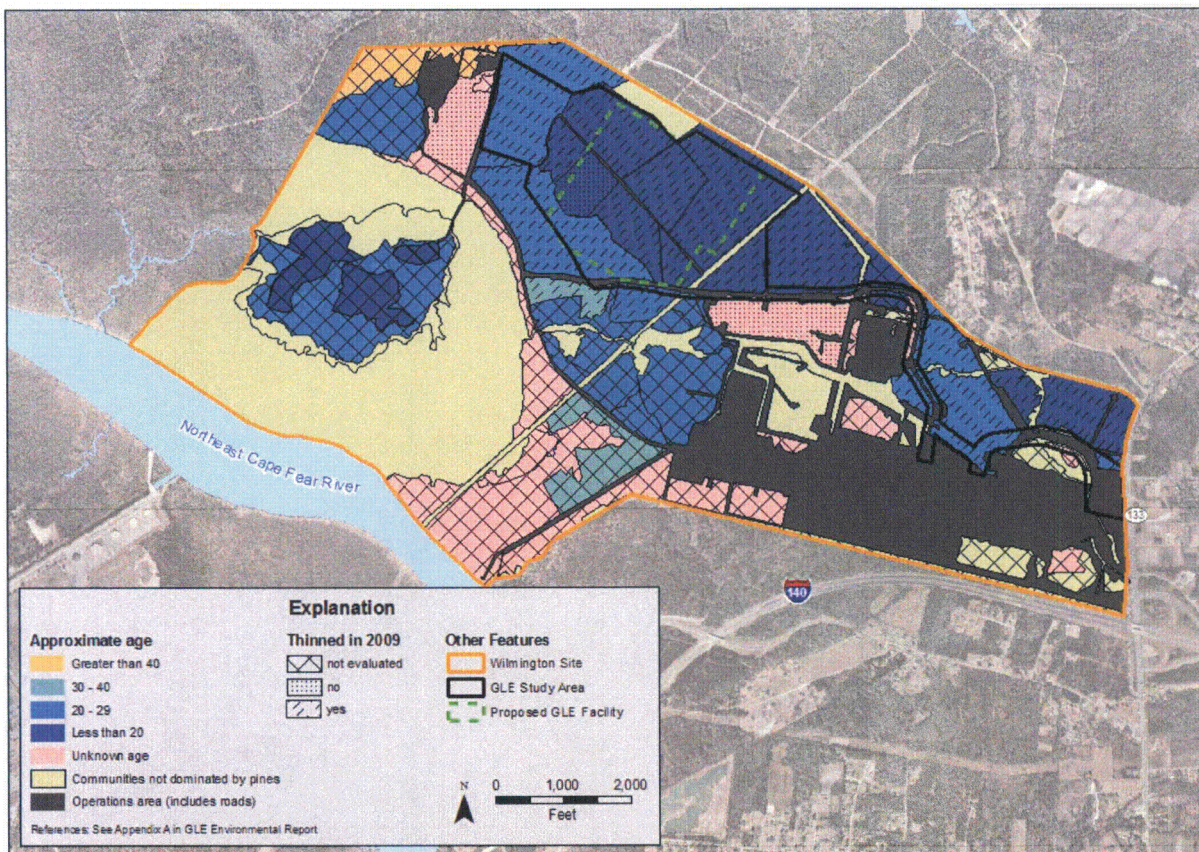


Figure 4.5(E): Age and Condition of Biotic Communities Dominated by Pine



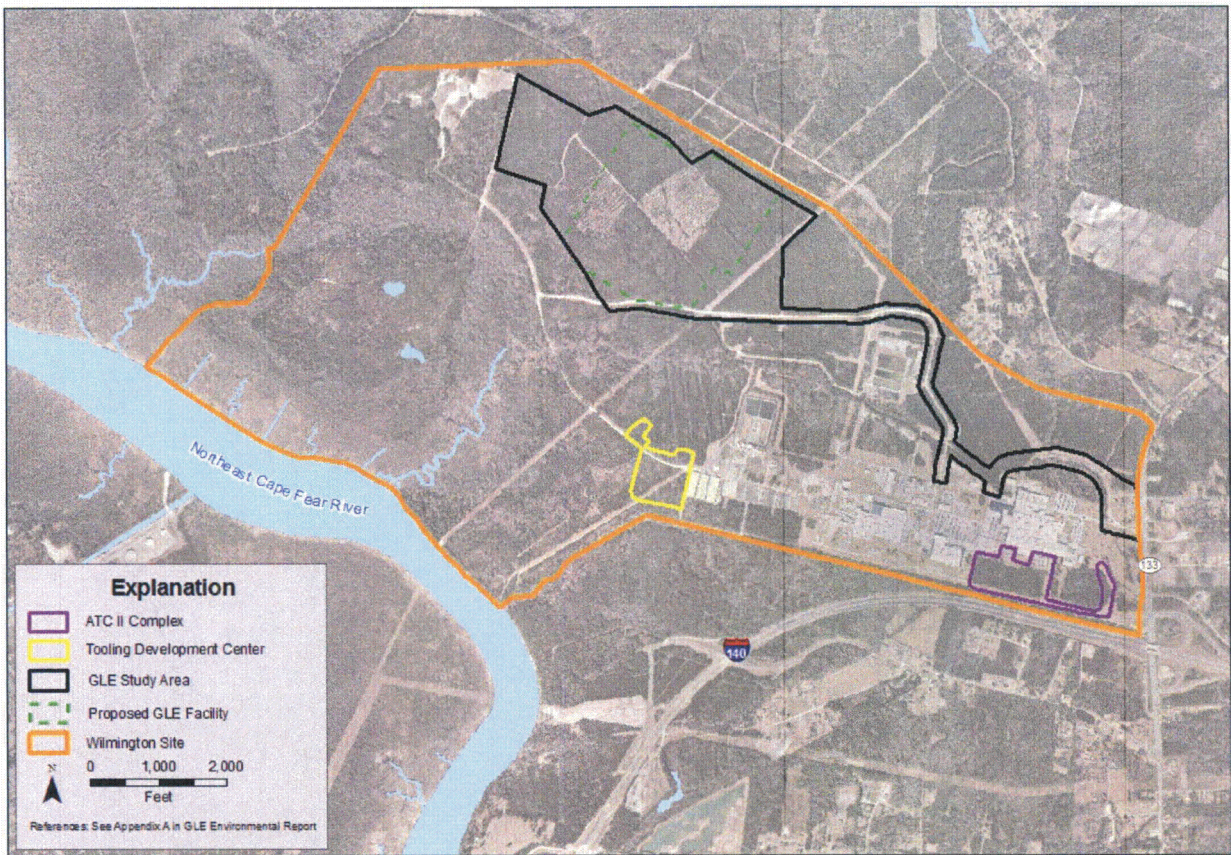


Figure 4.5(F). Planned Projects on the Wilmington Site.



North Carolina Department of Environment and Natural Resources

Division of Water Quality

Beverly Eaves Perdue  
Governor

Coleen H. Sullins  
Director

Dee Freeman  
Secretary

September 23, 2009

Mr. Shawn O'Connor  
Environmental Engineer  
Global Nuclear Fuel-Americas  
P. O. Box 780, M/C G-26  
Wilmington, NC 28402

Subject: Draft of Renewal Permit  
NPDES Permit NC0001228  
Global Nuclear Fuel-Americas  
Class II  
New Hanover County

Dear Mr. O'Connor:

Enclosed with this letter is a copy of the renewal draft permit for your facility. Be aware there are many changes from your existing permit. Please review the draft carefully to understand the conditions, measurement units, and new requirements.

Your permit is up for renewal. The changes made in your renewal permit were done to meet production based Federal Guidelines, North Carolina water quality standards (WQS), and to amend narratives where applicable. These changes include:

Summary of Changes from Current Permit

- 1) *Outfall 001: All Effluent Characteristics Parameters with previous production based limits had increases as a result of the increased production factors.* The Federal guidelines are production based. Comparison to WQS showed the WQS limits to be less stringent, or to be an Action Level parameter, and not applicable.
- 2) *Outfall 001: Total Cadmium, Total Copper, Total Chromium, Total Cyanide, Total Nickel, Total Silver, and Total Zinc sampling frequency were reduced to quarterly.* A RPA yielded no potential to exceed compliance limits.
- 3) *Outfall 001: Total Cadmium and Total Cyanide limits were defined as production based.* A RPA yielded no potential to exceed WQS based limits so production based limits were applied.
- 4) *Outfall 001: A Total Lead monthly limit was defined as production based.* Comparison to WQS showed monthly production base limit more stringent and was applied.
- 5) *Outfall 001: A Total Lead sampling frequency was increased to weekly.* Total Lead has the potential to exceed its daily maximum WQS limit.
- 6) *Outfall 001: A Total Kjeldahl Nitrogen (TKN) monthly monitoring was added.* TKN is a significant portion of the nitrogen discharged and must be monitored.
- 7) *Outfall 001: Amended Acute Toxicity narrative.* Additional requirement to submit all analytical data with each toxicity test was added.

Page 1 of 2

- 8) *Outfall 001: Added second Tier Effluent Page for pending GLE expansion.* New GLE production line scheduled for start up. No increase in permitted treatment capacity, only changes to production based limits.
- 9) *Outfall 002: Removed TRC limit.* UV has replaced chlorination as the disinfectant system.
- 10) *Outfall 002: Amended Supplemental Page to include last plant upgrade and reuse system.* Major improvements and the ability to recycle treated effluent internally were approved by the Division and completed.
- 11) *Outfall 002: Amended Effluent Page to require monitoring of Nitrite/Nitrate Nitrogen and Kjeldahl Nitrogen.* The Division requires monitoring and reporting of individual nitrogen sources data.
- 12) *Outfall 002: Added Special Condition for non-discharge event wavier.* Narrative requirements to facilitate data entry or wavier when recycle of treated wastewater occurs.
- 13) *Outfall 002: Added Special Condition for instream monitoring wavier.* Replaced previous footnote with new narrative.

Even through the TRC compliance limit was removed, any use of chlorination or a chlorine derivative for effluent treatment automatically required compliance with the TRC standard, 28 µg/l, and notification to the Wilmington Regional office.

The permit draft will be sent to the EPA Region IV and Environmental Sciences Section for comment and approval.

Concurrent with this notification the Division is publishing a notice in the newspaper having circulation in the general New Hanover County area, soliciting public comments on this permit draft. *Please provide any comments you may have regarding this draft to DENR – DWQ, NPDES Program no later than 30 days after receiving this draft permit.*

Following the 30-day public comment period, the Division will review all pertinent comments and take appropriate action prior to issuing a final permit. If you have questions concerning the draft for your facility, please call Ron Berry at (919) 807-6396 or by email at [ron.berry@ncdenr.gov](mailto:ron.berry@ncdenr.gov).

If no adverse comments are received from the public or from you, this permit will likely be issued in November 2009, with an effective date of December 1, 2009, expiring on January 31, 2012.

Sincerely,



Ron Berry  
Eastern NPDES Program

#### Attachments

Cc: Wilmington Regional Office/Surface Water Protection Section (email with Fact Sheet)  
EPA Region IV/Marshall Hyatt (with Fact Sheet and application form)  
Environmental Sciences Section/Aquatic Toxicology Unit/Susan Meadows (email)  
James L. Pugh (email)  
NPDES Unit



STATE OF NORTH CAROLINA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
DIVISION OF WATER QUALITY

PERMIT

TO DISCHARGE WASTEWATER UNDER THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provision of North Carolina General Statute 143-215.1, other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission, and the Federal Water Pollution Control Act, as amended,

Global Nuclear Fuel- Americas LLC (GNF-A)

is hereby authorized to discharge wastewater from a facility located at

GNF-A Wilmington Plant  
3901 Castle Hayne Road  
Wilmington, North Carolina  
New Hanover County

to receiving waters designated as the Northeast Cape Fear River in the Cape Fear River Basin in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, and IV hereof.

The permit shall become effective tbd.

This permit and the authorization to discharge shall expire at midnight on January 31, 2012.

Signed this day tbd.

DRAFT

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Coleen H. Sullins, Director  
Division of Water Quality  
By Authority of the Environmental Management Commission

## SUPPLEMENT TO PERMIT COVER SHEET

*All previous NPDES Permits issued to this facility, whether for operation or discharge are hereby revoked. As of this permit issuance, any previously issued permit bearing this number is no longer effective. Therefore, the exclusive authority to operate and discharge from this facility arises under the permit conditions, requirements, terms, and provisions included herein.*

### Global Nuclear Fuel- Americas LLC

is hereby authorized to:

1. Continue to operate the following process wastewater treatment systems located at 3901 Castle Hayne Road, Wilmington Plant, New Hanover County:

Outfall 001- (1.8 MGD Process Wastewater Treatment System)

- ◆ Treatment tanks and instruments
- ◆ Centrifuge at waste treatment
- ◆ Lime slurry preparation and addition system; lime slurry tank
- ◆ Flocculation addition
- ◆ Clarifier
- ◆ Filter presses and dryers
- ◆ Fluoride and nitrate settling basins
- ◆ Truck loading stations for nitrate liquid and etch acid neutralization solids
- ◆ Waste collection system and lift station
- ◆ Mixing tank for pH adjustment
- ◆ Mixing basin
- ◆ Final process settling basins with pH measurement and adjustment
- ◆ Instrumented flow measurement
- ◆ Effluent composite sampler
- ◆ Two receiving/storage tanks for hydrofluoric acid (HF)
- ◆ Two neutralization tanks
- ◆ HF neutralization scrubber

2. Continue to operate the following domestic wastewater treatment systems located at 3901 Castle Hayne Road, Wilmington Plant, New Hanover County:

Outfall 002 - ( 0.075 MGD Domestic Wastewater Treatment System)

- ◆ Wastewater collection system and pump stations
- ◆ Mechanical screw screen
- ◆ Mechanical fine screen
- ◆ Manual Back-up Bar Screen
- ◆ Equalization tanks 1 and pumps
- ◆ Manual grit removal
- ◆ Anoxic basins
- ◆ High rate aeration basins
- ◆ Mixed liquor return pumps
- ◆ Mixed liquor transfer pumps
- ◆ Membrane filtration
- ◆ Ultraviolet Disinfection
- ◆ Instrumented influent and effluent flow measurement
- ◆ Effluent composite sampler

- ◆ Dual incoming power service with manual switching capability
  - ◆ Aerobic sludge digester, sludge thickening, and sludge drying beds
3. Continue to operate a water reclamation and distribution system to recycle treated effluent from the domestic treatment plant to internal users at the Global Nuclear Fuels facility as provided in permit WQ0031317.
  4. After written confirmation that the GLE process is operational continue to operate the process wastewater treatment system to Outfall 001 at 3901 Castle Hayne Road, Wilmington Plant, New Hanover County, using expanded TSS, Total Nitrogen, and Total Fluoride limits.
  5. Discharges from said treatment works into an effluent channel discharging into the Northeast Cape Fear River, a Class C, Sw water in the Cape Fear River Basin, at the location specified on the attached map.



USGS Quad: J27SW Castle Hayne, NC

Outfall 001

Outfall 002

Latitude: 34° 19' 43" N

34° 19' 33" N

Longitude: 77° 56' 9" W

77° 55' 55" W

Stream Class: C, Sw

Subbasin: 03-06-23

Receiving Stream: Effluent Channel to Northeast Cape Fear River



North

Facility  
Location



Global Nuclear Fuel-Americas LLC  
NC0001228  
New Hanover County



## A (1). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS-DRAFT

Beginning on the effective date of this permit and lasting until expiration or receipt of written confirmation on the addition of the GLE process, the Permittee is authorized to discharge treated process wastewater from *Outfall 001*. Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS		
	Monthly Average		Daily Maximum		Measurement Frequency	Sample Type	Sample Location <sup>1</sup>
Flow	1.8 MGD				Continuous	Recording	I or E
Total Suspended Solids (TSS)	185.25 lbs/day		422.95 lbs/day		Weekly	Composite	E
BOD, 5-day, 20°C					Weekly	Composite	E
Oil and Grease	67.78 lbs/day		137.12 lbs/day		Weekly	Grab	E
Total Nitrogen (TN) TN = NO <sub>2</sub> -N + NO <sub>3</sub> -N + NH <sub>3</sub> -N	62.56 lbs/day		153.13 lbs/day		Weekly	Composite <i>Calculated</i>	E
Dissolved Oxygen (DO)	Not less than 5.0 mg/l max daily average				Weekly	Grab	E
Temperature, °C					Weekly	Grab	E
pH	Not greater than 9.0 S.U. nor less than 6.0 S.U.				Weekly	Grab	E
Total Lead	0.59 lbs/day			33.8 µg/l	Weekly	Composite	E
Total Fluoride	23.93 lbs/day		50.94 lbs/day		Monthly	Composite	E
Kjeldahl Nitrogen, mg/l (TKN)					Monthly	Composite	E
Trichloroethene, µg/l					Monthly	Grab	E
Total Cadmium	0.36 lbs/day		1.11 lbs/day		Quarterly	Composite	E
Total Chromium	2.42 lbs/day		4.64 lbs/day		Quarterly	Composite	E
Total Copper (In conjunction with Toxicity Test)	2.85 lbs/day		5.45 lbs/day		Quarterly	Composite	E
Total Cyanide	0.94 lbs/day		2.05 lbs/day		Quarterly	Grab	E
Total Nickel	3.77 lbs/day		7.19 lbs/day		Quarterly	Composite	E
Total Silver (In conjunction with Toxicity Test)	0.33 lbs/day		0.69 lbs/day		Quarterly	Composite	E
Total Zinc (In conjunction with Toxicity Test)	2.04 lbs/day		4.21 lbs/day		Quarterly	Composite	E
TTO <sup>2</sup>			3.43 lbs/day		Quarterly	Grab	E
Acute Toxicity <sup>3</sup>					Quarterly	Composite	E
Total Phosphorus, mg/l (TP)					Quarterly	Composite	E
Nitrosamine Compounds <sup>4</sup>					Quarterly	Grab	FCO

(FOOTNOTES on next page)

(continue A (1). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS)

Notes:

1. Sample locations: E- Effluent, I- Influent., FCO- Fuel Components Operation building discharge
2. TTO= Total Toxic Organics. In lieu of monitoring for TTO, the permittee may submit the following certification statement: "Based on my inquiry of the person(s) directly responsible for managing compliance with the permit limitation for TTO, I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewater has occurred since the filing of the last discharge monitoring report."
3. Acute Toxicity (Fathead Minnow) at *90%; January, April, July, and October; refer to Special Condition A (4).*
4. Nitrosamine compounds shall be limited and monitored at the FCO building discharge in accordance with *Special Condition A (5).*

lbs/day = pounds/day

There shall be no discharge of floating solids or visible foam in other than trace amounts.

## A (2). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS-DRAFT

Beginning on the effective date of this permit and receipt of a written confirmation of the addition of the GLE process and lasting until expiration, the Permittee is authorized to discharge treated process wastewater from *Outfall 001*. Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS		
	Monthly Average		Daily Maximum		Measurement Frequency	Sample Type	Sample Location <sup>1</sup>
Flow	1.8 MGD				Continuous	Recording	I or E
Total Suspended Solids (TSS)	227.28 lbs/day		523.53 lbs/day		Weekly	Composite	E
BOD, 5-day, 20°C					Weekly	Composite	E
Oil and Grease	67.78 lbs/day		137.12 lbs/day		Weekly	Grab	E
Total Nitrogen (TN) TN = NO <sub>2</sub> -N + NO <sub>3</sub> -N + NH <sub>3</sub> -N	80.6 lbs/day		198.6 lbs/day		Weekly	Composite <i>Calculated</i>	E
Dissolved Oxygen (DO)	Not less than 5.0 mg/l max daily average				Weekly	Grab	E
Temperature, °C					Weekly	Grab	E
pH	Not greater than 9.0 S.U. nor less than 6.0 S.U.				Weekly	Grab	E
Total Lead	0.59 lbs/day			33.8 µg/l	Weekly	Composite	E
Total Fluoride	33.0 lbs/day		61.0 lbs/day		Monthly	Composite	E
Kjeldahl Nitrogen, mg/l (TKN)					Monthly	Composite	E
Trichloroethene, µg/l					Monthly	Grab	E
Total Cadmium	0.36 lbs/day		1.11 lbs/day		Quarterly	Composite	E
Total Chromium	2.42 lbs/day		4.64 lbs/day		Quarterly	Composite	E
Total Copper (In conjunction with Toxicity Test)	2.85 lbs/day		5.45 lbs/day		Quarterly	Composite	E
Total Cyanide	0.94 lbs/day		2.05 lbs/day		Quarterly	Grab	E
Total Nickel	3.77 lbs/day		7.19 lbs/day		Quarterly	Composite	E
Total Silver (In conjunction with Toxicity Test)	0.33 lbs/day		0.69 lbs/day		Quarterly	Composite	E
Total Zinc (In conjunction with Toxicity Test)	2.04 lbs/day		4.21 lbs/day		Quarterly	Composite	E
TTO <sup>2</sup>			3.43 lbs/day		Quarterly	Grab	E
Acute Toxicity <sup>3</sup>					Quarterly	Composite	E
Total Phosphorus, mg/l (TP)					Quarterly	Composite	E
Nitrosamine Compounds <sup>4</sup>					Quarterly	Grab	FCO

(FOOTNOTES on next page)

(continue A (2). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS)

Notes:

1. Sample locations: E- Effluent, I- Influent., FCO- Fuel Components Operation building discharge
2. TTO= Total Toxic Organics. In lieu of monitoring for TTO, the permittee may submit the following certification statement: "Based on my inquiry of the person(s) directly responsible for managing compliance with the permit limitation for TTO, I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewater has occurred since the filing of the last discharge monitoring report."
3. Acute Toxicity (Fathead Minnow) at 90%; *January, April, July, and October, refer to Special Condition A (4).*
4. Nitrosamine compounds shall be limited and monitored at the FCO building discharge in accordance with *Special Condition A (5).*

lbs/day = pounds/day

There shall be no discharge of floating solids or visible foam in other than trace amounts.



**A (4). ACUTE TOXICITY PASS/FAIL PERMIT LIMIT (QTRRLY) - Outfall 001-DRAFT**

The permittee shall conduct acute toxicity tests on a *quarterly* basis using protocols defined in the North Carolina Procedure Document entitled "Pass/Fail Methodology For Determining Acute Toxicity In A Single Effluent Concentration" (Revised-July, 1992 or subsequent versions). The monitoring shall be performed as a Fathead Minnow (*Pimephales promelas*) 24 hour static test. The effluent concentration at which there may be at no time significant acute mortality is 90% (defined as treatment two in the procedure document). Effluent samples for self-monitoring purposes must be obtained during representative effluent discharge below all waste treatment. The tests will be performed *during the months of January, April, July, and October.*

All toxicity testing results required as part of this permit condition will be entered on the Effluent Discharge Monitoring Form (MR-1) for the month in which it was performed, using the parameter code TGE6C. Additionally, DWQ Form AT-2 (original) is to be sent to the following address:

Attention: North Carolina Division of Water Quality  
Environmental Sciences Section  
1621 Mail Service Center  
Raleigh, North Carolina 27699-1621

Completed Aquatic Toxicity Test Forms shall be filed with the Environmental Sciences Section no later than 30 days after the end of the reporting period for which the report is made.

Test data shall be complete and accurate and include all supporting chemical/physical measurements performed in association with the toxicity tests, as well as all dose/response data. Total residual chlorine of the effluent toxicity sample must be measured and reported if chlorine is employed for disinfection of the waste stream.

Should there be no discharge of flow from the facility during a month in which toxicity monitoring is required, the permittee will complete the information located at the top of the aquatic toxicity (AT) test form indicating the facility name, permit number, pipe number, county, and the month/year of the report with the notation of "No Flow" in the comment area of the form. The report shall be submitted to the Environmental Sciences Section at the address cited above.

Should any single quarterly monitoring indicate a failure to meet specified limits, then monthly monitoring will begin immediately until such time that a single test is passed. Upon passing, this monthly test requirement will revert to quarterly in the months specified above.

Should the permittee fail to monitor during a month in which toxicity monitoring is required, then monthly monitoring will begin immediately until such time that a single test is passed. Upon passing, this monthly test requirement will revert to quarterly in the months specified above.

Should any test data from either these monitoring requirements or tests performed by the North Carolina Division of Water Quality indicate potential impacts to the receiving stream, this permit may be re-opened and modified to include alternate monitoring requirements or limits.

If the Permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included in the calculation & reporting of the data submitted on the DMR and all AT Forms submitted.

NOTE: Failure to achieve test conditions as specified in the cited document, such as minimum control organism survival and appropriate environmental controls, shall constitute an invalid test and will require immediate follow-up testing to be completed no later than the last day of the month following the month of the initial monitoring.

## A (3). EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS-DRAFT

Beginning on the effective date of this permit and lasting until expiration, the Permittee is authorized to discharge treated *domestic wastewater* from *Outfall 002*. Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location <sup>1</sup>
Flow	0.075 MGD			Continuous	Recording	I or E
Temperature, °C				Daily	Grab	E
Temperature, °C <sup>2</sup>				Weekly	Grab	U, D
BOD, 5-day, 20°C	30.0 mg/l		45.0 mg/l	Weekly	Composite	E
Total Suspended Solids (TSS)	30.0 mg/l		45.0 mg/l	Weekly	Composite	E
Ammonia as N (NH <sub>3</sub> -N)				Weekly	Composite	E
Fecal coliform (geometric mean)	200/100 ml		400/100 ml	Weekly	Grab	E
pH	Not more than 9.0 s.u. nor less than 6.0 s.u.			Weekly	Grab	E
Dissolved Oxygen (DO)	Not less than 5.0 mg/l daily average			Weekly	Grab	E
Dissolved Oxygen (DO) <sup>2</sup>				Weekly	Grab	U, D
Conductivity, µmhos/cm <sup>2</sup>				Weekly	Grab	U, D
Kjeldahl (TKN), mg/l	Monitor & Report			Quarterly	Composite	E
Nitrite/Nitrate Nitrogen (NO <sub>2</sub> -N + NO <sub>3</sub> -N), mg/l	Monitor & Report			Quarterly	Composite	E
Total Nitrogen (TN), mg/l TN = (NO <sub>2</sub> -N + NO <sub>3</sub> -N) + TKN	Monitor & Report			Quarterly	Calculated	E
Total Phosphorus (TP), mg/l	Monitor & Report			Quarterly	Composite	E

## Notes:

1. Sample locations: E- Effluent, I- Influent, U- Upstream at public boat launch adjacent to US Hwy 117 bridge, D- Downstream at GE dock.
2. See Special Condition A (7).

There shall be no discharge of floating solids or visible foam in other than trace amounts.

## A (5). TUBE REDUCING SPENT LUBRICANT WASTEWATER REQUIREMENTS - Outfall 001-DRAFT

Additional permit requirements (per 40 CFR 471, Subpart I) for the tube reducing spent lubricant wastewater generated from the Fuel Components Operation include:

1. Discharge and Concentration Limits. Process wastewater pollutants may be discharged, with no allowance for any pollutants discharged, provided the permittee demonstrates, on the basis of analytical methods set forth in or approved pursuant to 40 CFR Part 136, that the concentrations of nitrosamine compounds (listed below) in the wastewater discharged from the tube reducing process do not exceed the following:

<u>Listed Nitrosamine Compounds</u>	<u>Concentration Limit</u>
N-nitrosodimethylamine	50 µg/l
N-nitrosodiphenylamine	20 µg/l
N-nitrosodi-n-propyl-amine	20 µg/l

These concentration limits apply at the point of discharge from the tube reducing process. However, sampling after the tube reducing wastewater has been commingled with other wastewaters is permitted if:

- ◆ Any dilution caused by the other wastewaters is taken into account in determining the appropriate (i.e., lower) allowable discharge concentration; and
  - ◆ An analytical method of sufficient sensitivity is used to measure the levels of each of the listed nitrosamine compounds in the wastewaters being sampled.
2. Sampling Frequency. The sampling demonstration shall be conducted quarterly. However, if a sample is found to contain any of the listed nitrosamine compounds exceeding their respective limit, then the permittee must implement remedial actions described in (3) below, and the demonstration sampling shall be increased to monthly until results for all listed nitrosamine compounds are below applicable limits for six consecutive months.
  3. Remedial Actions. Within 30 days of receiving written notification of sampling results for any listed nitrosamine compound exceeding applicable limits, the permittee shall ensure that there is no further discharge of tube reducing spent lubricant wastewater until the permittee conducts the following:
    - ◆ Perform a subsequent analysis which demonstrates that the concentrations of the listed nitrosamine compounds do not exceed the limits; or
    - ◆ Substitute a new tube reducing lubricant and thereafter comply with the sampling requirements above; or
    - ◆ Determine the source of the pollutant that exceeded its limit, and demonstrate to the satisfaction of the NPDES issuing authority that such source has been eliminated.

## A (6). REUSE/NON-DISCHARGE FROM OUTFALL 002 WAIVER-DRAFT

On the days that the treated wastewater is diverted for reuse as outlined in the terms and conditions of permit WQ0031317, and there is no discharge to Outfall 002, the permittee must insert the word "waiver" on the appropriate DMR date rows. The calculated monthly flow average shall be determined using only daily flow data on the days a discharge occurred to Outfall 002. If all days in a month are "waiver" days then the monthly average shall be left blank. Do not use the number value zero (0) to indicate no discharge. Any NPDES permit Effluent Characteristics monitoring requirement that may occur during a non-discharge event are considered waived. However, the Wilmington Regional Office may request additional Effluent Characteristics measurements to characterize the effluent.

**A (7). INSTREAM MONITORING-DRAFT**

Instream monitoring requirements in this NPDES permit shall be provisionally waived so long as the Permittee remains a member of the Lower Cape Fear River Association and the Association continues to function as approved by the Division and the Environmental Management Commission. If the Permittee does not participate in the Association or if the Association ceases to function, the instream monitoring requirements in this permit become effective immediately; and the Division may reopen this permit by administrative letter to establish additional instream monitoring requirements it deems necessary to adequately characterize the effects of the discharges on water quality in the receiving stream.



## **PART II**

# **STANDARD CONDITIONS FOR NPDES PERMITS**

### **Section A. Definitions**

#### 2/Month

Samples are collected twice per month with at least ten calendar days between sampling events. These samples shall be representative of the wastewater discharged during the sample period.

#### 3/Week

Samples are collected three times per week on three separate calendar days. These samples shall be representative of the wastewater discharged during the sample period.

#### Act or "the Act"

The Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), as amended, 33 USC 1251, et. seq.

#### Annual Average

The arithmetic mean of all "daily discharges" of a pollutant measured during the calendar year. In the case of fecal coliform, the geometric mean of such discharges.

#### Arithmetic Mean

The summation of the individual values divided by the number of individual values.

#### Bypass

The known diversion of waste streams from any portion of a treatment facility including the collection system, which is not a designed or established or operating mode for the facility.

#### Calendar Day

The period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

#### Calendar Week

The period from Sunday through the following Saturday.

#### Calendar Quarter

One of the following distinct periods: January through March, April through June, July through September, and October through December.

#### Composite Sample

A sample collected over a 24-hour period by continuous sampling or combining grab samples of at least 100 ml in such a manner as to result in a total sample representative of the wastewater discharge during the sample period. The Director may designate the most appropriate method (specific number and size of aliquots necessary, the time interval between grab samples, etc.) on a case-by-case basis. Samples may be collected manually or automatically. Composite samples may be obtained by the following methods:

- (1) Continuous: a single, continuous sample collected over a 24-hour period proportional to the rate of flow.
- (2) Constant time/variable volume: a series of grab samples collected at equal time intervals over a 24 hour period of discharge and combined proportional to the rate of flow measured at the time of individual sample collection, or
- (3) Variable time/constant volume: a series of grab samples of equal volume collected over a 24 hour period with the time intervals between samples determined by a preset number of gallons passing the sampling point. Flow measurement between sample intervals shall be determined by use of a flow recorder and

totalizer, and the preset gallon interval between sample collection fixed at no greater than 1/24 of the expected total daily flow at the treatment system, or

- (4) Constant time/constant volume: a series of grab samples of equal volume collected over a 24-hour period at a constant time interval. **Use of this method requires prior approval by the Director. This method may only be used in situations where effluent flow rates vary less than 15 percent.** The following restrictions also apply:
- Influent and effluent grab samples shall be of equal size and of no less than 100 milliliters
  - Influent samples shall not be collected more than once per hour.
  - Permittees with wastewater treatment systems whose detention time  $\leq$  24 hours shall collect effluent grab samples at intervals of no greater than 20 minutes apart during any 24-hour period.
  - Permittees with wastewater treatment systems whose detention time exceeds 24 hours shall collect effluent grab samples at least every six hours; there must be a minimum of four samples during a 24-hour sampling period.

#### Continuous flow measurement

Flow monitoring that occurs without interruption throughout the operating hours of the facility. Flow shall be monitored continually except for the infrequent times when there may be no flow or for infrequent maintenance activities on the flow device.

#### Daily Discharge

The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants measured in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. The "daily discharge" concentration comprises the mean concentration for a 24-hour sampling period as either a composite sample concentration or the arithmetic mean of all grab samples collected during that period. (40 CFR 122.2)

#### Daily Maximum

The highest "daily discharge" during the calendar month.

#### Daily Sampling

Parameters requiring daily sampling shall be sampled 5 out of every 7 days per week unless otherwise specified in the permit. Sampling shall be conducted on weekdays except where holidays or other disruptions of normal operations prevent weekday sampling. If sampling is required for all seven days of the week for any permit parameter(s), that requirement will be so noted on the Effluent Limitations and Monitoring Page(s).

#### DWQ or "the Division"

The Division of Water Quality, Department of Environment and Natural Resources.

#### EMC

The North Carolina Environmental Management Commission.

#### EPA

The United States Environmental Protection Agency

#### Facility Closure

Cessation of all activities that require coverage under this NPDES permit. Completion of facility closure will allow this permit to be rescinded.

#### Geometric Mean

The Nth root of the product of the individual values where N = the number of individual values. For purposes of calculating the geometric mean, values of "0" (or "< [detection level]") shall be considered = 1.

Grab Sample

Individual samples of at least 100 ml collected over a period of time not exceeding 15 minutes. Grab samples can be collected manually. Grab samples must be representative of the discharge (or the receiving stream, for instream samples).

Hazardous Substance

Any substance designated under 40 CFR Part 116 pursuant to Section 311 of the CWA.

Instantaneous flow measurement

A measure of flow taken at the time of sampling, when both the sample and flow will be representative of the total discharge.

Monthly Average (concentration limit)

The arithmetic mean of all "daily discharges" of a pollutant measured during the calendar month. In the case of fecal coliform, the geometric mean of such discharges.

Permit Issuing Authority

The Director of the Division of Water Quality.

Quarterly Average (concentration limit)

The average of all samples taken over a calendar quarter.

Severe property damage

Substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage excludes economic loss caused by delays in production.

Toxic Pollutant:

Any pollutant listed as toxic under Section 307(a)(1) of the CWA.

Upset

An incident beyond the reasonable control of the Permittee causing unintentional and temporary noncompliance with permit effluent limitations and/or monitoring requirements. An upset does not include noncompliance caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Weekly Average (concentration limit)

The arithmetic mean of all "daily discharges" of a pollutant measured during the calendar week. In the case of fecal coliform, the geometric mean of such discharges.

**Section B. General Conditions**

I. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the CWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application [40 CFR 122.41].

- a. The Permittee shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

- b. The CWA provides that any person who violates section[s] 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402 (a) (3) or 402 (b) (8) of the Act, is subject to a civil penalty not to exceed \$37,500 per day for each violation. [33 USC 1319 (d) and 40 CFR 122.41 (a) (2)]
  - c. The CWA provides that any person who *negligently* violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than 2 years, or both. [33 USC 1319 (c) (1) and 40 CFR 122.41 (a) (2)]
  - d. Any person who *knowingly* violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both. [33 USC 1319 (c) (2) and 40 CFR 122.41 (a) (2)]
  - e. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions. [40 CFR 122.41 (a) (2)]
  - f. Under state law, a civil penalty of not more than \$25,000 per violation may be assessed against any person who violates or fails to act in accordance with the terms, conditions, or requirements of a permit. [North Carolina General Statutes § 143-215.6A]
  - g. Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$16,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$37,500. Penalties for Class II violations are not to exceed \$16,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$177,500. [33 USC 1219 (g) (2) and 40 CFR 122.41 (a) (3)]
2. Duty to Mitigate  
The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit with a reasonable likelihood of adversely affecting human health or the environment [40 CFR 122.41 (d)].
  3. Civil and Criminal Liability  
Except as provided in permit conditions on "Bypassing" (Part II. C. 4), "Upsets" (Part II. C. 5) and "Power Failures" (Part II. C. 7), nothing in this permit shall be construed to relieve the Permittee from any responsibilities, liabilities, or penalties for noncompliance pursuant to NCGS 143-215.3, 143-215.6 or Section 309



of the Federal Act, 33 USC 1319. Furthermore, the Permittee is responsible for consequential damages, such as fish kills, even though the responsibility for effective compliance may be temporarily suspended.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject to under NCGS 143-215.75 et seq. or Section 311 of the Federal Act, 33 USC 1321. Furthermore, the Permittee is responsible for consequential damages, such as fish kills, even though the responsibility for effective compliance may be temporarily suspended.

5. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations [40 CFR 122.41 (g)].

6. Onshore or Offshore Construction

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters.

7. Severability

The provisions of this permit are severable. If any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby [NCGS 150B-23].

8. Duty to Provide Information

The Permittee shall furnish to the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee shall also furnish to the Permit Issuing Authority upon request, copies of records required by this permit [40 CFR 122.41 (h)].

9. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit [40 CFR 122.41 (b)].

10. Expiration of Permit

The Permittee is not authorized to discharge after the expiration date. In order to receive automatic authorization to discharge beyond the expiration date, the Permittee shall submit such information, forms, and fees as are required by the agency authorized to issue permits no later than 180 days prior to the expiration date. Any Permittee that has not requested renewal at least 180 days prior to expiration, or any Permittee that does not have a permit after the expiration and has not requested renewal at least 180 days prior to expiration, will subject the Permittee to enforcement procedures as provided in NCGS 143-215.6 and 33 USC 1251 et. seq.

11. Signatory Requirements

All applications, reports, or information submitted to the Permit Issuing Authority shall be signed and certified [40 CFR 122.41 (k)].

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

- (1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (a) a president, secretary, treasurer or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions for the corporation, or (b) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long

term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures .

- (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
- (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official [40 CFR 122.22].

- b. All reports required by the permit and other information requested by the Permit Issuing Authority shall be signed by a person described in paragraph a. above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  1. The authorization is made in writing by a person described above;
  2. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or well field, superintendent, a position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and
  3. The written authorization is submitted to the Permit Issuing Authority [40 CFR 122.22]
- c. Changes to authorization: If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative [40 CFR 122.22]

- d. Certification. Any person signing a document under paragraphs a. or b. of this section shall make the following certification [40 CFR 122.22]. NO OTHER STATEMENTS OF CERTIFICATION WILL BE ACCEPTED:

*"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."*

## 12. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition [40 CFR 122.41 (f)].

## 13. Permit Modification, Revocation and Reissuance, or Termination

The issuance of this permit does not prohibit the permit issuing authority from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by the laws, rules, and regulations contained in Title 40, Code of Federal Regulations, Parts 122 and 123; Title 15A of the North Carolina Administrative Code, Subchapter 2H.0100; and North Carolina General Statute 143-215.1 et. al.

## 14. Annual Administering and Compliance Monitoring Fee Requirements

The Permittee must pay the annual administering and compliance monitoring fee within thirty days after being billed by the Division. Failure to pay the fee in a timely manner in accordance with 15A NCAC 2H.0105 (b) (2) may cause this Division to initiate action to revoke the permit.

## **Section C. Operation and Maintenance of Pollution Controls**

### **1. Certified Operator**

Upon classification of the permitted facility by the Certification Commission, the Permittee shall employ a certified water pollution control treatment system operator in responsible charge (ORC) of the water pollution control treatment system. Such operator must hold a certification of the grade equivalent to or greater than the classification assigned to the water pollution control treatment system by the Certification Commission. The Permittee must also employ one or more certified Back-up ORCs who possess a currently valid certificate of the type of the system. Back-up ORCs must possess a grade equal to (or no more than one grade less than) the grade of the system [15A NCAC 8G.0201].

The ORC of each Class I facility must:

- Visit the facility as often as is necessary to insure proper operation of the treatment system; the treatment facility must be visited at least weekly
- Comply with all other conditions of 15A NCAC 8G.0204.

The ORC of each Class II, III and IV facility must:

- Visit the facility as often as is necessary to insure proper operation of the treatment system; the treatment facility must be visited at least five days per week, excluding holidays
- Properly manage and document daily operation and maintenance of the facility
- Comply with all other conditions of 15A NCAC 8G.0204.

Once the facility is classified, the Permittee shall submit a letter to the Certification Commission designating the operator in responsible charge:

- a. Within 60 calendar days prior to wastewater being introduced into a new system
- b. Within 120 calendar days of:
  - Receiving notification of a change in the classification of the system requiring the designation of a new ORC and back-up ORC
  - A vacancy in the position of ORC or back-up ORC.

### **2. Proper Operation and Maintenance**

The Permittee shall at all times provide the operation and maintenance resources necessary to operate the existing facilities at optimum efficiency. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the Permittee to install and operate backup or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit [40 CFR 122.41 (e)].

NOTE: Properly and officially designated operators are fully responsible for all proper operation and maintenance of the facility, and all documentation required thereof, whether acting as a contract operator [subcontractor] or a member of the Permittee's staff.

### **3. Need to Halt or Reduce not a Defense**

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the condition of this permit [40 CFR 122.41 (c)].

### **4. Bypassing of Treatment Facilities**

- a. Bypass not exceeding limitations [40 CFR 122.41 (m) (2)]

The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Paragraphs b. and c. of this section.

b. Notice [40 CFR 122.41 (m) (3)]

- (1) Anticipated bypass. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass; including an evaluation of the anticipated quality and effect of the bypass.
- (2) Unanticipated bypass. The Permittee shall submit notice of an unanticipated bypass as required in Part II. E. 6. (24-hour notice).

c. Prohibition of Bypass

- (1) Bypass from the treatment facility is prohibited and the Permit Issuing Authority may take enforcement action against a Permittee for bypass, unless:
  - (A) Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;
  - (B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
  - (C) The Permittee submitted notices as required under Paragraph b. of this section.
- (2) Bypass from the collection system is prohibited and the Permit Issuing Authority may take enforcement action against a Permittee for a bypass as provided in any current or future system-wide collection system permit associated with the treatment facility.
- (3) The Permit Issuing Authority may approve an anticipated bypass, after considering its adverse effects, if the Permit Issuing Authority determines that it will meet the three conditions listed above in Paragraph c. (1) of this section.

5. Upsets

- a. Effect of an upset [40 CFR 122.41 (n) (2)]: An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph b. of this condition are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- b. Conditions necessary for a demonstration of upset: Any Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - (1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
  - (2) The Permittee facility was at the time being properly operated; and
  - (3) The Permittee submitted notice of the upset as required in Part II. E. 6. (b) of this permit.
  - (4) The Permittee complied with any remedial measures required under Part II. B. 2. of this permit.
- c. Burden of proof [40 CFR 122.41 (n) (4)]: The Permittee seeking to establish the occurrence of an upset has the burden of proof in any enforcement proceeding.

6. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be utilized/disposed of in accordance with NCGS 143-215.1 and in a manner such as to prevent any pollutant from such materials from entering waters of the State or navigable waters of the United States. The Permittee shall comply with all existing Federal regulations governing the disposal of sewage sludge. Upon promulgation of 40 CFR Part 503, any permit issued by the Permit Issuing Authority for the utilization/disposal of sludge may be



reopened and modified, or revoked and reissued, to incorporate applicable requirements at 40 CFR 503. The Permittee shall comply with applicable 40 CFR 503 Standards for the Use and Disposal of Sewage Sludge (when promulgated) within the time provided in the regulation, even if the permit is not modified to incorporate the requirement. The Permittee shall notify the Permit Issuing Authority of any significant change in its sludge use or disposal practices.

7. Power Failures

The Permittee is responsible for maintaining adequate safeguards (as required by 15A NCAC 2H.0124) to prevent the discharge of untreated or inadequately treated wastes during electrical power failures either by means of alternate power sources, standby generators or retention of inadequately treated effluent.

**Section D. Monitoring and Records**

1. Representative Sampling

Samples collected and measurements taken, as required herein, shall be characteristic of the volume and nature of the permitted discharge. Samples collected at a frequency less than daily shall be taken on a day and time that is characteristic of the discharge over the entire period the sample represents. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Permit Issuing Authority [40 CFR 122.41 (j)].

2. Reporting

Monitoring results obtained during the previous month(s) shall be summarized for each month and reported on a monthly Discharge Monitoring Report (DMR) Form (MR 1, 1.1, 2, 3) or alternative forms approved by the Director, postmarked no later than the last calendar day of the month following the completed reporting period.

The first DMR is due on the last day of the month following the issuance of the permit or in the case of a new facility, on the last day of the month following the commencement of discharge. Duplicate signed copies of these, and all other reports required herein, shall be submitted to the following address:

NC DENR / Division of Water Quality / Water Quality Section  
**ATTENTION: Central Files**  
1617 Mail Service Center  
Raleigh, North Carolina 27699-1617

3. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from the true discharge rates throughout the range of expected discharge volumes. Flow measurement devices shall be accurately calibrated at a minimum of once per year and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. The Director shall approve the flow measurement device and monitoring location prior to installation.

Once-through condenser cooling water flow monitored by pump logs, or pump hour meters as specified in Part I of this permit and based on the manufacturer's pump curves shall not be subject to this requirement.

4. Test Procedures

Laboratories used for sample analysis must be certified by the Division. Permittees should contact the Division's Laboratory Certification Section (919 733-3908 or <http://h2o.enr.state.nc.us/lab/cert.htm>) for information regarding laboratory certifications.

Personnel conducting testing of field-certified parameters must hold the appropriate field parameter certifications.

Test procedures for the analysis of pollutants shall conform to the EMC regulations (published pursuant to NCGS 143-215.63 et. seq.), the Water and Air Quality Reporting Acts, and to regulations published pursuant to Section 304(g), 33 USC 1314, of the CWA (as amended), and 40 CFR 136; or in the case of sludge use or disposal, approved under 40 CFR 136, unless otherwise specified in 40 CFR 503, unless other test procedures have been specified in this permit [40 CFR 122.41].

To meet the intent of the monitoring required by this permit, all test procedures must produce minimum detection and reporting levels that are below the permit discharge requirements and all data generated must be reported down to the minimum detection or lower reporting level of the procedure. If no approved methods are determined capable of achieving minimum detection and reporting levels below permit discharge requirements, then the most sensitive (method with the lowest possible detection and reporting level) approved method must be used.

5. Penalties for Tampering

The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years per violation, or by both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both [40 CFR 122.41].

6. Records Retention

Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR 503), the Permittee shall retain records of all monitoring information, including:

- all calibration and maintenance records
- all original strip chart recordings for continuous monitoring instrumentation
- copies of all reports required by this permit
- copies of all data used to complete the application for this permit

These records or copies shall be maintained for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time [40 CFR 122.41].

7. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record the following information [40 CFR 122.41]:

- a. The date, exact place, and time of sampling or measurements;
- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

8. Inspection and Entry

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

- a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location [40 CFR 122.41 (i)].

## **Section E Reporting Requirements**

### **1. Change in Discharge**

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit.

### **2. Planned Changes**

The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility [40 CFR 122.41 (l)]. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for new sources at 40 CFR 122.29 (b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42 (a) (1).
- c. 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 or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

### **3. Anticipated Noncompliance**

The Permittee shall give advance notice to the Director of any planned changes to the permitted facility or other activities that might result in noncompliance with the permit [40 CFR 122.41 (l) (2)].

### **4. Transfers**

This permit is not transferable to any person without approval from the Director. The Director may require modification or revocation and reissuance of the permit to document the change of ownership. Any such action may incorporate other requirements as may be necessary under the CWA [40 CFR 122.41 (l) (3)].

### **5. Monitoring Reports**

Monitoring results shall be reported at the intervals specified elsewhere in this permit [40 CFR 122.41 (l) (4)].

- a. Monitoring results must be reported on a Discharge Monitoring Report (DMR) (See Part II, D. 2) or forms provided by the Director for reporting results of monitoring of sludge use or disposal practices.
- b. If the Permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included in the calculation and reporting of the data submitted on the DMR.

### **6. Twenty-four Hour Reporting**

- a. The Permittee shall report to the Director or the appropriate Regional Office any noncompliance that potentially threatens public health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance, and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [40 CFR 122.41 (l) (6)].

- b. The Director may waive the written report on a case-by-case basis for reports under this section if the oral report has been received within 24 hours.
- c. Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at (800) 662-7956, (800) 858-0368 or (919) 733-3300.

7. Other Noncompliance

The Permittee shall report all instances of noncompliance not reported under Part II, E. 5 and 6, of this permit at the time monitoring reports are submitted. The reports shall contain the information listed in Part II, E. 6, of this permit [40 CFR 122.41 (l) (7)].

8. Other Information

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information [40 CFR 122.41 (l) (8)].

9. Noncompliance Notification

The Permittee shall report by telephone to either the central office or the appropriate regional office of the Division as soon as possible, but in no case more than 24 hours or on the next working day following the occurrence or first knowledge of the occurrence of any of the following:

- a. Any occurrence at the water pollution control facility which results in the discharge of significant amounts of wastes which are abnormal in quantity or characteristic, such as the dumping of the contents of a sludge digester; the known passage of a slug of hazardous substance through the facility; or any other unusual circumstances.
- b. Any process unit failure, due to known or unknown reasons, that render the facility incapable of adequate wastewater treatment such as mechanical or electrical failures of pumps, aerators, compressors, etc.
- c. Any failure of a pumping station, sewer line, or treatment facility resulting in a by-pass without treatment of all or any portion of the influent to such station or facility.

Persons reporting such occurrences by telephone shall also file a written report within 5 days following first knowledge of the occurrence.

10. Availability of Reports

Except for data determined to be confidential under NCGS 143-215.3 (a)(2) or Section 308 of the Federal Act, 33 USC 1318, all reports prepared in accordance with the terms shall be available for public inspection at the offices of the Division. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in NCGS 143-215.1 (b)(2) or in Section 309 of the Federal Act.

11. Penalties for Falsification of Reports

The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$25,000 per violation, or by imprisonment for not more than two years per violation, or by both [40 CFR 122.41].

12. Annual Performance Reports

Permittees who own or operate facilities that collect or treat municipal or domestic waste shall provide an annual report to the Permit Issuing Authority and to the users/customers served by the Permittee (NCGS 143-215.1C). The report shall summarize the performance of the collection or treatment system, as well as the extent to which the facility was compliant with applicable Federal or State laws, regulations and rules pertaining to water quality.



The report shall be provided no later than sixty days after the end of the calendar or fiscal year, depending upon which annual period is used for evaluation.

The report shall be sent to:

NC DENR / DWQ / Central Files  
1617 Mail Service Center  
Raleigh, NC 27699-1617

## **PART III OTHER REQUIREMENTS**

### **Section A. Construction**

The Permittee shall not commence construction of wastewater treatment facilities, nor add to the plant's treatment capacity, nor change the treatment process(es) utilized at the treatment plant unless the Division has issued an Authorization to Construct (AtC) permit. Issuance of an AtC will not occur until Final Plans and Specifications for the proposed construction have been submitted by the Permittee and approved by the Division.

### **Section B. Groundwater Monitoring**

The Permittee shall, upon written notice from the Director, conduct groundwater monitoring as may be required to determine the compliance of this NPDES permitted facility with the current groundwater standards.

### **Section C. Changes in Discharges of Toxic Substances**

The Permittee shall notify the Permit Issuing Authority as soon as it knows or has reason to believe (40 CFR 122.42):

- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels";
  - (1) One hundred micrograms per liter (100 µg/L);
  - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  - (3) Five times the maximum concentration value reported for that pollutant in the permit application.
  
- b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels";
  - (1) Five hundred micrograms per liter (500 µg/L);
  - (2) One milligram per liter (1 mg/L) for antimony;
  - (3) Ten times the maximum concentration value reported for that pollutant in the permit application.

### **Section D. Evaluation of Wastewater Discharge Alternatives**

The Permittee shall evaluate all wastewater disposal alternatives and pursue the most environmentally sound alternative of the reasonably cost effective alternatives. If the facility is in substantial non-compliance with the terms and conditions of the NPDES permit or governing rules, regulations or laws, the Permittee shall submit a report in such form and detail as required by the Division evaluating these alternatives and a plan of action within 60 days of notification by the Division.

### **Section E. Facility Closure Requirements**

The Permittee must notify the Division at least 90 days prior to the closure of any wastewater treatment system covered by this permit. The Division may require specific measures during deactivation of the system to prevent adverse impacts to waters of the State. This permit cannot be rescinded while any activities requiring this permit continue at the permitted facility.

## **PART IV**

### **SPECIAL CONDITIONS FOR MUNICIPAL FACILITIES**

#### **Section A. Definitions**

In addition to the definitions in Part II of this permit, the following definitions apply to municipal facilities:

##### Indirect Discharge or Industrial User

Any non-domestic source that discharges wastewater containing pollutants into a POTW regulated under section 307(b), (c) or (d) of the CWA. [40 CFR 403.3 (b) (i) and (j)]

##### Interference

Inhibition or disruption of the POTW treatment processes; operations; or its sludge process, use, or disposal which causes or contributes to a violation of any requirement of the POTW's NPDES Permit or prevents sewage sludge use or disposal in compliance with specified applicable State and Federal statutes, regulations, or permits. [15A NCAC 2H.0903 (b) (13)]

##### Pass Through

A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or with discharges from other sources, causes a violation, including an increase in the magnitude or duration of a violation, of the POTW's NPDES permit, or of an instream water quality standard. [15A NCAC 2H.0903 (b) (23)]

##### Publicly Owned Treatment Works (POTW)

A treatment works as defined by Section 212 of the CWA, owned by a State or local government entity. This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances only if they convey wastewater to a POTW. The term also means the local government entity, or municipality, as defined in section 502(4) of the CWA, which has jurisdiction over indirect discharges to and the discharges from such a treatment works. [15A NCAC 2H.0903 (b) (27)]

##### "Significant Industrial User" or "SIU"

An industrial user that discharges wastewater into a publicly owned treatment works and that [15A NCAC 2H.0903 (b) (34)]:

- (a) discharges an average of 25,000 gallons or more per day of process wastewater to the POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewaters) or;
- (b) contributes more than 5 percent of the design flow of the POTW treatment plant or more than 5 percent of the maximum allowable headworks loading of the POTW treatment plant for any pollutant of concern, or;
- (c) is required to meet a national categorical pretreatment standard, or;
- (d) is, regardless of Parts (a), (b), and (c) of this definition, otherwise determined by the POTW, the Division, or the EPA to have a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement or POTW's receiving stream standard, or to limit the POTW's sludge disposal options.

#### **Section B. Publicly Owned Treatment Works (POTWs)**

All POTWs are required to prevent the introduction of pollutants into the POTW which will interfere with the operation of the POTW, including interference with its use or disposal of municipal sludge, or pass through the treatment works or otherwise be incompatible with such treatment works. [40 CFR 403.2]

All POTWs must provide adequate notice to the Director of the following [40 CFR 122.42 (b)]:

1. Any new introduction of pollutants into the POTW from an indirect discharger, including pump and hauled waste, which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; and
2. Any substantial change in the volume or character of pollutants being introduced by an indirect discharger as influent to that POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on (1) the quality and quantity of effluent introduced into the POTW, and (2) any anticipated impact that may result from the change of the quantity or quality of effluent to be discharged from the POTW.

### **Section C. Municipal Control of Pollutants from Industrial Users.**

1. Effluent limitations are listed in Part I of this permit. Other pollutants attributable to inputs from industries using the municipal system may be present in the Permittee's discharge. At such time as sufficient information becomes available to establish limitations for such pollutants, this permit may be revised to specify effluent limitations for any or all of such other pollutants in accordance with best practicable technology or water quality standards.
2. Prohibited Discharges
  - a. Under no circumstances shall the Permittee allow introduction of pollutants or discharges into the waste treatment system or waste collection system which cause or contribute to Pass Through or Interference as defined in 15A NCAC 2H.0900 and 40 CFR 403. [40 CFR 403.5 (a) (1)]
  - b. Under no circumstances shall the Permittee allow introduction of the following wastes in the waste treatment or waste collection system [40 CFR 403.5 (b)]:
    1. Pollutants 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;
    2. Pollutants which 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;
    3. Solid or viscous pollutants in amounts which cause obstruction to the flow in the POTW resulting in Interference;
    4. 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;
    5. Heat in amounts which will may 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 Division, upon request of the POTW, approves alternate temperature limits;
    6. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
    7. 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;
    8. Any trucked or hauled pollutants, except at discharge points designated by the POTW.
  - c. The Permittee shall investigate the source of all discharges into the WWTP, including slug loads and other unusual discharges, which have the potential to adversely impact the permittee's Pretreatment Program and/or the operation of the WWTP.

The Permittee shall report such discharges into the WWTP to the Director or the appropriate Regional Office. Any information shall be provided orally within 24 hours from the time the Permittee became aware of the circumstances. A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the discharge, the investigation into possible sources; the period of the discharge, including exact dates

and times; and if the discharge has not ceased, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance,

3. With regard to the effluent requirements listed in Part I of this permit, it may be necessary for the Permittee to supplement the requirements of the Federal Pretreatment Standards (40 CFR, Part 403) to ensure compliance by the Permittee with all applicable effluent limitations. Such actions by the Permittee may be necessary regarding some or all of the industries discharging to the municipal system.
4. The Permittee shall require any industrial discharger sending its effluent to the permitted system to meet Federal Pretreatment Standards promulgated in response to Section 307(b) of the Act as amended (which includes categorical standards and locally derived limits and narrative requirements). Prior to accepting wastewater from any significant industrial user, the Permittee shall either develop and submit to the Division a new Pretreatment Program or a modification of an existing Pretreatment Program, for approval as required under section D below as well as 15A NCAC 2H.0907 (a) and (b). [40 CFR 122.44 (j) (2)]
5. This permit shall be modified, or alternatively, revoked and reissued, to incorporate or modify an approved POTW Pretreatment Program or to include a compliance schedule for the development of a POTW Pretreatment Program as required under Section 402 (b) (8) of the CWA and implementing regulations or by the requirements of the approved State pretreatment program, as appropriate.

#### **Section D. Pretreatment Programs**

Under authority of sections 307 (b) and (c) and 402 (b) (8) of the CWA and implementing regulations 40 CFR 403, North Carolina General Statute 143-215.3 (14) and implementing regulations 15A NCAC 2H.0900, and in accordance with the approved pretreatment program, all provisions and regulations contained and referenced in the Pretreatment Program Submittal are an enforceable part of this permit. [40 CFR 122.44 (j) (2)]

The Permittee shall operate its approved pretreatment program in accordance with Section 402 (b) (8) of the CWA, 40 CFR 403, 15A NCAC 2H.0900, and the legal authorities, policies, procedures, and financial provisions contained in its pretreatment program submission and Division approved modifications thereof. Such operation shall include but is not limited to the implementation of the following conditions and requirements. Terms not defined in Part II or Part IV of this permit are as defined in 15A NCAC 2H.0903 and 40 CFR 403.3.

1. Sewer Use Ordinance (SUO)  
The Permittee shall maintain adequate legal authority to implement its approved pretreatment program. [15A NCAC 2H.0905 and .0906; 40 CFR 403.8 (f) (1) and 403.9 (1), (2)]
2. Industrial Waste Survey (IWS)  
The permittee shall implement an IWS consisting of the survey of users of the POTW, as required by 40 CFR 403.8 (f) (2) (i-iii) and 15A NCAC 2H.0905 [also 40 CFR 122.44 (j) (1)], including identification of all industrial users and the character and amount of pollutants contributed to the POTW by these industrial users and identification of those industrial users meeting the definition of SIU. The Permittee shall submit a summary of its IWS activities to the Division at least once every five years, and as required by the Division. The IWS submission shall include a summary of any investigations conducted under paragraph B, 2, c, of this Part.
3. Monitoring Plan  
The Permittee shall implement a Division-approved Monitoring Plan for the collection of facility specific data to be used in a wastewater treatment plant Headworks Analysis (HWA) for the development of specific pretreatment local limits. Effluent data from the Plan shall be reported on the DMRs (as required by Part II, Section D, and Section E.5.). [15A NCAC 2H.0906 (b) (2) and .0905]
4. Headworks Analysis (HWA) and Local Limits  
The Permittee shall obtain Division approval of a HWA at least once every five years, and as required by the Division. Within 180 days of the effective date of this permit (or any subsequent permit modification) the Permittee shall submit to the Division a written technical evaluation of the need to revise local limits (i.e., an



updated HWA or documentation of why one is not needed) [40 CFR 122.44]. The Permittee shall develop, in accordance with 40 CFR 403.5 (c) and 15A NCAC 2H.0909, specific Local Limits to implement the prohibitions listed in 40 CFR 403.5 (a) and (b) and 15A NCAC 2H.0909.

5. Industrial User Pretreatment Permits (IUP) & Allocation Tables

In accordance with NCGS 143-215.1, the Permittee shall issue to all significant industrial users, permits for operation of pretreatment equipment and discharge to the Permittee's treatment works. These permits shall contain limitations, sampling protocols, reporting requirements, appropriate standard and special conditions, and compliance schedules as necessary for the installation of treatment and control technologies to assure that their wastewater discharge will meet all applicable pretreatment standards and requirements. The Permittee shall maintain a current Allocation Table (AT) which summarizes the results of the HWA and the limits from all IUPs. Permitted IUP loadings for each parameter cannot exceed the treatment capacity of the POTW as determined by the HWA. [15A NCAC 2H.0909, .0916, and .0917; 40 CFR 403.5, 403.8 (f) (1) (iii); NCGS 143-215.67 (a)]

6. Authorization to Construct (AtC)

The Permittee shall ensure that an Authorization to Construct permit (AtC) is issued to all applicable industrial users for the construction or modification of any pretreatment facility. Prior to the issuance of an AtC, the proposed pretreatment facility and treatment process must be evaluated for its capacity to comply with all Industrial User Pretreatment Permit (IUP) limitations. [15A NCAC 2H.0906 (b) (6) and .0905; NCGS 143-215.1 (a) (8)]

7. POTW Inspection & Monitoring of their SIUs

The Permittee shall conduct inspection, surveillance, and monitoring activities as described in its Division approved pretreatment program in order to determine, independent of information supplied by industrial users, compliance with applicable pretreatment standards. [15A NCAC 2H.0908 (d); 40 CFR 403.8 (f) (2) (v)] The Permittee must:

- a. Inspect all SIUs at least once per calendar year; and
- b. Sample all SIUs at least twice per calendar year for all permit-limited pollutants, once during the period from January 1 through June 30 and once during the period from July 1 through December 31, except for organic compounds which shall be sampled once per calendar year. For the purposes of this paragraph, "organic compounds" means the types of compounds listed in 40 CFR 136.3 (a), Tables IC, ID, and IF, as amended.

8. SIU Self Monitoring and Reporting

The Permittee shall require all industrial users to comply with the applicable monitoring and reporting requirements outlined in the Division-approved pretreatment program, the industry's pretreatment permit, or in 15A NCAC 2H.0908. [15A NCAC 2H.0906 (b) (4) and .0905; 40 CFR 403.8 (f) (1) (v) and (2) (iii); 40 CFR 122.44 (j) (2)]

9. Enforcement Response Plan (ERP)

The Permittee shall enforce and obtain appropriate remedies for violations of all pretreatment standards promulgated pursuant to section 307 (b) and (c) of the CWA (40 CFR 405 et. seq.), prohibitive discharge standards as set forth in 40 CFR 403.5 and 15A NCAC 2H.0909, and specific local limitations. All enforcement actions shall be consistent with the Enforcement Response Plan (ERP) approved by the Division. [15A NCAC 2H.0906 (b) (7) and .0905; 40 CFR 403.8 (f) (5)]

10. Pretreatment Annual Reports (PAR)

The Permittee shall report to the Division in accordance with 15A NCAC 2H.0908. In lieu of submitting annual reports, Modified Pretreatment Programs developed under 15A NCAC 2H.0904 (b) may be required to submit a partial annual report or to meet with Division personnel periodically to discuss enforcement of pretreatment requirements and other pretreatment implementation issues.

For all other active pretreatment programs, the Permittee shall submit two copies of a Pretreatment Annual Report (PAR) describing its pretreatment activities over the previous twelve months to the Division at the following address:

NC DENR / DWQ / Pretreatment, Emergency Response, and Collection Systems Unit (PERCS)  
1617 Mail Service Center  
Raleigh, NC 27699-1617

These reports shall be submitted according to a schedule established by the Director and shall contain the following:

- a.) Narrative  
A brief discussion of reasons for, status of, and actions taken for all SIUs in Significant Non-Compliance (SNC);
- b.) Pretreatment Program Summary (PPS)  
A pretreatment program summary (PPS) on specific forms approved by the Division;
- c.) Significant Non-Compliance Report (SNCR)  
The nature of the violations and the actions taken or proposed to correct the violations on specific forms approved by the Division;
- d.) Industrial Data Summary Forms (IDSF)  
Monitoring data from samples collected by both the POTW and the SIU. These analytical results must be reported on Industrial Data Summary Forms (IDSF) or other specific format approved by the Division;
- e.) Other Information  
Copies of the POTW's allocation table, new or modified enforcement compliance schedules, public notice of SIUs in SNC, and any other information, upon request, which in the opinion of the Director is needed to determine compliance with the pretreatment implementation requirements of this permit;

11. Public Notice

The Permittee shall publish annually a list of SIUs that were in SNC as defined in the Permittee's Division-approved Sewer Use Ordinance with applicable pretreatment requirements and standards during the previous twelve month period. This list shall be published within four months of the applicable twelve-month period. [15A NCAC 2H.0903 (b) (35), .0908 (b) (5) and .0905 and 40 CFR 403.8 (f) (2) (vii)]

12. Record Keeping

The Permittee shall retain for a minimum of three years records of monitoring activities and results, along with support information including general records, water quality records, and records of industrial impact on the POTW. [15A NCAC 2H.0908 (f); 40 CFR 403.12 (o)]

13. Funding and Financial Report

The Permittee shall maintain adequate funding and staffing levels to accomplish the objectives of its approved pretreatment program. [15A NCAC 2H.0906 (a) and .0905; 40 CFR 403.8 (f) (3), 403.9 (b) (3)]

14. Modification to Pretreatment Programs

Modifications to the approved pretreatment program including but not limited to local limits modifications, POTW monitoring of their SIUs, and Monitoring Plan modifications, shall be considered a permit modification and shall be governed by 15 NCAC 2H.0114 and 15A NCAC 2H.0907.

GE FOREST MANAGEMENT SUMMARY REPORT  
COMMERCIAL THINNINGS: 10/31/08 - 1/27/09  
FEBRUARY 4, 2009

DESCRIPTION OF PROJECT

The objective of this project was to thin all planted and natural stands (GE Areas) which were biologically ready and economically feasible. This treatment is usually performed when stands contain too many stems per acre and can provide the following benefits:

- \* Reduce potential impacts of (any) wildfire by improving access into the stand and temporarily reducing understory and mid-story densities.
- \* Increase stand yields by reducing competition, stimulating the growth of trees which are retained and removing/selling surplus trees which can be suppressed and may not survive.
- \* Allow more opportunities for a Hazard Reduction Burning Program.
- \* Reduce stress from overcrowding and potential Southern Pine Beetle (SPB) infestations.
- \* Improve habitat for wildlife especially those preferring openings and early successional vegetation.

The plantations were treated via a third-row thinning to favor sawtimber production and retained sufficient stems per acre for subsequent thinning(s).

Due to the very high initial stand densities, it was found that most of the natural stands required thinning to residual row spacings approximately the same as the plantations. The wider residual row spacings originally prescribed for the natural stands would not have accomplished the objectives of these thinnings.

The following tables review the characteristics of the thinned stands and a compilation of the results:



GE FOREST MANAGEMENT SUMMARY REPORT/2  
02/04/09

CHARACTERISTICS OF GE STANDS - THINNED

AREA	ACRES*	AGE	TYPE
1	21.0 BP	28	P
3	96.0	21	N
5	119.0	12	N
5A	65.0	16/17	P
5C	16.0	20	P
7	40.0	17	P
	114.0	21	N
8A	50.0	19/20	P
	52.5	21+	N
9	23.5	40+	N
11	11.0 BP	40	P
12A	9.0 BP	34	P (SECOND THINNING)
14	55.0	21	P
15	49.0	21	N
TOTAL	721.0		

\* ACRES FROM MAP BY [REDACTED] /GE 1-23-92

BP = BORROW PIT

P = Planted, N = Natural

[REDACTED]



GE FOREST MANAGEMENT SUMMARY REPORT/3  
02/04/09

THINNING RESULTS

AREA	SYP (TONS)		MHW (TONS)		TOTALS (TONS)	T/AC
	CHIPS	C-N-S	CHIPS			
1	835.27	183.10	-		1018.37	48.5
3	2401.43	26.69	306.13		2734.25	28.5
5	805.19	-	-		805.19	6.8
5A	2072.60	25.72	76.15		2174.47	33.5
5C	478.75	-	-		478.75	29.9
7	2244.90	-	-		2244.90	14.6
8A/11 /12A	2201.78	106.27	368.01		2676.06	21.8
9	245.08	56.67	-		301.75	12.8
14	1849.87	132.70	127.55		2110.12	38.4
15	1026.68	25.96	360.72		1413.36	28.8
<b>TOTALS</b>						
	14161.55	557.11	1238.56		15957.22	22.13

NOTE: \$ ROUNDING DIFFERENCES WERE FOUND IN THE SETTLEMENTS < \$.10  
TOTAL BUT WERE POSITIVE TO GE'S BENEFIT. THESE WERE  
APPORTIONED TO THE AREA \$ TOTALS.

GE FOREST MANAGEMENT SUMMARY REPORT/4  
02/04/09

DISCUSSION

The plantations and older stands yielded more volume and \$ per acre as would be expected. The per acre values are not precise; every acre of every stand was not thinned due to buffers at the creeks and drainage canal, against the Sledge property line, along Sledge Road, or where it was not economically feasible. There are differences in site (soil) productivity between stands in these results which are not possible to quantify.

When comparing planted and natural stands, planted trees have a "head start", 1st and 2nd generation genetically improved seedlings were used and feature wider spacings (less competition). However, the higher costs of establishing plantations must be carried to the end of the rotation in ROI calculations. When most of these plantations were established, natural regeneration was not an option. In general, the higher investments in plantation forestry should be focused on sites of the highest quality whenever possible.

Some of these results are complicated by combinations of planted and natural forest in the same stand (Area 7 & Area 8A) and some adjacent stands were thinned, sold and settled together (8A, 11, 12A). There are some meaningful comparisons. The per acre results of Areas 3 and 15, both regenerated by the Seed-Tree Method and the same age, are very similar. Comparing Areas 5A and 14 is an example of the difference in yields that 4-5 years in age can make this early in the rotation.

The next thinnings in, say, 5-7 years will not include all of the stands treated. The thinned plantations should be examined then as well as those plantations which were too young to thin at this time. The natural stands will probably not be thinned again but allowed to develop at current spacings. Thinning natural stands commercially even once represents fairly intensive management, in this case made possible via the in-woods chipper.

A Hazard Reduction Burning Program including the thinned stands should be initiated where possible when the NC Forest Service and GE can proceed. This is considered the best management prescription to perform on thinned 8Y Pine stands - between thinnings - to maintain the benefits of thinning listed earlier. Another benefit of burning the natural stands will be to prepare seedbeds and facilitate natural regeneration eventually.

GE FOREST MANAGEMENT SUMMARY REPORT/5  
02/04/09

It may be a good time to review the objectives of management on the GE Forest. Thinning is an Intermediate Cutting which cannot be repeated in a stand indefinitely. Unless longer-than-average rotations are desired, decisions will be required on rotation lengths for the older plantations and natural stands and what method(s) of regeneration will be followed.

I understand that some additional conversion of forestland to a manufacturing operation is being considered by GE. As discussed, if this occurs an attempt should be made to commercially harvest the site first.

Please advise your questions and comments.

Sincerely,

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