Progress Energy

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Senior Vice President and Chief Nuclear Officer
Progress Energy Carolinas, Inc.

Serial: NPD-NRC-2008-036
September 22, 2008

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: **Shearon Harris Nuclear Power Plant Units 2 and 3**
Docket Nos. 52-022 and 52-023
Supplemental Information for Environmental Audit –
Information Needs with Attachments

Reference: Letter from James Scarola (PEC) to NRC, dated February 18, 2008, "Application for Combined License for Shearon Harris Nuclear Power Plant Units 2 and 3, NRC Project Number 738"

Ladies and Gentlemen:

In the referenced letter, Progress Energy Carolinas, Inc. (PEC) submitted an application for a combined construction and operating license (COL) for Shearon Harris Nuclear Power Plant Units 2 and 3 (HAR 2 and 3), located in Wake County, North Carolina.

During July 14-17, 2008, an NRC team conducted an Environmental Audit to gather information to assist in the review of the Environmental Report (ER) submitted with the application. The purpose of this letter is to submit information requested by the NRC team during the audit.

Enclosure 1 provides responses to information needs that the NRC identified prior to and during the audit. Enclosure 2 provides a list of requested files noted in the responses that are included on the attached DVD. The first file is an index for the files showing the topic area, information or material requested, and the corresponding file names. All files have been prepared in accordance with NRC electronic submittal guidance. A pre-flight report is included as Enclosure 3 which lists the files that do not pass pre-flight but are deemed acceptable due to rescanning/OCR efforts, text being word searchable, clarity/legibility of high quality, and embedded photos and images.

Through a letter dated April 17, 2008, Ms. Serita Sanders of the NRC informed us that the NRC staff completed its acceptance review and had determined that our combined license application (COL) was acceptable for docketing. The letter also noted that the staff has identified areas that introduced uncertainty into the review schedule. These areas included: 1) transportation impact analysis needed to support the evaluation of construction and operational road impacts of reconstructed roads, and 2) sampling for aquatic species at the proposed intake location of the water makeup source needed to assess environmental impacts. PEC addressed these areas with NRC staff during the July 14-17 Environmental Audit and includes the following reports as part of Enclosure 2 of this letter:

P.O. Box 1551
Raleigh, NC 27602

T> 919.546.4222
F> 919.546.2405

D084
NRO

1) A transportation impact analysis to support the evaluation of road impacts associated with the activities defined in the Shearon Harris COL (Filename HAR Final Report 07.09.08 with Redaction.pdf).

2) Three aquatic biological surveys of the proposed intake location of the water makeup source. The three surveys include:
   a. Assessment of Fish Spawning Activity and Fish Spawning Habitat on the Cape Fear River at Buckhorn Dam (Filename AQ-7-007_CFR_Fish_Sampling.pdf);
   b. Assessment of the Benthic Macroinvertebrate Community and Associated Habitat on the Cape Fear River at Buckhorn Dam (Filename AQ-7-004_2008_Invertebrate_Sampling.pdf); and
   c. Assessment of Mussel Community and Associated Habitat on the Cape Fear River at Buckhorn Dam (Filename AQ-7-003_2008_Mussel_Sampling.pdf).

If you have any questions or need additional information, please contact Bob Kitchen at (919) 546-6992 or Garry Miller at (919) 546-6107.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on September 22, 2008.

Sincerely,

James Scarola

Enclosures/Attachments

JSK

cc (w/ 2 of attached DVD): Dr. Donald Palmrose, U.S. NRC Environmental Project Manager

cc (w/o attached DVD): U.S. NRC Director, Office of New Reactors/NRLPO
U.S. NRC Office of Nuclear Reactor Regulation/NRLPO
U.S. NRC Region II, Regional Administrator
U.S. NRC Resident Inspector, SHNPP Unit 1
Mr. Manny Comar, Project Manager, Division of New Reactor Licensing

Enclosure 1 to NPD-NRC-2008-036

Responses to Information Needs for Environmental Audit

Responses to Information Needs

Shearon-Harris Units 2 and 3 Environmental Site Audit

July 14-17, 2008

Provided by

CH2M HILL

Contents

Resolution of Information Needs

Information Need	Status as of this Response
G-1	Resolved
G-2	Resolved
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G-4	Resolved
G-A	Resolved
G-B	Resolved
G-C	Resolved
LU-1	Resolved
LU-2	Resolved
LU-A	Resolved
LU-B	Resolved
TL-1	Resolved
TL-A	Resolved
NP-1	Open
MET-1	Resolved
MET-2	Resolved
MET-3	Open
MET-4	Resolved
MET-5	Resolved
MET-6	Resolved
MET-7	Resolved
MET-8	Resolved
MET-9	Resolved
MET-10	Resolved
MET-11	Open
MET-12	Resolved
MET-13	Resolved
H-1	Resolved
H-2	Resolved
H-3	Resolved
H-4	Resolved
H-5	Resolved
H-6	Resolved
H-7	Resolved
H-8	Resolved
H-9	Resolved
H-10	Resolved
H-11	Resolved

Information Need	Status as of this Response
H-12	Resolved
H-13	Resolved
H-14	Resolved
H-15	Resolved
TE-1	Open
TE-2	Open
TE-3	Resolved
TE-4	Open
TE-5	Open
TE-6	Open
TE-7	Open
TE-A	Open
TE-B	Open
TE-C	Open
TE-D	Resolved
TE-E	Resolved
TE-F	Open
TE-G	Open
AQ-1	Resolved
AQ-2	Resolved
AQ-3	Open
AQ-4	Open
AQ-5	Open
AQ-6	Resolved
AQ-7	Open
AQ-8	Resolved
AQ-9	Open
AQ-A	Open
SE-1	Resolved
SE-2	Resolved
SE-3	Resolved
SE-4	Open
SE-5	Open
SE-6	Open
SE-7	Open
SE-A	Resolved
SE-B	Resolved
SE-C	Open
SE-D	Open
SE-E	Resolved
CR-1	Resolved
CR-2	Resolved
CR-3	Open

Information Need	Status as of this Response
CR-4	Open
CR-5	Resolved
CR-6	Resolved
CR-7	Resolved
CR-8	Resolved
CR-9	Resolved
CR-10	Resolved
CR-11	Resolved
CR-12	Resolved
Alt-1	Open
Alt-2	Open
Alt-3	Resolved
Alt-A	Resolved
Alt-B	Resolved
HP-1	Resolved
HP-2	Resolved
HP-3	Resolved
HP-4	Resolved
HP-5	Resolved
HP-6	Resolved
HP-7	Resolved
HP-8	Resolved
HP-9	Resolved
HP-10	Resolved
HP-11	Resolved
HP-12	Resolved
HP-13	Resolved
HP-A	Resolved
Acc-1	Resolved
Acc-2	Resolved
Acc-3	Resolved
Acc-4	Resolved
Acc-5	Resolved
Acc-6	Resolved
Acc-7	Resolved
Acc-A	Resolved
Acc-B	Resolved
T-1	Resolved

General Information Needs

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **G-1**	TOPIC AREA: **GENERAL INFORMATION NEEDS**
COMMENT/ISSUE: **Provide originals of all ER figures in .jpg, .png, or .tif format at a resolution of at least 300 dpi, and sized correctly.**	

RESPONSE:

Originals of all Environmental Report (ER) figures are provided, as noted below.

STATUS: Resolved

DOCUMENTS ATTACHED:

These figures are being provided on DVDs submitted under a separate cover.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **G-2**	TOPIC AREA: **GENERAL INFORMATION NEEDS**
COMMENT/ISSUE: **Provide separate layers for GIS files.**	

RESPONSE:

Separate layers for GIS files are provided, as noted below.

STATUS: Resolved

DOCUMENTS ATTACHED:

These files are being provided on DVDs submitted under a separate cover.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **G-3**	TOPIC AREA: **GENERAL INFORMATION NEEDS**
COMMENT/ISSUE: **Make ER references available.**	

RESPONSE:

The references listed in Revision 0 of the HAR ER have been provided in the Reading Room, as discussed with the NRC during the Audit. Specific references that need to be docketed can be provided for posting on ADAMS upon request by the NRC.

STATUS: Resolved

DOCUMENTS ATTACHED:

None

PENDING ACTIONS:

References are available in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **G-4**	TOPIC AREA: **GENERAL INFORMATION NEEDS**
COMMENT/ISSUE:	
Provide the background information that supports all statements made and conclusions reached for each subject area for each alternative site (documentation is needed to show due diligence in gathering and using the best readily available information for a reconnaissance-level review).	

RESPONSE:

Discussions occurred in specific breakout sessions during the Audit and backup information needed by the NRC has been documented in specific topic areas.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **G-A**	TOPIC AREA: **GENERAL INFORMATION NEEDS**
COMMENT/ISSUE:	
Provide knowledgeable expert(s) in appropriate disciplines to discuss contents of Tables 10.1-1 and 10.1-2 and assure consistency between the contents of the summary tables and the results of information needs discussions. It is anticipated that this will be addressed in specific breakout sessions for the individual disciplines.	

RESPONSE:

Discussions were held as requested. Discussions included a clarification explaining that impacts are operational and not related to construction.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Clarifications in Table 10.1-2 will be incorporated into a future revision in the ER, including the following: 1) First bullet (pg 10-22), clarification that impacts presented are operation impacts and not construction impacts. 2) First bullet (pg 10-23), under mitigation measures heading, expand statement to address mitigation measures to be implemented at the Harris Lake intake structure.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **G-B**	TOPIC AREA: **GENERAL INFORMATION NEEDS**
COMMENT/ISSUE:	
Provide or make available copies of permits related to the existing HNP, such as USACE permit for Harris Reservoir Dam, NCDENR, Division of Water Quality permit for Harris Reservoir, etc.	

RESPONSE:

Copies were made available in the library during the Audit.

STATUS: Resolved

DOCUMENTS ATTACHED:

Copies of permits related to the existing HNP (for example, U.S. Army Corps of Engineers (USACE) permit for Harris Dam, Division of Water Quality (DWQ) permit for Harris Reservoir) provided electronically in Attachment 1 as follows: G-B-001_HNP NPDES Permit.pdf G-B-002_HNP NPDES Permit Notification for Instream Monitoring.pdf G-B-003_HNP Impoundment and Maintenance of Impounded Water Permit.pdf G-B-004_HNP USACE Reservoir Construction Permit.pdf G-B-005_HNP Synthetic Minor Air Permit.pdf G-B-006_HNP Oil Terminal Registration.pdf

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **G-C**	TOPIC AREA: **GENERAL INFORMATION NEEDS**
COMMENT/ISSUE: **Need copies of Audit presentation slides (Alt sites, transp. analysis, orientation, etc.).**	

RESPONSE:

Copies of Audit presentation slides are provided.

STATUS: Resolved

DOCUMENTS ATTACHED:

Copies of the presentation slides (Alternate sites, transportation analysis, orientation, etc.) are provided electronically in Attachment 1 as follows: G-C-001_PEC Presentations on 07.14.08.pdf G-C-002_PEC Alt Sites Presentation of 07.15.08.pdf G-C-003_PEC TIA Presentation 07.15.08.pdf

PENDING ACTIONS:

None.

Land Use

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **LU-1**	TOPIC AREA: **Land Use**

COMMENT/ISSUE:

Provide a knowledgeable expert to identify any protected wetlands impacted by the following actions and to describe the nature of impacts, local laws affecting wetlands, and impact mitigation requirements:

(1) Timber harvesting along the reservoir shoreline affected by the raising of the pool elevation;

(2) Timber harvesting and other clearing activities in the transmission corridors proposed for upgrading or widening;

(3) Road and park relocation activities;

(4) New wetlands likely to be created by the new normal operating pool elevation of the reservoir.

RESPONSE:

1. There will be forested wetlands cleared along the shoreline, although this clearing will likely not be done as a commercial harvest. The forested wetlands that exist around Harris Reservoir have very little merchantable timber and are generally savanna-like, with canopy closure less than 50 percent. A complete delineation of wetlands and other waters of the United States was conducted in August 2006, following established U.S. Army Corps of Engineers (USACE) procedures for the plant site, water lines, and the area around the lake that would be inundated. The delineation identified 105.8 acres of forested wetlands, 5 acres of scrub-shrub wetlands, and 6.5 acres of emergent wetlands within the area to be cleared. Identified features (streams and wetlands) were mapped during the delineation using global positioning system technology. The potential impacts to streams and wetlands were determined based on the results of the delineation and proposed site modifications. A jurisdictional determination has not been requested from the USACE to verify the results of the delineation. Because conditions may change over time, the area will be delineated again prior to clearing activities and a formal jurisdictional determination will be obtained from USACE. An individual Section 404 of the Clean Water Act permit would be obtained from USACE that would authorize both the clearing and subsequent flooding of these wetlands. A single permit would authorize both actions as they are part of the same complete action. The Section 404 permit also would be contingent upon receiving water quality certification under Section 401 of the Clean Water Act from the NC DNR. Mitigation would be required as a condition of the Section 404 permit. The specifics of the mitigation would be established through the Section 404 permitting process and would be expected to include credit for new wetlands that would form around the shoreline at the 240-foot elevation and additional compensatory mitigation.

2. No delineations have been completed for the transmission corridors. These areas would be delineated in advance of any clearing activities. The impacts along transmission corridors would be included with and authorized under the same permit as the clearing for the reservoir. Any additional mitigation required for wetland impacts along the transmission corridors would be included as a requirement of the permit.

3. It is not expected that wetlands would be impacted for road and park relocation. Site selection for new locations would attempt to avoid additional impacts to wetlands, as required by Section 404 of the Clean Water Act. Once these actions are defined, potential relocation areas would be investigated for the presence of wetlands and other waters of the United States and the relocations would be permitted through the Clean Water Act Section 404 program, as described above. Any required mitigation would be included as a permit condition. Depending upon the USACE decision, road and park relocation may be

handled as part of the same permit as the reservoir/reactor/transmission corridors or addressed as separate actions.

4. The perimeter of the lake will almost double from its current length. There are relatively level areas near the 240-foot contour where wetlands will form when the water level rises. Some of these areas will be slightly below the 240-foot contour and some will be slightly above that elevation. Because the areas will become shallowly inundated or saturated for much of the biologically active portion of the year, wetlands will form. Where the areas are below the 240-foot mark, emergent or willow/alder shrub wetlands would be expected to form. Where the elevation is slightly above 240 feet, the saturated ground conditions would lead to development of forested or mixed forested wetlands. These types of wetlands developed around Harris Reservoir after it was filled. Once the hydrology is set, hydrophytic vegetation propagules will establish in suitable areas around the reservoir (very gentle to gentle slopes around the water line. Hydric soils will eventually form as a result of the accumulation of organic matter and development of anaerobic conditions. This is the same process by which the current Harris Reservoir fringe wetlands formed which did not exist prior to construction of the reservoir.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **LU-2**	TOPIC AREA: **Land Use**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss mineral rights on the Harris site, specifically:** **(1) Ownership of mineral rights on the Harris site;** **(2) Coexistence of mineral rights ownership and surface ownership on the site.**	

RESPONSE:

- There are no mineral resources associated with the proposed HAR facilities that are leased and available for use by parties other than PEC. There are no minerals being utilized on property owned by PEC for HNP or land intended for HAR. More information on mineral resources is provided in ER Subsection 4.1.1.2.6.
- No mineral rights have been leased within the exclusion area and there are no outstanding mineral rights that could result in the production of either surface or subsurface minerals at the HAR site (ER Reference 4.1-005). However, a brick facility operates in the vicinity. No HAR-related construction activities will significantly affect the operation of this facility, nor will they affect existing mineral rights or land use at the brick operation.

Reference in ER (last paragraph, Subsection 4.1.1.2.6) will be provided.

Discussion held during the breakout session regarding Progress Energy ownership was adequate to address questions.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **LU-A**	TOPIC AREA: **Land Use**
COMMENT/ISSUE:	
Provide custom digital GIS coverages (shapefiles or geodatabases) used to construct Figures 4.0-7, 4.0-8, and 4.0-9; including the proposed new shoreline layer and the point layers used to depict the impacted areas in these figures.	

RESPONSE:

NRC and CH2M HILL GIS staff have discussed path forward and determined the correct format and method of transfer for requested files.

STATUS: Resolved

DOCUMENTS ATTACHED:

Custom digital GIS coverages (shapefiles or geodatabases) used to construct Figures 4.0-7, 4.0-8, and 4.0-9, including the proposed new shoreline layer and the point layers used to depict the impacted areas in these figures are included in the provided DVDs (see the responses for G-1 and G-2).

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **LU-B**	TOPIC AREA: **Land Use**

COMMENT/ISSUE:

Provide high-resolution digital scans of aerial photos taken before and during the HNP construction illustrating preconstruction conditions, the maximum extent of the HNP construction footprint, timber clearing operations in preparation for filling the reservoir, and dam construction activities.

RESPONSE:

Progress Energy provided historical slides during discussion on 7/16/2008.

STATUS: Resolved

DOCUMENTS ATTACHED:

Historical slides presented during discussion on 7/16/2008 are provided electronically in Attachment 1 as follows:

LU-B-001_Cooling Tower Construction.jpg
LU-B-001_HNP Aerial Looking North January 1986.jpg
LU-B-001_HNP Aerial Looking South January 1986.jpg
LU-B-001_HNP Aerial Looking South September 1979.jpg
LU-B-001_HNP Aerial with Main Reservoir Clearing 1979.jpg
LU-B-001_HNP Construction Aerial Lkg West.jpg
LU-B-001_HNP Construction Aerial Lkg WNW.jpg
LU-B-001_HNP Construction Aerial Looking.jpg
LU-B-001_Main Dam and Spillway Construction Lkg SE.jpg
LU-B-001_Main Dam and Spillway Construction Lkg SW.jpg
LU-B-001_Main Dam Construction January 1981.jpg
LU-B-001_Main Dam Construction Lkg North May 1981.jpg
LU-B-001_Main Dam Diversion Canal Lkg North 1978.jpg
LU-B-001_Main Dam Reservoir Filling April 1981.jpg
LU-B-001_Main Dam Spillway Construction May 1981.jpg
LU-B-001_Main Reservoir Clearing August 1980.jpg
LU-B-001_Main Reservoir Clearing June 1979.jpg
LU-B-001_Main Reservoir Clearing Lkg NW September 1979.jpg
LU-B-001_Main Reservoir Clearing October 1978.jpg
LU-B-001_Main Reservoir Clearing.jpg
LU-B-001_Main Reservoir January 1985.jpg
LU-B-001_Main Reservoir Nearing 220 Elevation March 1982.jpg
LU-B-001_Power Block Construction March 1980.jpg
LU-B-001_Power Block Construction September 1979.jpg
LU-B-001_Power Block Excavation Looking SE.jpg
LU-B-001_Power Block Excavation Looking South.jpg
LU-B-001_West Aux Dam Construction Lkg East June 1979.jpg
LU-B-001_West Aux Dam Looking East January 1983.jpg
LU-B-001_West Aux Reservoir Looking East.jpg
LU-B-001_West Aux Reservoir March 1982.jpg

PENDING ACTIONS:

None.

Transmission Lines

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TL-1**	TOPIC AREA: **Transmission Lines**
COMMENT/ISSUE: See Land Use, Ecology, Cultural Resources, Socioeconomics, and Alternatives for discipline-specific Transmission Line needs.	

RESPONSE:

Comment noted. See specific responses in other topic areas.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TL-A**	TOPIC AREA: **Transmission Lines**
COMMENT/ISSUE: Provide the custom digital GIS coverages (shapefiles or geodatabases) used to construct Figure 3.7-2, including the transmission line layer and the point layer depicting the substation locations in this figure.	

RESPONSE:

All GIS layers used to produce figures are included in accompanying DVDs. See G-2.

STATUS: Resolved

DOCUMENTS ATTACHED:

All GIS layers used to produce figures are included in DVDs provided per G-2.

PENDING ACTIONS:

None.

Need for Power

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **NP-1**	TOPIC AREA: **Need for Power**

COMMENT/ISSUE:

Provide a knowledgeable expert on the need for power for Progress, VACAR, and the SERC region to provide:

(1) Description of regional transmission and the regional inter-ties that may impact the VACAR/SERC transmission constraints at the expected capacity and voltage; Is there a bottleneck/resolution in VACAR/SERC projection that restricts inflow/outflow of power?

(2) Description or confirmation that capacity margin variability is seasonal (11-17%) (8.1.4).

(3) Description of wholesale power sales at 18% (firm, non-firm, in area or in sub-region, etc.) (8.1.4).

(4) Explanation of discrepancy in "undesignated" power (8.1.2 indicates 2803 MW summer where 8.4.1 and 8.4.2 indicate 3643 MW). Also explain the discrepancy in the year 2020 as dedicated to being baseload power.

(5) Description of the 1578 MW of additions ("undesignated," permits filed, CPCN or FERC inter-tie, etc.) (8.2.2).

(6) Description or clarification of Table 8.1-2: a. Inclusion and quantification of PURPA qualifying entities in "other resources and capacity," b. Firm capacity purchased power - peaking or intermediate capacity, c. Any joint ventures for capacity additions and available capacity.

(7) Description of the known current or projected merchant capacity and capacity factors in the regional power pool and how they contribute to current or expected power purchase agreements, available reserve margin, or decommissioning activities (8.3.3).

(8) Validation of the discrepancy between VACAR/SERC capacity projections for the region and PEC including NERC's 2007 LTRA projections (committed and uncommitted interconnect agreements).

Additional information needs during the discussion:

(9) (a) Verify the total load and the margins in Table 8.1-2. (In Table 8.1-2, energy efficiency demand reduction appears as an addition to the firm obligation. Explain and adjust capacity/reserve margins and comment on whether these changes impact commercial operation dates.)

(9) (b) Would the North Carolina renewable energy portfolio standards impact projections?

(9) (c) Confirm the start date for HAR 2018 or 2020?

(9) (d) Confirm how 1.1% growth rate impacts the start date?

(9) (e) Are there any PURPA entities and can they be quantified from the 2007 purchases and other resources on Table 1-1 in the December 2007 IRP?

(9) (f) Last bullet on page 8-36, reword statement about N.C. climate change and carbon emissions: "HAR will displace significant amounts of carbon as soon as the plant becomes operational."

(9) (g) Will any electric-generating plants within ROI be able to retire once HAR comes online?

(9) (h) Is there a company mandated percentage for PEC to purchase power? If so, is there a basis to establish the percentage?

(9) (i) Does PEC have existing agreements to sell power outside the ROI? How much? Explain percent or average.

(9) (j) Do SC and NC both rule on a needs case?

(9) (k) Does SC issue opinion on IRPs? Is their process robust?

(9) (l) Is PEC's renewable resources portfolio standards (RPS) for North Carolina and South Carolina, or for North Carolina alone? Explain and quantify impact of to capacity/reserve margins, if any.

(9) (m) In 8.2.2.3.3, what portion of the wholesale power is committed as a percentage or as megawatts?

RESPONSE:

(1) The following new text will be provided as supplemental information for ER Chapter 8: "According to PEC's December 2007 Integrated Resource Plan (IRP) submitted to the North Carolina Utilities Commission (NCUC), Progress Energy-Carolinas (PEC) coordinates its transmission planning and operations with neighboring systems to assure the safety, reliability, and economy of its power system. As part of this effort to ensure that the transmission system will continue to be adequate, PEC regularly conducts coordinated near-term operating studies and longer-range planning studies that involve representatives from the Virginia-Carolinas Subregion (VACAR) and adjacent subregions and regions to provide interregional coordination. Currently (2008) VACAR does not have much available surplus power to purchase and interties are limited to 400-500 MW with transmission upgrades.

PEC actively participates on the Intra-regional Long-term Power Flow Study Group (LT-PFSG), the Intra-regional Near-term Power Flow Study Group (NTPFSG), the VACAR reliability committees, and the Eastern Interconnection Reliability Assessment Group (ERAG) and has participated in development efforts for a potential regional transmission organization (RTO) in the southeast.

In addition, PEC, Duke, North Carolina Eastern Municipal Power Agency (NCEMPA), and the North Carolina Electric Membership Corporation (NCEMC) are engaged in a collaborative transmission planning process (the NC Transmission Planning Collaborative). This effort allows NCEMPA and NCEMC to participate in all stages of the transmission planning process, resulting in Duke and PEC moving towards a single collaborative transmission plan for their control areas that addresses both reliability and market access."

(2) The capacity marginal variability information used in ER Tables 8.1-2 and 8.1-3 in ER Chapter 8 of the HAR ER was taken from the December 2007 IRP. According to Tables 1-1 and 1-2 in the 2007 December IRP, the summer capacity margin for the years 2008 through 2022 is forecasted to range from 11 - 21 percent. The winter capacity margin for the time period is forecasted to range from 25 – 33 percent. The 11-17 percent capacity margin variability presented in the text of the current ER Section 8.1.4 is from the draft September 2007 IRP.

(3) PEC does have wholesale sale agreements with co-ops and municipally-owned power companies (listed in the December 2007 IRP) located within the current PEC service territory.

(4) The 2803 MW summer undesignated generation additions data used in ER Chapter 8 were taken from the December 2007 PEC IRP, while the 3643 MW summer undesignated generation additions data used in ER Section 8.4.1 and 8.4.2 is taken from the draft September 2007 IRP.

(5) The 1578 MW value for undesignated peaking additions is from the draft September 2007 IRP. The undesignated peaking additions value in the PEC December 2007 IRP is 633 MW with an additional undesignated base value of 2170 MW expected in service in 2018-19.

(6) a. The US Congress passed an energy bill in 1978 titled the Public Utility Regulatory Policies Act ("PURPA"). PURPA dealt with several energy industry issues and required investor-owned electric utilities to interconnect and purchase power from non-utility owned generating facilities as long as those facilities meet a set of guidelines. A facility that meets those standards and guidelines is deemed to be a "Qualifying Facility" or "QF" under PURPA. PURPA broadly defined two types of QFs, Cogenerators and Small Power

Producers. Cogenerators produce electricity and another useful form of thermal energy (such as heat or steam) that can be used for industrial, commercial, residential, or institutional purposes.

This two-fold use of a fuel source is more efficient than just producing heat or steam for a process or just generating electricity alone. Small Power Producers produce energy from renewable resources such as wind, solar, hydroelectric, geothermal, biomass, or some waste product. Through the IRP process, PEC periodically assesses various generating technologies to ensure that projections for new resource additions capture new and emerging technologies over the planning horizon. This analysis involves a preliminary screening of the generation resource alternatives based on commercial availability, technical feasibility, and cost. The alternative screening process is generic in nature, not site-specific. The IRP process looks at the commercial availability, the technological feasibility for commercially available technologies, and the levelized cost of energy production. To accomplish this, the PEC IRP process incorporates sophisticated resource optimization computer models to evaluate future generation alternatives.

As of December 2007, PEC's IRP includes purchased power from two municipal solid waste (MSW) facilities and contracts with landfill gas facilities. PEC is actively engaged in a variety of projects to develop new alternative sources of energy, including solar, hydrogen, biomass, and landfill gas technologies. In addition, wind and solar, as well as other renewables are being evaluated for their ability to meet renewable energy requirements on a case-by-case basis and included as a resource option if appropriate. PURPA QF entities and capacity in the service territory are presented in Tables 1-1 and 1-2 of the PEC's December 2007 IRP. PURPA QF (NUG QF Cogen, NUG QF Renewable, and NUG QF Other) entities in North Carolina from 2008-2022 are listed under Purchases and Other Resources in Table 8.1-2 of the HAR ER.
b. Firm capacity within PC is baseload
c. Currently (2008) PEC does not have any joint ventures for capacity additions and available capacity.

(7) There are currently (2008) no merchant plants within the PEC service territory.

(8) SERC has surplus capacity; most in Entergy. Transmission capabilities is limiting factor. PEC is in the process of adding approximately 1000 MW of additional transmission import capability to the PEC system, but 800 MW is currently reserved in PEC's OASIS system according to FERC regulations.

(9) (a) The energy efficiency/demand reduction is not an addition. Firm obligation is the minimal total load after meeting efficiencies and demand reduction programs.

(9) (b) Further research is needed to determine how (if at all) the North Carolina renewable energy portfolio standards (RPS) would impact projections.

(9) (c) The confirmed start date as indicated in the December 2007 IRP for HAR Unit 2 is projected to be the year 2018.

(9) (d) Additional research is needed to determine how the projected 1.1% growth rate impacts the start date.

(9) (e) See response for 6a.

(9) (f) Given pending and future state and federal legislation related to climate change and carbon emissions, the effect of HAR operations serves another important need by potentially reducing future carbon emissions in the state. The operation of the HAR will potentially reduce the need for replacing construction of additional emission-generating fossil-fuel power generation facilities within the PEC service territory. The effect of HAR operations would then prevent the generation of significant amounts of carbon and other emissions.

(9) (g) PEC currently has no firm plans for retiring any of its generating units. PEC is adding environmental controls and maintaining existing generating units as necessary to keep them operational and in compliance with environmental requirements.

(9) (h) PEC currently (2008) has no company mandated percentage to purchase power. VACAR does not have much available surplus power to purchase. Additionally, interties would limit power purchases to 400-500 MW with transmission upgrades.

(9) (i) PEC currently (2008) has no existing agreements to regularly sell power outside the service territory. At times, PEC does make available off-system sales to adjacent regional reliability councils (RRCs); to date, these have been always short-term sales (e.g., several hours or days).

(9) (j) The State of North Carolina, specifically the North Carolina Utilities Commission (NCUC), rules on needs cases for facilities proposed for construction and operation with the political boundaries of the State of North Carolina. The SCPSC rules on facilities proposed for construction and operation within the South Carolina state boundary.

(9) (k) The South Carolina Public Services Commission (SCPSC) does docket submittals, issue opinions, and receives comments. To date, PEC submittals have not had opposing comments on its docketed IRP to SCPSC.

(9) (l) PEC's RPS is for North Carolina. By the year 2020, PEC will be required to meet 12.5 percent of retail sales by a mixture of renewables, DSM, or renewable credit energy purchases.

(9) (m) PEC has 18 percent of their power commitments in firm contracts and that is through power authority co-ops and municipal power companies.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

(1) Provide supplemental text for the ER to better explain PEC power purchases with VACAP/SERC.
(2) Provide supplemental text revising Chapter 8, Section 8.1.4, to reflect December 2007 IRP data.
(3) Provide supplemental text adding text in Chapter 8, Section 8.1.4 to reflect December 2007 IRP data and add new table listing the co-ops and municipally-owned power companies that PEC has wholesale power sales agreements.
(4) Provide supplemental text, revising Chapter 8, Section 8.4.1 and 8.4.2 to reflect December 2007 IRP data.
(5) Provide supplemental text, revising Chapter 8, Section 8.2.2, to reflect December 2007 IRP data.
(6) Provide supplemental text, adding text in Chapter 8, Section 8.1.4 to reflect December 2007 IRP data.
(7) Provide supplemental text, adding sentence in Chapter 8, Section 8.3.3 to reflect December 2007 IRP data.
(8) Provide supplemental text, adding sentence in Chapter 8, Section 8.3.1 to reflect December 2007 IRP data.
(9) (a) Provide supplemental text, adding sentence to 8.21.
(9) (b) Additional research required to determine impacts of North Carolina RPS on projections and clarify in ER.
(9) (c) Provide supplemental text to the ER to correct date.
(9) (d) Additional research required to determine impacts of projected 1.1% growth rates on start date and clarify in the ER.
(9) (e) None.
(9) (f) Provide supplemental text, revising sentence and adding new sentence to ER.
(9) (g) Provide supplemental text, adding sentence about planned retirements in Chapter 8, Section 8.3.1 to reflect December 2007 IRP data.
(9) (h) Provide supplemental text, adding sentence explaining purchase power in Chapter 8, Section 8.3.3 to reflect December 2007 IRP data.

(9) (i) Provide supplemental text, adding sentence explaining wholesale sales agreements in Chapter 8, Section 8.1.4 to reflect December 2007 IRP data.
(9) (j) None.
(9) (k) None.
(9) (l) Provide supplemental text, adding sentence to 8.2.2.3.3.
(9) (m) Provide supplemental text, adding sentence to 8.2.2.3.3.

Meteorology/Air Quality

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-1**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE: **Provide the 1994-1999 meteorological data using the format specified in Regulatory Guide 1.23, Rev. 1.**	

RESPONSE:

A CD with the 1994–1999 data in RG 1.23, Rev. 1 format was provided to NRC as a supplement to the COLA on February 18, 2008.

A copy of the original data disc as submitted to NRC and a copy of the original transmittal letter were provided to Jeremy Rishel/PNL per NRC instructions on July 14, 2008.

STATUS: Resolved

DOCUMENTS ATTACHED:

See above.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-2**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE: **Provide a summary of mean wind speed by month and annual mean wind speeds for the 1994-1999 and a summary of wind persistence at the 39-ft. and 200-ft. levels.**	

RESPONSE:

The mean monthly and annual wind speeds for the 1994 – 1999 data period (lower level) were obtained from monthly joint frequency distributions of wind speed, wind direction, and atmospheric stability that were prepared in support of the ER and are as follows:

Month*	Wind Speed (m/s)
January	1.84
February	1.97
March	2.20
April	2.11
May	2.20
June	1.69
July	1.65
August	1.53
September	1.56
October	1.53
November	1.63
December	1.65
Annual	1.77 (all 5 years combined)

*Monthly values are averages of the 5 monthly values for the 5-year period

A wind persistence summary was not prepared for the 1994 to 1999 period of record since wind persistence was not relied on or used in any analysis presented in the ER. However, wind persistence information for the existing SHNP site is provided for the upper and lower measurement levels in the SHNP FSAR (Table 2.3.2-2, "Wind Direction Persistence Data") for the period January 14, 1976 to December 31, 1978. A comparison of the wind roses for the 1976 – 1978 (SHNP FSAR Figure 2.3.2-7) and the 1994 – 1999 (ER Figure 2.7-3) data periods indicates a similar distribution of wind speed and direction for the two periods and there is no reason to expect that wind persistence would be substantially different for the two data periods. For the 1994 – 1999 period of record a detailed summary of the frequency of occurrence of wind speed, wind direction, and atmospheric stability is provided in the joint frequency distributions and wind roses provided in ER Section 2.7.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-3**	TOPIC AREA: **Meteorology and Air Quality**

COMMENT/ISSUE:

Provide a knowledgeable expert to provide the following:

(1) Rationale for using dew point temperature data from 1976-1978 in the ER (Section 2.7.4.1.3.3) when the 1994-1999 period is being used for all other variables;

(2) Explanation for dew point temperatures approximately 5-7°F lower than neighboring Raleigh- Durham and Greensboro;

(3) Explanation of potential effect this may have on the SACTI plume analysis.

RESPONSE:

Information on dew point temperature for the three year period 1976-1978 in ER Section 2.7.4.1.3.3 was included and compared with long-term dew point observations in ER Table 2.7-66 "Comparison of Mean Dew-Point Temperatures" and ER Table 2.7-67 "Mean Dew-Point Temperatures." The onsite dew-point temperatures presented in these tables were obtained from the SHNP FSAR. Onsite dew-point temperatures for the 1994 – 1999 period of record were not summarized since they were not relied on or used in any analysis in the ER.

A comparison of the onsite dew-point observations and the regional dew-point observations from Charlotte, Greensboro, and Raleigh-Durham in ER Table 2.7-66 does in fact indicate some variations in the data. However, it is noted that there is not a consistent difference in dew-point temperature between the onsite measurements and the observing stations. For Raleigh-Durham, the onsite measurements are generally less during the winter months and higher during the summer months. A similar comparison is noted for Greensboro. Annual average observations are nearly identical, with less than 0.5°F difference. Given the short period of record for the onsite data, the amount of variability and lack of a consistent correlation between the onsite and regional observations is not unexpected.

It is acknowledged that uncharacteristically low (or high) dew-point temperatures could have an impact on modeled plume lengths and visibilities; however, the effects of minor differences in temperature (on average) are not expected to be particularly significant. During periods of the year when the dew-point is lower than would be expected for a longer term data period, predicted plume lengths would tend to be shorter. Conversely, during periods of the year when the dew-point is higher than expected, predicted plume lengths would be longer.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Progress Energy will consider running SACTI analysis with 1994 - 1999 data to facilitate EIS preparatory activities. Mike Lazaro/ANL has SACTI model (DOS version) compiled and available and has agreed to send the source file, executable file, sample data input files, and user's manual to George Howroyd/CH2M HILL.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-4**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss the low average temperatures at Harris being some 3°F higher than Raleigh Durham (5 °F for Greensboro) and the potential effects this may have on delta -T stability estimates.**	

RESPONSE:

A review of ER Table 2.7-2 indicates that long-term annual average temperatures (58-year POR) at Raleigh-Durham (RDU) and Greensboro (GBO) are 59.5 and 58.1°F, respectively and the annual average on-site temperature observed at the SHNP facility for an 8-year POR (1976 – 1978, 1994 – 1999) was 49.0°F. The lower average temperature at the SHNP site is most likely attributable to the rural setting of the plant where there should be no evidence of urban heat island or other population related effects on the measurements, versus the urban setting of the RDU and GBO observing station locations where higher temperatures are expected to be observed. A review of the monthly average temperatures in ER Tables 2.7-62 and 2.7-63 indicates that monthly extreme temperatures (maximum and minimum) are more closely aligned. Since extreme temperature readings are typically the result of synoptic weather events, this is not unexpected.

During the course of the discussion of this item on July 14, 2008, it was noted that the annual average temperatures for the years 1994 - 1999 as presented in Table 2.7-61 are incorrect and should be revised (i.e., the averages for these years are representative only of January data). The correct annual averages are as follows:

Year	Annual Average Temperature (°F)
1994	63.5 (March – December)
1995	59.3
1996	59.3
1997	59.6
1998	62.2
1999	46.7 (January – February only)

These average values in Table 2.7-61 will be revised in a future amendment to the ER.

It was also suggested that the mean January temperatures from RDU be compared with the mean January temperatures that were observed on-site during the period 1994 – 1999 data period. The RDU January temperatures were obtained from NCDC Local Climatological Data (LCD) summaries and a summary of the January average temperatures (ER Table 2.7-61) is provided below:

Year	RDU	On-Site
1995	42.9	42.1
1996	38.3	38.8
1997	41.3	42.1
1998	44.7	45.5
1999	45.7	47.1

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Correct Table 2.7-61, as noted above, in a future revision to the ER.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-5**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE: **Table 2.7-69 in the ER has precipitation values in both inches and centimeters, though the table title suggests inches. Verify the data in this table.**	

RESPONSE:

A review of the monthly and annual average on-site precipitation totals in ER Table 2.7-69 indicates that the 1994 – 1999 data are actually in centimeters rather than inches as indicated in the table heading. As a result, all 1994 – 1999 monthly and annual average values need to be divided by 2.54 to convert the values to inches. Additionally, the average monthly values in the far right column will need to be re-calculated to reflect the correct monthly values. These revisions will be made in a future amendment to the ER. The revised annual average precipitation totals are as follows:

Year	Annual Precipitation Total (Inches)
1994	30.53 (March – December only)
1995	44.75
1996	40.76
1997	30.50
1998	32.61
1999	3.62 (January – February only)

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Correct Table 2.7-69, as noted above, in a future revision to the ER.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-6**	TOPIC AREA: **Meteorology and Air Quality**

COMMENT/ISSUE:

Provide a knowledgeable expert to discuss the following:

(1) The Harris precipitation measurements (ER, Section 2.7.4.1.4) being some 10-inches below nearby NWS sites. Specifically, 1996-1998 seem to be very under-observed years at Harris when compared to Raleigh-Durham and Greensboro;

(2) The potential impacts of using underestimated Harris precipitation measurements in the MACCS2 severe accident calculations.

RESPONSE:

The difference in the onsite and regional precipitation measurements that are indicated in ER Table 2.7-6 is believed to be attributable to the comparison of only 3 years of onsite data with a 30-year period of record for the Charlotte, Greensboro, and Raleigh-Durham stations. While many of the monthly totals are comparable, the short-term nature of the onsite data is likely to exclude the higher rainfall totals that would be included in the longer-term measurements.

The MACCS2 severe accident calculations that were performed for proposed new Units 2 and 3 were not based on the 1994 – 1999 data, rather they were based on data for the period 2001 – 2005, the same data that was used to support the MACCS2 license renewal analysis for SHNP Unit 1. The impact of using under-estimated precipitation measurements on the MACCS2 severe accident calculations can be evaluated, at least in part, by comparing the relative results of the MACCS2 analyses (using the highest precipitation year 2003 as the base case) that were performed on each of the five years of data, as illustrated in the following table:

Year	Annual Precipitation (in.)	Precipitation Change from 2003	Predicted Dose Risk Change (from 2003)	Predicted Cost Risk Change (from 2003)
2003	49.7	--	--	--
2001	29.4	-41%	-14%	-14%
2002	43.6	-12%	-7%	-9%
2004	34.9	-30%	-4%	-5 %
2005	30.6	-38%	-13%	-14%

While the data suggests some correlation between the amount of precipitation and the metrics of dose risk and cost risk, the results for the year 2004 would appear to indicate, as expected, that the amount of precipitation is not the sole determining parameter. In general, one would expect that precipitation in conjunction with plume travel direction and the population distribution (i.e., rain over population centers) would have the most significant impact on dose and cost risk. It is also noted that the base case year 2003 used in the MACCS2 analysis has a higher annual precipitation total than the regional NWS sites in Table 2.7-68 in ER Section 2.7.4.1.4.

During the discussions on July 14, 2008 it was suggested by Jeremy Rishel/PNL that the on-site annual precipitation value used in the MACCS2 analysis (49.7 inches) be compared with the Raleigh-Durham (RDU) observed precipitation for the same year. A review of the NCDC LCD for 2003 indicates that the RDU precipitation for 2003 was 50.01 inches, which is comparable to the on-site measurement.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-7**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE: **Discuss any anticipated changes to the meteorological monitoring program, if any.**	

RESPONSE:

Aside from routine equipment upgrades that periodically occur when older equipment is replaced with more current and possibly more accurate equipment or components, the only change to the system that is currently being contemplated is a reprogramming of the existing electronic data loggers to record wind speeds as scalar averages, rather than as vector averages (the current configuration).

It was also observed during the site visit to the meteorological tower on July 14, 2008, that Progress Energy had recently cleared some trees and other vegetation in the area to ensure compliance with guidance provided in RG 1.23, Rev. 1 relative to airflow obstructions. Paul Snead of Progress Energy indicated that this was performed in 2007.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-8**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE:	
Section 2.7.2 in the ER states that Wake County is a maintenance area for carbon monoxide and in non-attainment for 8-hour ozone. Provide a knowledgeable expert to discuss how this might affect construction and operation activities at the site with respect to air permitting and clarify if air permits are going to be required (e.g., for concrete batch and backup generators).	

RESPONSE:

Air construction and operating permits are expected to be required for the facility, primarily as a result of the emissions from the diesel-fired emergency backup generators, ancillary generators, fire pump engines, and possibly from the cooling towers (PM/PM-10 emissions). The existing facility is currently permitted as a minor source (under the Title V Operating Permit program) and it is not yet known if the additional emissions from the new units will result in a need to permit the facility as a major source. Also, if the facility is determined to be a major source under the PSD program and a PSD construction permit is required, the pollutant that will trigger this requirement will be PM-10 (from the cooling towers). Wake County is currently designated as a "maintenance area" for CO; however, the CO emissions from the facility will not be significant and are not expected to pose any permitting difficulties. Wake County has also been recently re-designated as attainment for ozone (December 2007), eliminating the potential for any nonattainment area permitting requirements. It is expected that the installation of any temporary concrete batch plants that will be operated on the property during construction will be permitted under temporary operating permits that will be secured by the contractor(s) responsible for the construction. It is also noted that the use of onsite concrete batch plants will result in an effective reduction in mobile source emissions compared to the alternative of using trucks to deliver concrete from off-site concrete batch plants.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Progress Energy will update the ER in future revision to reflect a recent redesignation of Wake County as attainment for ozone.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-9**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE: **Provide or make available the complete XOQDOQ calculation package used to support the routine release analysis in the ER, including documentation on any supporting calculations or assumptions, input and output files to the XOQDOQ code, and the meteorological file used in the analysis. In addition, provide a knowledgeable expert to discuss the analysis.**	

RESPONSE:

Printed copies of the XOQDOQ input and output files were provided to Jeremy Rishel/PNL for review on July 16, 2008. These files contain assumptions and meteorological data used in the analysis.

STATUS: Resolved

DOCUMENTS ATTACHED:

Electronic copies of the input and output files are included in the Data Files Folder in folder Met-9-001_XOQDOQ on a DVD being submitted under a separate cover.

PENDING ACTIONS:

Calculation package will be placed in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-10**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE: **Provide routine release X/Q values for nearest residence calculation in Table 2.7-76 (Sheet 1 of 3) in ER.**	

RESPONSE:

The X/Q values for the nearest residence are included on the second sheet of Table 2.7-76.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-11**	TOPIC AREA: **Meteorology and Air Quality**
COMMENT/ISSUE:	
Provide or make available the complete SACTI calculation package used to support the cooling tower plume analysis in the ER, including documentation on any supporting calculations or assumptions, input and output files to the SACTI code, and the meteorological file used in the analysis. In addition, provide a knowledgeable expert to discuss the SACTI analysis.	

RESPONSE:

The SACTI code was not used in the analysis of cooling tower plume behavior for the proposed new Units 2 and 3. In ER Section 5.3.3.1.1 "Length and Frequency of Elevated Plumes", reference was made to the cooling tower modeling results that were provided in the SHNP FSAR. Progress Energy will consider use of the SACTI model to assess cooling tower plume behavior for Units 2 and 3 and the results will be incorporated in a future amendment to the ER. Consideration will also be given to the cumulative impacts of the cooling towers for the proposed new units with the existing Unit 1 cooling tower.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Progress Energy will consider use of the SACTI model to assess cooling tower plume behavior and the results may be incorporated in a future amendment to the ER.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-12**	TOPIC AREA: **Meteorology and Air Quality**

COMMENT/ISSUE:

ER (Section 5.3.3.1.1) references SACTI plume modeling done in a 1983 FSAR. Provide a knowledgeable expert to discuss the following:

(1) The relevance of the inputs to the 1983 SACTI analysis with respect to the AP1000 Reactor Design;

(2) The representativeness of the January 14, 1976 to December 31, 1979 meteorological data used in the SACTI analysis relative to the site (i.e., clarify whether or not the data have been benchmarked similar to the 1994-1999 data used in the ER).

RESPONSE:

(1) The SACTI code was not used in the analysis of cooling tower plume behavior for the proposed new Units 2 & 3. In ER Section 5.3.3.1.1 "Length and Frequency of Elevated Plumes", reference was made to the cooling tower modeling results that were provided in the SHNP FSAR. Progress Energy will consider use of the SACTI model to assess cooling tower plume behavior for Units 2 and 3 and the results will be incorporated in a future amendment to the ER. Consideration will also be given to the cumulative impacts of the cooling towers for the proposed new units with the existing Unit 1 cooling tower.

(2) As discussed during the July 14, 2008 meeting, the text in Section 5.3.3 "Atmospheric Heat-Dissipation System" refers to only a single natural draft cooling tower. This wording requires clarification in that there will be a single cooling tower for each of Units 2 and 3. To further clarify this issue, the text in ER Section 5.3.3.1.1 "Length and Frequency of Elevated Plumes" also provides some general information related to the cooling tower evaporation rate of 8000 to 12,000 gallons per minute (gpm) of water per unit. The maximum normal design evaporation rate is actually 13,510 gpm per tower, and the circulating water flow rate is 531,100 gpm per tower. The estimated maximum drift loss is estimated to be 110 gpm per tower. The text in this section will be revised to reflect this information in a future amendment to the ER.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

See pending action for Met-11. A future revision will clarify ER Section 5.3.3 as noted in Response 2 above.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Met-13**	TOPIC AREA: **Meteorology and Air Quality**

COMMENT/ISSUE:

ER, Section 5.3.3.1.2 states "As described in ER Section 2.7, naturally occurring fog was reported an average of 845 hours per year during the 3-year period from 1955 to 1957." Provide a reference for this statement in Section 2.7 and provide a knowledgeable expert to provide the rationale for using data from 1955-1957.

RESPONSE:

The referenced statement in ER Section 5.3.3.1.2 incorrectly refers to a statement in ER Section 2.7 that no longer exists. More specifically, Section 2.7.4.1.5 in the ER was revised (but inadvertently not updated in ER Section 5.3.3.1.2) to refer to fog observations in Charlotte, Greensboro, and Raleigh-Durham as summarized in ER Table 2.7-70 "Average Number of Days of Fog Occurrence." Table 2.7-70 contains more detailed information on fog observations at the three indicated observing stations for periods of record that range from 56 to 78 years and the average number of observations by month and annually are reported. While the statement in Section 5.3.3.1.2 is correct, it should have been replaced with the more updated information from ER Section 2.7.4.1.5 that reflects a longer period of data. Supplemental text to support ER Section 5.3.3.1.2 will be provided to clarify issue.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Provide supplemental ER Section 5.3.3.1.2 text as noted above.

Hydrology

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-1**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE:	
Groundwater (GW)-1: Provide a knowledgeable expert to describe subsurface in various cross-sections including surficial and bedrock aquifers, the topography of the bedrock.	

RESPONSE:

Cross-sections were provided in FSAR 2.5 (specifically Figures 2.5.4-202 and 2.5.4-204A through 206B, and text in 2.5.4.1.1 and 2.5.1.2)

Several FSAR figures support the request for subsurface cross-sections and topography of bedrock:
Figure 2.5.4-202 - "Borehole Locations Near AP1000 Structures"
Figure 2.5.4-204A & 204B - "Stratigraphic Cross Section at HAR 2" - Plant N-S and E-W
Figure 2.5.4-205A & 205B - "Stratigraphic Cross Section at HAR 3" - Plant N-S and E-W
Figure 2.5.4-206A & 206B - "Elevation of Top of Sound Rock" at HAR 2 and HAR 3

FSAR Subsection 2.5.4.1.1 provides a description of soil and rock subsurface conditions encountered in the HAR 2 and HAR 3 boreholes (a few pages). A detailed description of the site geologic setting (based on literature sources and field reconnaissance by Geomatrix) is presented in FSAR Subsection 2.5.1.2.

Supporting information:
ER Subsection 2.3.1.3 provides a summary of regional and site-specific hydrogeological descriptions.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-2**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE:	
GW-2: Provide a knowledgeable expert to discuss the basis for estimated recharge in natural and cleared portions of the landscape.	

RESPONSE:

Shallow depth to bedrock limits deep recharge for HAR 2. For HAR 3 area some backfilling will be involved. Laydown areas, construction parking, and switchyard will be graveled. Areas around cooling towers will be seeded. Power block area will be impervious. Drainage ditches outside the power block area will be pervious. Significant changes in recharge will occur locally but are not likely to impact other areas. See ER 4.2.1.3. (Terrestrial ecology – ER 4.3.1.1.1 discusses the vegetation.) Exact cut/fill maps are in FSAR Fig 2.5.4-211A and B, and 212 A and B.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-3**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE: **GW-3: Provide copies for review of boring logs, pump test data, and well logs.**	

RESPONSE:

Documents were provided for review. Bore logs are in FSAR Appendix 2.BB. Well completion diagrams are in 338884-EDF-018 Rev D. Slug test results are in HAG-0000-X7C-001. These documents will be reviewed at the safety audit.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-4**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE:	
GW-4: Provide a knowledgeable expert with a working version of AquiferWin32 to discuss pump test analyses.	

RESPONSE:

Slug test results are in HAG-0000-X7C-001. These documents will be reviewed at the safety audit.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-5**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE: **GW-5: Provide a knowledgeable expert to describe measurements that lead to the conclusions that diabase dikes are causing artesian conditions at the site.**	

RESPONSE:

Supporting information to the discussion included the following items:

1) ER Subsection 2.3.1.3 provides properties associated with the intrusion of diabase dikes. This information establishes a conceptual model of the area in the vicinity of the diabase dikes.

2) ER Reference 2.3-015 explains diabase dikes in more detail and states that they can function as dams because they block groundwater flow and tend to impound water in the sediments on their upgradient sides.

3) ER Figures 2.3-22, 2.3-24, 2.3-26, and 2.3-28 show the location within the site and groundwater elevations for each of the quarterly gauging events.

4) ER Table 2.3-14 establishes that groundwater elevations for all quarterly gauging events within MWA-9D were above the ground surface.

5) ER Table 2.3-15 establishes that upward groundwater vertical gradients occurred in MWA-9S/9D for all quarterly gauging events.

6) FSAR Figures 2.5.1-231, 2.5.1-232, and 2.5.1-235 show the locations of diabase dikes within the HAR site. See FSAR 2.5.1.2.3.

7) FSAR 2.5.1.1.3.1.2.2, FSAR 2.5.1.2.1, FSAR 2.5.1.2.2, and FSAR 2.5.1.2.3.3 also provided supporting information.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-6**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE:	
GW-6: Provide a knowledgeable expert to discuss any consultations with EPA regarding the likelihood of any aquifers in the region being designated as sole-source aquifers.	

RESPONSE:

There are no sole source aquifers in North Carolina. The NRC staff may choose to consult directly with EPA on future plans to designate sole source aquifers.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-7**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE:	
GW-7: Provide a knowledgeable expert to provide a technical basis (statistically valid) to assume that the variability in the limited groundwater quality measurements is consistent with the postulated conceptual model.	

RESPONSE:

NUREG-1555-2.3.3, ER 2.3.2.3, ER 2.3.3.3, ER Table 2.3-54, ER Figure 2.3-35, ER 4.2.2.3, ER 5.2.2.3, ER Table 6.6-1, ER Figure 6.6-1, ER Figure 6.6-2 and ER Figure 6.3-1. Observed water quality parameters are consistent with the site conceptual model used at the HAR 2 and HAR 3 site.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **H-8**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE:	
Surface Water (SW)-1: Provide a knowledgeable expert to describe the applicant's characterization of the increase in water table elevation at locations away from the site due to the increase in lake elevation.	

RESPONSE:

The size and shape of the Buckhorn Creek Drainage basin along with the associated contour lines were shown to the NRC staff. The associated topographic lines indicate all precipitation that enters the basin eventually flows into either the Auxiliary or Main Reservoirs (if not used or removed through evapotranspiration). The only area that might be affected by an increase in lake level is the portion of the drainage basin below the Main Dam. Since the Buckhorn Creek Sub-Basins naturally connect at this point, the effects will be minimal. The dam was originally designed to create a lake with a water level elevation of 250 feet NGVD29.

Supporting information:

1) Topographical map of the entire Buckhorn Creek Drainage Basin

2) ER Figure 2.3-4 – "Buckhorn Creek Drainage Basin"

3) FSAR Figure 2.4.3-201 – "Buckhorn Creek Sub-Basins"

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-9**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE: **SW-2: Provide a knowledgeable expert to discuss Buckhorn Creek, including the location of the USGS gage station and any flow requirements below Harris Reservoir.**	

RESPONSE:

The applicant and NRC staff discussed the USGS 02102192 Buckhorn Creek NR Corinth, NC monitoring station, including the location. There are no minimum flow requirements within Buckhorn Creek since discharge has historically fallen below 0.1 cfs during drought periods.

Supporting information:
1) Site Map from the USGS website for the USGS 02102192 BUCKHORN CREEK NR CORINTH, NC monitoring station
2) Summary of available data from the USGS website for the USGS 02102192 BUCKHORN CREEK NR CORINTH, NC monitoring station
3) ER Figure 2.3-8 – "USGS Monitoring Stations on the Deep, Haw, and Cape Fear River"
4) ER Figure 6.1-1 – "Surface Water Monitoring Locations" (shows the Buckhorn Creek monitoring station within the Buckhorn Creek Drainage Basin)
5) ER Figure 2.3-5 – "Yearly Maximum Average Daily Streamflow Measurements for the Buckhorn Creek Monitoring Station"
6) ER Table 2.3-1 – "Monthly Mean Streamflow Measurements for the Buckhorn Creek Monitoring Station"
7) ER Table 2.3-2 – "Yearly Peak Streamflow Measurements for the Buckhorn Creek Monitoring Station"
8) ER Table 2.3-4 – "Monthly Mean Measurements for the Buckhorn Creek Monitoring Station" (Gage height)

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-10**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE: **SW-3: Provide a copy of the 1992 Water Control Manual for Jordan Lake for staff review.**	

RESPONSE:

The full version of the 1992 Water Control Manual for B. Everett Jordan project is not available online or through NCDWR. An excerpt from the complete version of the manual pertaining to the Jordan Lake water control plan is provided by the U.S. Army Corps of Engineers at the website, http://epec.saw.usace.army.mil/jwcplan.txt.

The NRC staff plans to follow up with the USACE.

Supporting information:
1) Five page excerpt from the approved 1992 Water Control Manual for B. Everett Jordan project.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-11**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE:	
SW-4: Provide a knowledgeable expert to discuss the basis for the 460 ac-ft sediment accumulation estimate and the 20 ac-ft of sediment in Auxiliary Reservoir.	

RESPONSE:

The applicant and NRC staff discussed the sediment accumulation estimates for the Main and Auxiliary Reservoirs. This section of the HAR ER was based on the analysis shown in the SHNPP ER (1982). Subsection 2.4.2.3.2.6 of the SHNPP ER was also discussed with the NRC. The applicant stated that no future changes in land use are expected in the immediate area around the lake.

Supporting information:
1) ER Subsection 2.3.1.2.1.3 – "Sedimentation"
2) SHNPP ER Subsection 2.4.2.3.2.6 and associated table and figure

During the site tour the NRC staff noted predominate forested land cover with no evidence of mass wasting (landslides). The NRC staff may investigate the PLOAD model from EPA, which was used to confirm the results from the original ER.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-12**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE: **SW-5: Provide a knowledgeable expert and calculation packages used to support all water budget calculations.**	

RESPONSE:

The following were reviewed by NRC staff:

- CALC No. 338884-CALC-1001 "Evaluation of Cape Fear Water Supply Using the Cape Fear River Basin Hydrological Model"
- HAG-XK01-GER-001, Rev 0 "Evaluation of Lake Level – Normal Pool Level and Makeup Flow Requirement for Two Additional AP 1000 Units"
- Tech Memo 338884-TMEM-031 "Potential Water Supply and Water Quality Impacts of Plant Makeup Water Requirements to Support the ER"
- Design Information Transmittal WP-009 "Cooling tower performance data and water usage"
- JVT-Request for Information RFI #234 How long the 3 units could operate w/o make-up during a drought (assuming lake initially at 240')

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

The documents listed above have been made available in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-13**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE:	
SW-6: Provide a knowledgeable expert to describe process (including calculation packages, if used) and consultations employed to estimate current and future water demands from the Cape Fear River.	

RESPONSE:

The following were reviewed by NRC staff:

- CALC No. 338884-CALC-1001 "Evaluation of Cape Fear Water Supply Using the Cape Fear River Basin Hydrological Model"
- HAG-XK01-GER-001, Rev 0 "Evaluation of Lake Level – Normal Pool Level and Makeup Flow Requirement for Two Additional AP 1000 Units"
- Tech Memo 338884-TMEM-031 "Potential Water Supply and Water Quality Impacts of Plant Makeup Water Requirements to Support the ER"
- Design Information Transmittal WP-009 "Cooling tower performance data and water usage"
- JVT-Request for Information RFI #234: How long the 3 units could operate w/o make-up during a drought (assuming lake initially at 240')

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

See H-12.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-14**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE: **SW-7: Provide a knowledgeable expert to describe the methods used to estimate the 7Q10.**	

RESPONSE:

The 7Q10 for Buckhorn was scaled from Lillington and is described in HAG-XK01-GER-001, Rev0 and will be provided as in H-12.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **H-15**	TOPIC AREA: **HYDROLOGY**
COMMENT/ISSUE: **SW–8: Provide a knowledgeable expert to discuss infrastructure modifications required due to raised lake elevation.**	

RESPONSE:

The applicant discussed modifications to existing infrastructure due to increasing the Main Reservoir elevation from 220 to 240 feet NGVD.

Supporting information:

1) Technical Memorandum 338884-TMEM-002, Rev. 1 – "Progress Energy – Harris Lake Infrastructure Impacts" (This is a reference in ER and will be docketed with rest of references as part of G-3).

STATUS: Resolved

DOCUMENTS ATTACHED:

References have been made available in the Progress Energy-provided Reading Room (See G-3)

PENDING ACTIONS:

None.

Terrestrial Ecology

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TE-1**	TOPIC AREA: **Terrestrial Ecology**

COMMENT/ISSUE:

Provide any available correspondence or meeting notes relevant to discussions or communications with US Fish and Wildlife Service (USFWS), Army Corps of Engineers, North Carolina Natural Heritage Program, and the North Carolina Wildlife Resources Commission, regarding potential impacts to wetlands and terrestrial resources on the site. Include information from USFWS and North Carolina Wildlife Resources Commission, and the North Carolina Natural Heritage Program indicating the likelihood for important biota species to potentially occur at the Harris Site. Provide any information describing the most recent ecological survey data that documents the presence/absence of important federally or state-listed species that potentially inhabit the site, and information on the current presence, seasonality, habitat use, and distribution of state-listed plant or wildlife species (important species) likely to be found on the Harris site.

RESPONSE:

Section 2.4.1.2.4 of the ER discusses important species and Section 2.4.1.2.3.1 of the ER discusses areas of significance, which provide suitable habitat for many of the state-listed species that could occur in the project area. Section 4.3.1.1.1 of the ER addresses potential impacts to vegetative communities including important species. Section 4.3.1.1.2 of the ER addresses potential impacts to wildlife including important animal species.

Habitat surveys coincident with wetland delineation effort assessed presence/absence of potential habitat for sensitive species.

No suitable habitat for harperella occurs in the project area. This species would not occur within the project area.

Suitable habitat for Michaux's sumac occurs within the project area. However, this species can be readily identified throughout the year and it was not observed during the surveys. Michaux's sumac does not occur in the project area.

There are no active red-cockaded woodpecker colonies within or adjacent to the project area. While there are pine stands of suitable age and composition to support the species, no evidence of use by this species was found. Recolonization is considered unlikely as the nearest active colony is more than 45 km away.

Bald eagles are known to use Harris Reservoir and one active nest occurs on property near the project site. Tree removal would occur within 1,500 feet of the nest site.

Suitable habitat for state-listed species is concentrated in three natural areas (Hollemans Crossroads Slopes, Utley Creek Slopes, and Jim Branch/Buckhorn Creek forests) deemed "areas of significance", as discussed in Section 2.4.1.2.3.1 of the ER. No state-listed species were observed outside of these areas. Virginia spiderwort was observed on the Utley Creek Slopes above the 240-foot elevation.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Agency responses notebook has been made available in the Progress Energy-provided Reading Room.
2) Update and submit Ecological Observations Report to include habitat types (preferences) of important species as defined in the ER.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TE-2**	TOPIC AREA: **Terrestrial Ecology**

COMMENT/ISSUE:

Provide a knowledgeable expert concerning current information describing the relative abundance and habitat preferences of breeding birds inhabiting or likely to inhabit:

(1) the 1068 hectares of forested lands that will be inundated by raising the reservoir level, and

(2) those forested and grassland areas that will be impacted by other construction and road building activities, such as the potential expansion of transmission line corridor, and the Cape Fear River intake structure and associated pipeline.

RESPONSE:

Section 2.4.1.2.2.1 of the ER addresses common bird species that would occur on the HAR site and Section 4.3.1.1.2 addresses potential impacts.

Data from the North Carolina GAP Analysis will be used to generate a list of species with habitats predicted to occur within the 220' to 240' elevation. The North Carolina Gap Analysis Project (NC-GAP) is the state level representative of the National Gap Analysis Program sponsored by the Biological Resources Division of the United States Geological Survey. According to the project website:

> "The composition and structure of the dominant vegetation is an important and easily described measure of habitat for animals (Scott et al. 1993) and has long been used as an indirect indicator of animal distributions (Austin 1991). Other biotic and abiotic factors (i.e. elevation, wetland type, and distance from standing water) can also play a major role in defining a particular species' habitat. Many studies of vertebrate species have been conducted over the years documenting this type of information. In addition, data on known ranges for vertebrate species has also been collected. This includes not only survey data records, but the cumulative field experiences of biologists who work with these species on a daily basis."

STATUS: Open

DOCUMENTS ATTACHED:

See AQ-7

PENDING ACTIONS:

1) Submit List important species, including game species, as appendix to updated Ecological Observations TM.
2) Summarize and submit 1983-2003 environmental annual monitoring reports for important species (breeding birds, shore birds, waterfowl), as defined in the ER.
3) Summarize NC GAP data analysis for important species for area between 220' and 240' and submit summary only to NRC.

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INFO NEED NUMBER: **TE-3**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE: **As part of the identification of important species, provide a list of the game and/or recreationally important terrestrial wildlife species that may be impacted by habitat loss on the Harris property.**	

RESPONSE:

Section 2.4.1.2.2.1 of the ER addresses common wildlife species that would occur on the HAR site and Section 4.3.1.1.2 addresses potential impacts.

The HAR 2 and HAR 3 proposed sites offer little wildlife habitat value. The HAR 2 site is maintained mowed grasses and weeds. The HAR 3 site consists mostly of recently harvested and replanted loblolly pine.

Because other suitable habitat is abundant nearby, impacts to wildlife of game/recreational importance would be expected to be minimal. White-tailed deer, wild turkey, mourning dove, quail, eastern cottontail, gray squirrel will lose habitat from the increase in water level in the reservoir.

Waterfowl would be expected to benefit from increased shoreline and shallow water habitat.

Discussed and resolved in TE-2 and TE-4

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

See TE-2.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TE-4**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE:	
Provide a knowledgeable expert to discuss information describing and characterizing the relative abundance and habitat preferences and locations of the amphibians that are found or are likely to be found in or near the wetlands, streams, or open waters of the existing reservoir on the site.	

RESPONSE:

No current terrestrial monitoring data are available. Data from historic monitoring surveys can be provided along with current NC Gap Analysis of potential suitable habitat to describe the likely abundance and distribution of amphibian species.

There is one state amphibian Species of Concern found in Wake County, the Four-toed Salamander (*Hemidactylium scutatum)* the county status is current and however this species is rare or uncommon in North Carolina. This species usually uses fishless vernal pools for egg laying and is normally associated with sphagnum bog areas. As discussed under TE-6, no vernal pools occur in the project area, so this species would not be expected to occur there.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Summarize and submit 1983-2003 environmental annual monitoring reports for amphibians.
2) Summarize NC GAP data analysis for amphibians for area between 220' and 240' and submit summary only to NRC.
3) Provide supplemental text for the ER to delete vernal pool reference.
4) Update Ecological Observations TM to remove incorrect reference to vernal pools and discuss amphibian habitats

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **TE-5**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss information describing and characterizing the relative abundance and habitat preferences and locations of reptile species that are found or are likely to be found on the site.**	

RESPONSE:

No current terrestrial monitoring data are available. Data from historic monitoring surveys can be provided along with current NC Gap Analysis of potential suitable habitat to describe the likely abundance and distribution of reptile species.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Summarize and submit 1983-2003 environmental annual monitoring reports for reptiles.
2) Summarize NC GAP data analysis for amphibians for area between 220' and 240' and submit summary only to NRC.
3) Update Ecological Observations TM to remove incorrect reference to vernal pools and discuss reptile habitats.

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INFO NEED NUMBER: **TE-6**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE:	
Provide a knowledgeable expert to discuss information describing any ecological surveys that have been conducted at seasonally appropriate times to determine use of vernal pools and wetlands as reproductive areas for amphibians on the site.	

RESPONSE:

No vernal pools exist in the project area. A delineation of wetlands and streams was conducted following established U.S. Army Corps of Engineers procedures for the plant site, water lines, and the area around the lake that would be inundated. No vernal pool areas were identified in the survey area. Any areas with physical attributes that could have led to vernal pool formation were directly connected to the reservoir at full pool level or connected via a culvert at full pool level. The ease of access to these areas by fish would preclude substantial use for amphibian breeding.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Update and submit Ecological Observations TM to remove incorrect reference to vernal pools and discuss amphibian habitats.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TE-7**	TOPIC AREA: **Terrestrial Ecology**

COMMENT/ISSUE:

Provide a knowledgeable expert to discuss the delineation, characterization, and analysis of impacts to wetlands on the Harris site:

(1) Detailed information is needed regarding analyses conducted to infer limited loss of wetlands due to reservoir level changes;

(2) Information on what models, topographic and geographic data were used to determine the impacts to wetlands and to support the assumptions that new wetlands will form after the reservoir is raised is needed.

A quantitative discussion (net gain/loss) is needed on new topography areas that would support wetlands.

RESPONSE:

A complete delineation of wetlands and other waters of the United States following established U.S. Army Corps of Engineers procedures for small sites was conducted in August 2006 for the plant site, water lines, and the area around the lake that would be inundated (as described in Reference 2.4-003). The procedure for small sites was used because it provided greater direct coverage than the procedure for large sites. The delineation identified 105.8 acres of forested wetlands, 5 acres of scrub-shrub wetlands, and 6.5 acres of emergent wetlands within the area to be cleared. Identified features (streams and wetlands) were mapped during the delineation using global positioning system technology. The potential impacts to streams and wetlands were determined based on the results of the delineation and proposed site modifications.

A jurisdictional determination has not been requested from the U.S. Army Corps of Engineers (USACE) to verify the results of the delineation. Because conditions may change over time, the area will be delineated again prior to clearing activities and a formal jurisdictional determination will be obtained from USACE

The perimeter of the lake will almost double from its current length. There are relatively level areas near the 240 foot contour where wetlands will form when the water level rises. Some of these areas will be slightly below the 240-foot contour and some will be slightly above that elevation. Because the areas will become shallowly inundated or saturated for much of the biologically active portion of the year, wetland will form. Where the areas are below the 240-foot mark, emergent or willow/alder shrub wetlands would be expected to form. Where the elevation is slightly above 240 feet, the saturated ground conditions would lead to development of forested or mixed forested wetlands. These types of wetlands developed around Harris Reservoir after it was filled. Whether the elevated reservoir would have more, less, or the same amount of these wetlands is not knowable with the available data.

Once the hydrology is set, hydrophytic vegetation propagules will establish in suitable areas around the reservoir (very gentle to gentle slopes around the water line). Hydric soils will eventually from as a result of the accumulation of organic matter and development of anaerobic conditions. This is the same process by which the current Harris Reservoir fringe wetlands formed. Those wetlands did not exist prior to construction of the reservoir.

To provide a quantified estimation of the area for potential formation of emergent and forested or mixed forested wetlands a GIS analysis can be performed based on topography and slope of exiting wetlands. This analysis can be used as support for inference of limited loss of wetlands

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Document supporting statements that an unnumbered amount of wetlands will reform at 240'.
2) Create and submit graphics showing areas of potential formation of wetlands depending on slope and topography.
3) Create and submit graphics showing areas of existing and new fringe wetlands based on bathymetry.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **TE-A**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE: Provide information regarding the potential mitigation that will be required in accordance with state and federal regulations. Please identify and discuss any potential areas that have been identified for mitigation of wetlands.	

RESPONSE:

No potential mitigation areas have been identified. Mitigation planning began with the June 2008 meeting with regulatory agencies and will continue.

Since size of wetlands and additional wetlands (fire pond and new roads) will likely change over time a preliminary jurisdiction may be requested by PEC. However, a formal jurisdictional determination would be completed as part of the Clean Water Act Section 404 permitting process, which would also include an updated delineation of waters on the site. The formal jurisdictional determination would be valid for a period of 5 years from date of issue.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Prepare and submit Mitigation Plan or strategy when available.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TE-B**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE: Provide information and maps describing the locations of areas that will be temporarily disturbed during construction, such as laydown yards or temporary parking lots. Describe whether these locations contain wetlands or sensitive resources that could potentially be impacted.	

RESPONSE:

Wetland and terrestrial surveys for laydown areas, road improvements, Wastewater Treatment Plant (WWTP) and any expanded WWTP lines will be provided as they become available. RFI 158 addresses known laydown areas associated with construction areas and temporary parking areas associated with reactor and cooling tower construction

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Update and submit Ecological Observation Report to include additional terrestrial surveys associated with areas identified and areas not previously surveyed.
2) Provide laydown yard information, roadways, parking lots, cooling towers outside of 220' and 240' contour.
3) Confirm location of new WWTP for HAR 2 and 3. If outside of footprint of RFI 158, provide additional surveys.
4) RFI 158 has been provided in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **TE-C**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE: (1) Please provide knowledgeable staff to discuss the potential for avian collisions with transmission lines, and describe any avian collision monitoring programs and that that have been conducted and collected. (2) Land management in the transmission corridors (herbicide use, erosion and sedimentation control).	

RESPONSE:

Available information on avian collisions will be provided. All existing data submitted to USFWS since 2001 on relocations and collisions with transmission lines is provided in attached document. No correspondence from the agencies has been received in response to the provided reports. Maintenance procedures are described and discussed in TE-D

STATUS: Open

DOCUMENTS ATTACHED:

TE-C-001_Bird_Collisions.pdf is provided in Attachment 1.

PENDING ACTIONS:

1) Provide documentation of permits and historical bird collisions with cooling towers and transmission lines so NRC can estimate probability.
2) Provide any Avian Permit Reports, Avian Collision Reports, or Migratory Bird Relocation Reports and Procedures that are available.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TE-D**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE: Describe transmission line maintenance and related activities.	

RESPONSE:

Maintenance activities and procedures were discussed. Several documents were identified and requested as described below.

STATUS: Resolved

DOCUMENTS ATTACHED:

Pesticides (EVC-SUBS-00021) are provided electronically in Attachment 1 as TE-D-001_Pesticides.pdf.
Environmental Policy (EVC-HOCO-00001) is provided electronically in Attachment 1 as TE-D-002_Env_Policy.
Permits (NC EVC-PGNC-00102) are provided electronically in Attachment 1 as TE-D-003_NCMigratoryBirdPermit.pdf and TE-D-003_FederalDepredationPermit.pdf
Land disturbing activities (EVC-SUBS-00022) are provided electronically in Attachment 1 as TE-D-004_Land_Disturbing.pdf
T4 Specification Section 15 Part 1 (Clearing), Part 2 (Erosion Control), and Part 3 (Re-seeding) are provided electronically in Attachment 1 as TE-D-005_Erosion_Control.pdf.
Migratory Bird Procedure (EVC-SUBS-00017) is provided electronically in Attachment 1 as TE-D-006_Migratory_Bird.pdf.
Transmission/Vegetation Management Plan (MNT-TRMX-00176) is provided electronically in Attachment 1 as TE-D-007_Veg_Maintence_Plan.pdf.
T&E Species Procedure (EVC-SUBS-00011) is provided electronically in Attachment 1 as TE-D-008_TandE_Species.pdf.

PENDING ACTIONS:

Information on procedures for Rare Plants on Transmission Lines (SH sections) has been provided in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TE-E**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE:	
Provide information regarding the cumulative impacts to terrestrial environment of the site of past, present, and expected projects, including activities conducted or planned, by private enterprise, tribal, and municipal agencies.	

RESPONSE:

Secondary and Cumulative impacts were discussed and focused on the existing plans to address these type of impacts that have been developed by the Towns of Apex and Holly Springs. The Towns and DENR have a signed MOU that allows these plans to be used in EISs under the NC State Environmental Policy Act to describe secondary and cumulative impacts associated with growth. The town's planning areas include almost all of Harris Lake and the site of the new nuclear reactors. The Town of Apex Secondary and Cumulative Mitigation Plan is included as Reference 2.4-007.

STATUS: Resolved

DOCUMENTS ATTACHED:

The Town of Holly Springs Secondary and Cumulative Mitigation Plan is provided electronically in Attachment 1 as TE-E-001_Holly_Springs_SCI.pdf.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **TE-F**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE: Provide knowledgeable staff or contractors to discuss wildlife use of shoreline habitat.	

RESPONSE:

See pending actions below.

STATUS: Open

DOCUMENTS ATTACHED:

None

PENDING ACTIONS:

1) Obtain and submit deer and turkey harvest data from WRC local check stations.
2) Contact NCSU to determine if any ecological studies have been conducted recently associated with Harris.
3) Provide GAP data analysis for mammals.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **TE-G**	TOPIC AREA: **Terrestrial Ecology**
COMMENT/ISSUE: Provide knowledgeable staff or contractors to discuss the impacts of noise on wildlife on the site, and particularly the expected noise levels and impacts related to blasting to develop the pipeline corridor and whether these methods will potentially affect important species.	

RESPONSE:

Discussion included blasting related to makeup water pipeline. Limited information is available at this time. Generic info may be available.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Investigate literature for potential bounds on noise values and associated impacts on wildlife and provide any available information to NRC.

Aquatic Ecology

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **AQ-1**	TOPIC AREA: **AQUATIC ECOLOGY**
COMMENT/ISSUE:	
If available, provide any correspondence with federal or state agencies (e.g., USFWS and NCDENR) regarding impacts to aquatic species in Chatham, Lee, Wake, and Hartnett Counties, and proposed discussions for appropriate monitoring studies.	

RESPONSE:

All correspondence and meeting notes were made available in hard copy form at the NRC Audit. Monitoring studies are described in ER 6.5. In an effort not to duplicate monitoring efforts, PEC will coordinate its ecological monitoring with existing ecological monitoring programs and efforts being performed by PEC, NCDENR, USEPA, North Carolina Wildlife Resources Commission (NCWRC), and other applicable groups or agencies.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Provide updates of agency correspondence, including responses from WRC, NHP, and FWS, as available.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **AQ-2**	TOPIC AREA: **AQUATIC ECOLOGY**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss cumulative impacts to the aquatic environment in the region (Holly Springs plant, Cape Fear Power Plant, proposed Western Wake Wastewater Treatment Plant [WWTP]).**	

RESPONSE:

The water demands estimates and downstream impacts to the aquatic environment were discussed as they relate to the proposed Western Wake Water Reclamation Facility. Water and wastewater services are described in ER 5.8.2.7.2. The existing Cape Fear Power plant has been used to supply data and its influence on the aquatic environment has been included in the existing environmental conditions described in ER 2.3. The proposed Western Wake Water Reclamation Facility has been considered during ER development. The most recent publicly available project description of the proposed project was included in Reference 2.4-036. Additionally the Towns of Apex and Holly Springs have prepared Secondary and Cumulative Master Mitigation Plans to address cumulative impacts of growth. The Secondary and Cumulative Master Mitigation Plan for the Town of Apex is provided as are Reference 2.4-007. These plans were made available during the Audit and discussed.

STATUS: Resolved

DOCUMENTS ATTACHED:

See TE-E.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **AQ-3**	TOPIC AREA: **AQUATIC ECOLOGY**
COMMENT/ISSUE:	
Provide a knowledgeable expert to discuss Best Management Practices associated with construction and operation/maintenance of the plant and transmission corridors, especially related to aquatic habitats.	

RESPONSE:

BMPs discussed during the session related to sediment and erosion control, stormwater, and general information on stream crossings by the water makeup line. BMPs are described in ER 2.4.1.2.1 and include the establishment of Streamside Management Zones, buffer strips of vegetation adjacent to perennial and intermittent streams (at least 15.2 m [50 ft.] wide on each side of the stream), and water bodies such Harris Reservoir. Sediment and erosion control measures will be put into place following NC guidelines. Stormwater will be addressed as part of the 401 process. Additional information is also provided in response to Terrestrial Ecology Information Need D (TE-D)

STATUS: Open

DOCUMENTS ATTACHED:

NC DLQ Sediment and Erosion Control Manual is provided electronically in Attachment 1 as AQ-3-002_ESC_Manual(1of8).pdf through AQ-3-002_ESC_Manual(8of8).pdf.
NC BMP Manual for Stormwater is provided electronically in Attachment 1 as AQ-3-003_BMP_Manual.pdf.
General Conditions for the USACE 404 NWP 12 is provided electronically in Attachment 1 as AQ-3-004_NWP12_Conditions.pdf.
Middle Cape Fear Local Watershed Plan (NCDENR 2004) is provided electronically in Attachment 1 as AQ-3-005_MCFR_watershed_Plan.pdf.

PENDING ACTIONS:

1) Determine dewatering techniques to be used during construction.
2) Characterize fire pond.
3) Describe where water from fire pond will be disposed of.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **AQ-4**	TOPIC AREA: **AQUATIC ECOLOGY**
COMMENT/ISSUE:	
Provide a knowledgeable expert to discuss construction and operation of the proposed Harris Lake makeup water system intake structure on the Cape Fear River, including intake design, areas and aquatic habitats and species likely to be impacted, information on proposed timing and length of the construction period, any predictions of the need for future dredging in the vicinity of the intake, and mitigation plans for impacted habitats (wetlands).	

RESPONSE:

A discussion was held on preliminary intake design and makeup water system. ER 2.4.1.3 and 3.1.4.1 describes the Harris Lake water intake structure and pumphouse. Impacts of operation of the intake system are described in ER 5.3.1. More detailed information is also included in Reference 5.2-021, Conceptual Design and Calculations for Harris Lake Makeup Water System for Harris Advanced Reactors Units 2 & 3.

AQ-7 includes information on recent studies (benthic invertebrates, mussels, fish) performed to address species potentially impacted by the intake structure.

Three reports (benthic invertebrates, mussels, fish [draft]) were provided to NRC.

STATUS: Open

DOCUMENTS ATTACHED:

Jones et al., 2000. Harris Lake Creel Survey 1997-1998. NCWRC Division of Inland Fisheries, Raleigh, NC, is provided in Attachment 1 as AQ-4-001_Jones_2000.pdf.

PENDING ACTIONS:

1) Transmit information on final design of intake and withdrawal operating rules when available.
2) Provide details on wetland mitigation when available.

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INFO NEED NUMBER: **AQ-5**	TOPIC AREA: **AQUATIC ECOLOGY**
COMMENT/ISSUE:	
Provide a knowledgeable expert to discuss construction of the proposed Harris Lake makeup water discharge structure and blowdown cooling discharge structures, including discharge locations and design, areas and aquatic habitats and species likely to be impacted, as well as any information on proposed timing and length of the construction period.	

RESPONSE:

Locations of discharge structures were discussed and observed during field visits. The blowdown lines are planned to be adjacent to existing blowdown lines. ER 4.1.2.1 describes the impacts from construction of the blowdown line. Figure 2.3-3 shows approximate locations of the discharge structures related to the blowdown line as well as the Cape Fear Make-up system. Discussed location and rationale for collocation for HAR 2 and 3 discharge to be conservative in estimating effects of discharge. Preliminary design information indicates the new intake design will be similar to HNP intake. A 316b determination will be required for both new intakes and information will be transmitted to the NRC. Existing screens are inspected for impingement; however, only floating vegetation is normally found. SMEs from NRC observed existing HNP intake screen and location of HAR 2 and 3 intake screens. For information on species potentially affected please see AQ-7.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Provide design information on HAR 2 and 3, including possible dredging when available.
2) Submit screen maintenance reports from operator shift rounds, if available (possibly sensitive information).
3) Submit new 316b determination to NRC.

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INFO NEED NUMBER: **AQ-6**	TOPIC AREA: **AQUATIC ECOLOGY**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss the current status of aquatic environmental permits and consultations (e.g., NPDES, Section 404, Threatened and Endangered Species related to the proposed Harris Lake makeup water intake on the Cape Fear River and the tributaries associated with Harris Lake).**	

RESPONSE:

Discussions on the status of permits listed were held. ER 1.2 contains information on permitting activities and a list of anticipated permits is included in Table 1.2-1 with a general description of timing of permits. Permitting is in preliminary stages and began with a pre-scoping meeting held June 2008. Correspondence with regulatory agencies is described in AQ# 1 (specifically the June 2008 workshop meeting minutes).

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **AQ-7**	TOPIC AREA: **AQUATIC ECOLOGY**

COMMENT/ISSUE:

Provide a knowledgeable expert to discuss the aquatic ecological monitoring programs on the Cape Fear River and Harris Lake to discuss the following:

(1) The methodology and results of the quarterly sampling performed in Harris Reservoir from 2004 to present (make all fish sampling reports [1995-2004 and any others] available for review during site audit);

(2) The methodology and results of invertebrate sampling done in Harris Lake (make available any data from HNP monitoring activities);

(3) The methodology and results of monitoring activities performed in the Cape Fear River in the areas around the proposed makeup water intake structure and pumphouse, upstream of Buckhorn Dam and downstream as far as the first COE Lock and Dam (ER indicates the Middle Cape Fear River Basin Association does monitoring);

(4) The status of sampling/monitoring activities planned in both Harris Lake and Cape Fear River with regard to operational monitoring.

RESPONSE:

The following resulted from the discussion:

(1) Annual monitoring report from 2004 has been provided as reference 2.4-002. Environmental Monitoring Reports from 1983 to 2003 will be provided.

(2) Discussion and presentation on recent sampling (summer 2008) results of fish and invertebrate sampling resolved issue.

(3) Discussion resolved and MCFRBA does not conduct ecological monitoring.

(4) Monitoring likely to continue as part of permit conditions and in accordance with permit regulations.

STATUS: Open

DOCUMENTS ATTACHED:

2008 Mussel Sampling Report is provided electronically in Attachment 1 as AQ-7-003_2008_Mussel_Sampling.pdf.
2008 Invertebrate Sampling Report is provided electronically in Attachment 1 as AQ-7-004_2008_Invertebrate_Sampling.pdf.
Phase 2 316(b) consideration for Harris (Unit 1) is provided electronically in Attachment 1 as AQ-7-006_HNP1_316b.pdf.
2008 Cape Fear River Fish Sampling Report is provided electronically in Attachment 1 as Aq-7-007_CFR_Fish_Sampling.pdf
1983 - 2003 Harris Monitoring Reports are provided electronically in Attachment 1 as the following: AQ-7-002_1983_Monitoring_Report.pdf AQ-7-002_1984_Monitoring_Report.pdf AQ-7-002_1985_Monitoring_Report.pdf AQ-7-002_1986_Monitoring_Report.pdf AQ-7-002_1987-88_Monitoring_Report.pdf AQ-7-002_1989_Monitoring_Report.pdf AQ-7-002_1990_Monitoring_Report.pdf AQ-7-002_1991_Monitoring_Report.pdf

AQ-7-002_1992_Monitoring_Report.pdf
AQ-7-002_1993_Monitoring_Report.pdf
AQ-7-002_1994_Monitoring_Report.pdf
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AQ-7-002_2000_Monitoring_Report.pdf
AQ-7-002_2001_Monitoring_Report.pdf
AQ-7-002_2002_Monitoring_Report.pdf
AQ-7-002_2003_Monitoring_Report.pdf

PENDING ACTIONS:

1) 2006 Harris Monitoring Report.
2) Submit 2008 Harris Lake fish data analysis.
3) Submit plans to monitor areas during construction activities.
4) Submit permit updates and approvals to NRC when available.
5) Update and submit Ecological Observations Report Appendix for Benthic Invertebrate and Species List.
6) Update Table 2.4.2 of the ER T&E/SC Species in 4 county area/animals to include omitted species.
7) Submit observation of American Eel in Harris Lake.

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INFO NEED NUMBER: **AQ-8**	TOPIC AREA: **AQUATIC ECOLOGY**

COMMENT/ISSUE:

Provide a knowledgeable expert to discuss the potential for impingement and entrainment of aquatic organisms at the Cape Fear River intake and the Harris Reservoir intake with regard to:

- **Adult/juvenile ratio of entrained or impinged fish (as suggested from using Cape Fear Power Plant data).**
- **Estimates of the magnitude of the potential impingement and entrainment impacts on aquatic species populations and the aquatic ecosystems in Cape Fear River and Harris Lake.**

RESPONSE:

Discussion of impingement and entrainment data was conducted. Reference 5.3-004 has specific data that was summarized in the ER. ER 5.3.1.2.2 specifically discusses impingement and ER 5.3.1.2.3 discusses entrainment.

Below are major discussion points

1) Plan to fill during periods of high flow, which will increase dilution of eggs and larvae.

2) ER mentions 6 million entrained aquatic species....out of what...couldn't put in context.

3) Fishery population results appear to be healthy; no stressful conditions observed.

4) No Cape Fear (CF) shiners collected in Harris Lake or the area immediately upstream and downstream of Buckhorn Dam and are not expected in this section of the river.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Correspondence of Impingement/Entrainment with USFWS for CF Plant Studies has been added to the Progress Energy-provided Reading Room.
2) Provide clarification in ER on "6 million entrainment" as noted in Response 2.

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INFO NEED NUMBER: **AQ-9**	TOPIC AREA: **AQUATIC ECOLOGY**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss and provide information regarding locations of wetlands and perennial/intermittent streams to be crossed by ROW.**	

RESPONSE:

A discussion on general locations of wetlands and impacts of ROW was held. ER 2.4.2.4.1 describes the Harris Lake makeup water system pipeline corridor. Additionally wetland surveys were described in Reference 5.2-010 338884-RPT_004 Ecological Field Observations Harris Nuclear Plant. Additional information on typical ROW maintenance activities was described by Progress Energy staff (see TE-D).

The following responses resulted from the discussion:

1) Intermittent streams and wetlands will be inundated and are described as impacts between 240' and 220'.

2) Discussed previous discussion about trying to mapout, depending on slope, where potential wetland will form.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Identify possible expansion of power line ROW to fit makeup pipe and submit to NRC if areas are identified.
2) Identify stream/wetlands impacts if expanded and submit to NRC if impacts are identified.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **AQ-A**	TOPIC AREA: **AQUATIC ECOLOGY**
COMMENT/ISSUE: **Identify location and number of logging roads for land clearing around lake.**	

RESPONSE:

Currently it is not know where new logging roads will be located to access the areas between 220' and 240' that are to be cleared. The use of existing logging roads will minimize the impacts and need for new logging roads. A sediment and erosion control plan and BMPs will minimize aquatic impacts due to clearing activities. AQ-3 has additional information on BMPs and NC regulations regarding sediment and erosion control techniques.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Consider development and submittal to NRC of a Clearing Management Plan for clearing around Harris Lake (by January 2009 if possible).

Socioeconomics/EJ

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **SE-1**	TOPIC AREA: **Socioeconomics/EJ**

COMMENT/ISSUE:

Provide a knowledgeable expert on local transportation network impacts. This expert should be able to address transportation issues such as:

(1) Impacts of the proposed reservoir elevation increase on the existing Hwy 1 road bed;

(2) Impacts of the proposed reservoir pool on the existing New Hill Holleman Road and associated bridge across the reservoir;

(3) Specific impacts of the proposed reservoir pool on other existing roadways and bridges around the existing reservoir (for example, road relocations, wetlands impacts, etc.);

(4) Re-routing of existing routes to accommodate the proposed reservoir pool level;

(5) Status of consultation with the NCDOT regarding the HAR 2 and 3 transportation system alterations.

RESPONSE:

Kimley-Horn presented the results of their Traffic Impact Analysis to the NRC during the Audit. A question and answer session followed the presentation and a field visit of the potentially affected roadways was held. Discussions during the presentation addressed questions:

- Related to worker per vehicle assumptions,
- Whether the proposed service road would allow public access,
- Consideration of a temporary overpass over US-1
- The 2- to 3-year time frame for permitting, design and construction of the improvements
- Consideration of a park and ride system
- Discussion of potential impacts at US-1 from reservoir rise, and
- Discussion of potential impacts to road and rail beds due to heavy construction traffic.

STATUS: Resolved

DOCUMENTS ATTACHED:

Kimley-Horn Traffic Impact Analysis is available in the Progress Energy-provided Reading Room. Additionally the
Kimley-Horn Traffic Impact Analysis with redacted cultural resource figure and without the Appendix calculations is
Provided in Attachment 1 as HAR Final Report 07.09.08 with Redaction.pdf.

PENDING ACTIONS:

None

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **SE-2**	TOPIC AREA: **Socioeconomics/EJ**
COMMENT/ISSUE:	
Provide a knowledgeable expert on the application of the demographic analysis techniques used in the COLA to speak to the following: Explanation of the analysis approach and discussion of any custom-developed algorithms or code used to determine grid cell populations for the grids shown in Figures 2.5-1 and 2.5-2.	

RESPONSE:

The demographic analysis for significant population groupings for a sector was used in determining population distribution as described below. The current plan includes the installation of two AP1000 units. The center of the distance between the two reactor buildings was assumed to be the centerpoint for the radii and sector grid. The distance between the centerpoint of the reactor buildings for HAR 2 and HAR 3 is 289 meters (m) (950 feet [ft.]). Half of this distance, or 144 m (475 ft.), was used to extend the radii in the grid sectors. To account for the difference in distance between each proposed unit and the HAR centerpoint, 0.16 km (0.1 mi.) was added to each radial distance to conservatively adjust the population data. The radii were expanded by half of the distance between the two reactor buildings for the proposed Shearon Harris Nuclear Power Plant Units 2 and 3 (HAR). The two proposed reactor buildings are centered at the following coordinates:

- Proposed Shearon Harris Nuclear Power Plant Unit 2 (HAR 2)
  Latitude: 35° 38' 15.39" Longitude: -78° 57' 29.84"

- Proposed Shearon Harris Nuclear Power Plant Unit 3 (HAR 3)
  Latitude: 35° 38' 23.90" Longitude: -78° 57' 34.71"

Data on population were gathered using U.S. Census Bureau 2000 data (ER Reference 2.5-001). Projected population was determined based upon projection data provided by the North Carolina State Data Center (SDC), Data Services Unit, Office of the State Budget and Management website entitled North Carolina State Demographics, Website (ER Reference 2.5-002). The U.S. Census Bureau data from the 2000 U.S. Census, in addition to a Geographic Information System (GIS), were used to determine the sector population distribution. Populations were calculated using census blocks, the smallest unit of data collected by the U.S. Census Bureau. For population calculations, the census population data were assumed to be evenly distributed throughout a census block. Using this assumption, the GIS was used to determine the percent area of a census block contained in a particular sector. The percent area of the census block was then used to calculate the portion of the census block population within that sector. For example, if a sector contained 50 percent of a census block, the sector was assumed to also contain 50 percent of the census block population.

Projection information was collected from the North Carolina State Demographics unit website for county projections. The population projections are based on the expected population percent change rates (percent change) between 2000 and 2010, 2010 and 2020, and 2020 and 2030 (ER Reference 2.5-004). The percent change was estimated for each county, and the expected population change rate for the 10-year increments between 2020 and 2080 were assumed to be similar to the estimated percent change between 2010 and 2020. The county percent change rates were then used to project populations using the U.S. Census Bureau data for each census block within the county. Population projections for each sector were calculated using the same method described above, assuming even distribution throughout the census block.

The requested GIS layers (Figures 2.5-1 and 2.5-2) will be provided as part of the larger GIS dataset delivery, see G-2.

STATUS: Resolved

DOCUMENTS ATTACHED:

Requested GIS files are supplied electronically in DVDs provided under a separate cover (see G-2).

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **SE-3**	TOPIC AREA: **Socioeconomics/EJ**

COMMENT/ISSUE:

Provide a knowledgeable expert on the local tax structure affecting the Harris site to speak to the following:

(1) Property tax payments that PEC has made to Wake County over the 1998-2007 period;

(2) Proportion of Wake County government's annual expenditures that PEC's tax payments over this period represent;

(3) Property tax payments that PEC has made to Chatham County over the 1998-2007 period;

(4) Proportion of Chatham County government's annual expenditures that PEC's tax payments represent over this period.

(5) Error in paragraph on pg 2-337 regarding percentage of Progress Energy's contribution to overall Wake County general fund. (Note – lowercase font identifies issues raised during NRC Audit.)

RESPONSE:

The NUREG does not specify the time period over which historical tax payments should be reported; however, ER Chapter 2, p. 2-337, and Chapter 5, p. 5-160, provide property tax payments by Progress Energy to Wake County and Chatham County over the 2001-2004 period. Issues 1 and 3 are addressed by the table below, while Issues 2 and 4 are pending data being collected from the respective counties and will be provided in the future.

Harris Plant North Carolina Property Tax Payments

Plant	Harris Plant Total	Chatham County	Wake County
2007	$ 7,767,475	$ 124,519	$ 7,642,956
2006	$ 7,926,407	$ 127,067	$ 7,799,340
2005	$ 7,390,892	$ 118,482	$ 7,272,410
2004	$ 7,651,625	$ 122,662	$ 7,528,963
2003	$ 7,424,030	$ 119,013	$ 7,305,017
2002	$ 8,396,063	$ 134,596	$ 8,261,467
2001	$ 7,117,927	$ 114,106	$ 7,003,821
2000	$ 7,887,664	$ 126,446	$ 7,761,218
1999	$ 7,457,186	$ 119,545	$ 7,337,641
1998	$ 7,225,826	$ 115,836	$ 7,109,990
Percent of Total Plant Cost	100%	2%	98%

Source: Progress Energy Tax Department

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Issues 2 and 4 are pending data being collected from the respective counties.
2) Provide supplemental text, revising paragraph on page 2-337, in a future revision of the ER.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **SE-4**	TOPIC AREA: **Socioeconomics/EJ**

COMMENT/ISSUE:

Provide a knowledgeable expert familiar with the local consultations made in preparation of the COLA to speak to the following:

(1) Contacts that were made to determine that there are no economic development plans or similar regional plans affecting the Harris site;

(2) Basis for the final statement in Section 2.5.2.7 asserting that the projected capacity of public services is adequate and is expected to expand to meet the demands of slight population growth in the region;

(3) Current and projected capacities of local hospital and burn units.

RESPONSE:

- Local government websites were reviewed for planning and economic development information. No specific economic development plans were identified at that time. Follow up calls regarding planned future development patterns were made and no specific economic development information was identified at that time. Review of the Chatham County website in early July 2008 indicates that a new economic development plan for Chatham County has been developed. This document is posted to the Chatham County website and is entitled: Chatham County Economic Development Corporation – "New!- Chatham County Economic Development Strategic Plan Recommendations"

- There are four WTP which serve the area. The Cary/Apex WTP will be expanded to 25 mgd for a 197,000 population expected in 2020. Apex Wake County has a planned expansion to 6.3 mgd in 2020 for 75,000 people. The Cary/Apex WTP will expand to 56 mgd by 2015). Chatham County WTP will be expanded to 8 mgd by 2020, the City of Sanford will need to expand to 19 mgd to meet the projected 2020 demand. Harnett County WTP is expected to require expansion by 2012, the existing facility can be expanded to 24 mgd. There are five wastewater treatment facilities that serve the project area. There are no plans to expand the Utley Creek (Town of Holly Springs) facility. The Western Wake Regional WRF will serve the areas of Cary, Apex, Morrisville and Holly Springs and will have a 30 mgd capacity in 2020. The Chatham County Bynum WWTP only serves 26 customers and will not be expanded, the City of Sanford only has 7,174 customers and will not be expanded and the Harnett County facility will be expanded by 2012. Contacts were also made with the local fire departments, emergency management agencies and hospitals regarding current level of service and whether increases were planned. Each county has provided PEC with signed letters endorsing their ability to serve the two new units.

- The closest burn center is the North Carolina Jaycee Burn Center in Chapel Hill, NC. Hospitals contacted and current capacities, refer to Section 2.5.2.7 Public Service and Facilities in document:

    1. WakeMed Cary Hospital – 114 (planned expansion of 42 beds in 2009)
    2. WakeMed North HealthPlex – 14
    3. Wake Med Raleigh Campus – 515
    4. Duke Raleigh Hospital – 186
    5. Rex Hospital – 388
    6. Betsy Johnson Hospital – 101
    7. Chatham Hospital – 25

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Provide table and methodology behind statement that projected capacity of public services is adequate.
2) Provide documentation to support assertion that hospitals have adequate capacity and discuss expansion plans (table showing percent capacity).

PROGRESS ENERGY HAR ER POST-COLA AUDIT
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INFO NEED NUMBER: **SE-5**	TOPIC AREA: **Socioeconomics/EJ**

COMMENT/ISSUE:

Provide a knowledgeable expert familiar with the local consultations made in preparation of the COLA to speak to the following:

(1) Groups that were contacted to search for local subsistence practices or resource dependencies among the population in the immediate vicinity of the Harris site;

(2) Extent that the academic literature was searched in the effort to identify either special local environmental justice populations or to identify subsistence practices or special resource dependencies among the population in the immediate vicinity of the Harris site.

RESPONSE:

After internet searches for EJ and subsistence information, no significant issues were identified in the area surrounding Shearon Harris, the websites originally searched in 2007 are listed below:

1. NC State University—"environmental justice" general search; "Centennial Campus Middle School Walnut Creek Project" Presentation—Partners for Environmental Justice
2. General Google Search – "Environmental Justice issues for Progress Energy at Shearon Harris"
3. OrangePolitics.org – "Congressman Price Seeks Review of Fire Enforcement of Nuclear Plants" Shearon Harris Plant
4. The News & Observer – "Fire Drill"; "N.C.'s greener energy future"; "N.C. water: safe to drink?"
5. Herald Sun.com – "Nuclear Plant review is warranted" – safety at Shearon Harris Plant
6. Independent Weekly Website – Harris Fire Woes Smolder
7. Green Sand – Security Violations—Shearon Harris
8. University of Michigan – Environmental Justice Case Studies "Hog Farming in North Carolina"
9. www.ibiblio.org - Government Information Sources: Environmental Justice – North Carolina Resources and EPA; Non- Government Information Sources: Environmental Justice – North Carolina Resources
10. NC Warn – "Clarifying Common Questions & Criticisms" Nuclear Waste Expansion at Shearon Harris
11. North Carolina Conservation Network – "Mending Unequal Water Justice"; "EJ Issues: Just how far have we come?"; "Jordan Lake".

To confirm no recent developments, the following websites were searched in 2008:

12. NC WARN – "Nuke Revival Hits Quicksand at Harris, other Plants"; "Letter from Congressman Klein on NRC's oversight of Hemyc Fire Barriers"; "Letter from Attorney John Ruckle to NRC Commissioner on Enforcement of Fire Protection regulations at Shearon Harris"; "Letter from Commissioner in response to Klein's Letter on Fire Protection"; "New Fire Program at Nuclear Plant in Shambles"; "It's Efficiency or chaos"

13. National Register of Historic Places – Chatham and Harnett County subsistence farming locations
14. Chatham Journal – "New North Carolina Laws go into Effect in 2006" to provide for a statewide subsistence fishing license waiver, to prohibit the Wildlife Resources Commission from disclosing personal identifying information of licensees and others under certain circumstances
15. General Google Searches – "Subsistence Fishing, Farming, and Hunting in Chatham, Harnett, and Lee Counties in North Carolina"
16. St. Augustine's College, Raleigh, NC – historically black college - searched EJ and Subsistence fishing, farming, and hunting
17. Shaw University, Raleigh, NC – historically black university – searched EJ and subsistence fishing, farming, and hunting
18. Chatham County Economic Development Corporation – "New!- Chatham County Economic Development Strategic Plan Recommendations"
19. General Google Search – "2008 Environmental Justice Issues for Progress Energy Shearon Harris"
20. Raleigh Eco News – "Progress Energy Halts spent-fuel shipments to Shearon Harris nuke plant"
21. Facing South – "NRC shuts public out of meeting on Progress Energy nuke"
22. "No New Nukes Campaign" PDF from Google search

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Contact Health and Human Services (HHS) and verify that no subsistence fishing occurs in the area.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **SE-6**	TOPIC AREA: **Socioeconomics/EJ**

COMMENT/ISSUE:

Provide a knowledgeable expert to discuss timber harvesting, specifically:

(1) Volume of merchantable timber that is expected to be harvested for commercial use from the proposed transmission corridor upgrades;

(2) Volume of merchantable timber that is expected to be harvested for commercial use from the reservoir lakeshore in preparation for raising the pool elevation to the proposed level;

(3) Stumpage rates that can be expected for merchantable timber in North Carolina.

RESPONSE:

- Progress Energy's Forestry Real Estate professional has prepared the following table with an analysis of the market value of harvesting the timber affected by the reservoir rise.

Harris Project, Timber Estimate Between 220 and 240 Contour

				Estimated Tons/ Acre				
YEAR EST	ORIGIN	AGE	ACRES	Pine Pulpwood	Pine Chip-and-Saw	Pine Sawtimber	Hardwood Pulpwood	Hardwood Sawtimber
0	Open	0	621.12	0	0	0	0	0
1950	Natural	58	2334.19	4.00	15.00	10.00	16.00	11.00
2007	Planted	1	95.52	0	0	0	0	0
2006	Planted	2	2.92	0	0	0	0	0
2005	Planted	3	0.05	0	0	0	0	0
2003	Planted	5	0.73	0	0	0	0	0
2002	Planted	6	22.14	0	0	0	0	0
2001	Planted	7	50.35	0	0	0	0	0
2000	Planted	8	75.89	0	0	0	0	0
1999	Planted	9	28.62	0	0	0	0	0
1998	Planted	10	39.23	0	0	0	0	0
1990	Planted	18	15.54	61.37	14.35	0.10	0.07	0.00
1988	Planted	20	24.47	61.96	17.96	0.11	0.10	0.00
1986	Planted	22	1.82	64.41	19.36	0.13	0.04	0.00
1984	Planted	24	43.10	64.62	21.40	0.06	0.00	0.00
1982	Planted	26	21.73	65.76	23.43	0.08	0.00	0.00

Harris Project, Timber Estimate Between 220 and 240 Contour

				Estimated Tons/ Acre				
YEAR EST	ORIGIN	AGE	ACRES	Pine Pulpwood	Pine Chip-and-Saw	Pine Sawtimber	Hardwood Pulpwood	Hardwood Sawtimber
1979	Planted	29	140.00	66.80	26.75	0.13	0.08	0.00
1977	Planted	31	31.74	67.08	29.18	0.18	0.18	0.00
1976	Planted	32	69.05	67.12	30.41	0.21	0.25	0.00
1972	Planted	36	31.54	66.63	35.40	0.39	0.62	0.00
1970	Planted	38	17.15	66.04	37.93	0.51	0.87	0.00
1969	Planted	39	24.60	65.67	39.20	0.59	0.00	3.01
			3,692			Total Tons		
				37,103	46,644	23,425	37,419	25,750
			Stumpage Values per ton	$5.70	$16.19	$24.34	$4.57	$18.92
			Total Timber Value Per Product	$ 211,488.57	$ 755,172.16	$ 570,156.75	$ 171,006.19	$ 487,192.57
							Total Timber Value Below 240' Contour	$ 2,195,016.25

Source: Forester, Corporate Services-Real Estate, Progress Energy.

See pending actions below.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) (Issues 1 and 3) Estimate the value of merchantable timber along the transmission corridors based on the routes utilized in 3.7 of the ER.
2) Identify the timeframe for clearing the reservoir.
3) Characterize logging traffic, which was not addressed in the TIA.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **SE-7**	TOPIC AREA: **Socioeconomics/EJ**

COMMENT/ISSUE:

Provide a knowledgeable expert to speak to impacted recreation facilities and property, such as:

(1) Facilities at Harris Lake County Park that will be impacted and to what extent;

(2) Mitigation that will be required for facilities permanently removed from public service as a result of raising the reservoir pool elevation;

(3) Specific time span that is considered "temporary" in the context of impacts to affected recreation facilities;

(4) Baseline recreation usage statistics for the affected recreation facilities including Harris Lake County Park and the four affected boat ramps;

(5) Impacts that can be expected on State Gamelands bordering the reservoir as a result of raising the reservoir.

RESPONSE:

1. An Infrastructure Technical Memorandum (ER Reference 10.3-003) identified the following facilities at Harris Lake County Park as being impacted by the change in reservoir level: Harris County Park Amphitheater, Harris County Park Peninsula Hiking Trail - majority of trail below 240 ft., Harris County Park Longleaf Pine Management Area - mostly upland piedmont, Harris County Park Loblolly Shelter; 2 other shelters nearby, Harris County Park volleyball court, Harris County Park Clearing near volleyball court, Harris County Park Buckhorn Disc Golf Course.

2. Mitigation for lost recreation services due to raising the reservoir pool elevation is under discussion between Progress Energy and the County. Documentation of these on-going discussions was available for NRC during the Audit. In addition, during the construction phase of the HAR site, as described in ER Chapter 4, boat launch facilities on Harris Reservoir that are impacted by the increased water level will be relocated. One boat launch is located in Harris Lake County Park (car-top boat launch) and will be mitigated along with the park. PEC will mitigate the impact to Holleman's Crossing and Highway NC-42 boat launch facilities during construction (ER Reference 5.1-009). PEC will modify the Highway NC-42 boat launch, the two ramps, and one-half of the 66-space parking lot during construction (ER References 5.1-001, 5.1-010, and 5.1-011). The boat ramps will be available for use during operation in a location uphill from their current locations (ER Reference 5.1-009). Relocated boat launch facilities will be available for use during operation and will be designed to accommodate fluctuating lake levels (ER Reference 5.1-009).

3. As per ER Ch. 5: 5-11, "temporary" means the time period necessary for relocating the park amenities. There will be no impact on recreational use of the Harris Lake County Park during operation because infrastructure in the park located 73.2 m (240 ft.) NGVD29 will have been relocated during construction of the HAR site (ER Reference 5.1-009). Beyond this commitment, the details related to the timing, location, nature, and extent of the new design will depend upon the park mitigation plan.

4. Harris Lake County Park opened to the public in 1999. The 275 ha (680 ac. or 1.06 $mi.^2$) park is owned by PEC and leased to Wake County Parks, Recreation, and Open Space who manages the park (ER Reference 5.1-006). During fiscal year 2005 to 2006, the park received 107,000 visitors, with a peak of

approximately 1000 visitors per day (ER Reference 5.1-007). Recreation is the primary reason people visit the park. Recreational activities at the park include playing disc golf, mountain biking, using the playground, and fishing (ER Reference 5.1-008).

5. PEC has enrolled 5353 ha (13,227 ac. or 20.67 mi.^{2}) of the area surrounding Harris Lake in the North Carolina Game Lands Program through the North Carolina Wildlife Resources Commission (NCWRC) (ER Figure 4.3-1) (ER Reference 5.1-012). As noted in Subsection 4.3.1.2.1, PEC originally committed approximately 1619 ha (4,000 ac. or 6.25 mi.^{2}) to the North Carolina Game Lands Program and has voluntarily committed the remaining acreage over the years. This area is known as the Shearon Harris Game Lands. It can be determined from Figure 4.3-1 that approximately 818 ha (2022 ac. or 3.16 mi.^{2}) or 14 percent, of the game lands will be inundated. The USGS land use classification will change from forested to water body (ER Figure 2.2-1). PEC initiated communication with the NCWRC in early 2007 regarding potential impacts to the Shearon Harris Game Lands.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) (Issue 3) Identify specific time span for "temporary" impacts to affected recreation facilities and describe the staging and phasing of mitigation process (how long will access be restricted?)
2) (Issue 4) Document search for usage reports.
3) (Issue 5) Contact State Gamelands officials to determine existence of gameland statistics. How would officials characterize impacts from rising lake levels (will loss of terrestrial acreage affect recreational usage).

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **SE-A**	TOPIC AREA: **Socioeconomics/EJ**
COMMENT/ISSUE: **Provide a geographic summary of the current HNP operations workforce sufficient to permit the staff to determine the county of residence, without identifying individual employees.**	

RESPONSE:

As noted in ER Subsection 4.4.2, p. 4-104, and Section 5.8, p. 5-152: "Currently, approximately 91.3 percent of the existing HNP workforce lives in Wake (61.6 percent), Chatham (6.3 percent), Lee (16.2 percent), and Harnett (7.2 percent) counties. The remaining 8.7 percent of workers live in surrounding counties." A detailed breakout is provided below:

HNP Unit 1 Employee Listing By County

County Residence	HNP U1 Employees	Percentage
Chatham, NC	29	6.33%
Cumberland, NC	2	0.44%
Duplin, NC	1	0.22%
Durham, NC	6	1.31%
Harnett, NC	33	7.21%
Johnston, NC	17	3.71%
Lee, NC	74	16.16%
Moore, NC	5	1.09%
New Hanover, NC	1	0.22%
Orange, NC	1	0.22%
Person, NC	1	0.22%
Rowan, NC	1	0.22%
Randolph, NC	2	0.44%
Sampson, NC	2	0.44%
Wake, NC	282	61.57%
Wilson, NC	1	0.22%
Grand Total	458	100.00%

Source: Progress Energy Human Resources Department.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **SE-B**	TOPIC AREA: **Socioeconomics/EJ**

COMMENT/ISSUE:

Provide a geographic summary of the most recent refueling outage workforce sufficient to permit the staff to determine the county of residence for NC workers and the state of residence for non-NC workers, without identifying individual employees.

RESPONSE:

Geographic summaries by county and state are provided below based on information generated by the Progress Energy Human Resources Department and provided Progress Energy staff.

Harris Plant Outage Workforce by NC County

STATE	COUNTY	TOTAL PER COUNTY	% of Total
NC	BRUNSWICK	89	24%
NC	COLUMBUS	60	16%
NC	WAKE	35	9%
NC	ROBESON	24	6%
NC	BLADEN	14	4%
NC	CUMBERLAND	12	3%
NC	LEE	12	3%
NC	NEW HANOVER	12	3%
NC	PENDER	11	3%
NC	CABARRUS	7	2%
NC	DURHAM	7	2%
NC	DUPLIN	6	2%
NC	HARNETT	5	1%
NC	GUILFORD	4	1%
NC	MECKLENBURG	4	1%
NC	RANDOLPH	4	1%
NC	SAMPSON	4	1%
NC	BEAUFORT	3	1%
NC	HOKE	3	1%
NC	JOHNSTON	3	1%

Harris Plant Outage Workforce by NC County

STATE	COUNTY	TOTAL PER COUNTY	% of Total
NC	LENOIR	3	1%
NC	MOORE	3	1%
NC	RUTHERFORD	3	1%
NC	CHATAM	2	1%
NC	CLEVELAND	2	1%
NC	CRAVEN	2	1%
NC	DARE	2	1%
NC	DAVIDSON	2	1%
NC	FORSYTH	2	1%
NC	HALIFAX	2	1%
NC	IRENDELL	2	1%
NC	MARTIN	2	1%
NC	NASH	2	1%
NC	ONSLOW	2	1%
NC	PITT	2	1%
NC	ROWAN	2	1%
NC	UNOIN	2	1%
NC	WAYNE	2	1%
NC	ALAMANCE	1	0%
NC	ASHE	1	0%
NC	CAMDEN	1	0%
NC	CHEROKEE	1	0%
NC	GASTON	1	0%
NC	HAYWOOD	1	0%
NC	LINCOLN	1	0%
NC	MCDOWELL	1	0%
NC	ORANGE	1	0%
NC	RICHMOND	1	0%
NC	SCASWELL	1	0%
NC	STANLY	1	0%
NC	WILKES	1	0%
NC	YADKIN	1	0%

Harris Plant Outage Workforce by NC County

STATE	COUNTY	TOTAL PER COUNTY	% of Total
	Total	372	

HNP 2007 Outage Contractors - Residence by State

Response to SE-B

STATE	TOTAL	PERCENT
AK	1	0.11%
AL	13	1.48%
AR	18	2.05%
AZ	8	0.91%
CA	4	0.46%
CO	2	0.23%
CT	7	0.80%
FL	53	6.04%
GA	37	4.21%
ID	3	0.34%
IL	5	0.57%
IN	2	0.23%
KS	10	1.14%
KY	1	0.11%
LA	14	1.59%
MA	3	0.34%
MI	3	0.34%
MO	12	1.37%
MS	14	1.59%
MT	1	0.11%
NC	372	42.37%
NE	3	0.34%
NH	4	0.46%
NJ	1	0.11%
NY	13	1.48%
OH	14	1.59%
OK	11	1.25%
OR	2	0.23%
PA	31	3.53%
SC	115	13.10%
TN	22	2.51%
TX	32	3.64%
VA	31	3.53%
WA	4	0.46%
WI	3	0.34%
WV	8	0.91%
WY	1	0.11%
TOTAL	878	100.00%

Information provided by Corporate Access Authorization

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **SE-C**	TOPIC AREA: **Socioeconomics/EJ**
COMMENT/ISSUE: **Existing cost are too old. Need to update. (Cost information as compared to Levy (based on 2007 dollars) seems out of date.)**	

RESPONSE:

See pending actions below.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Updated cost estimate information will be provided in future correspondence.
2) The following sections would be affected by any changes in cost estimates and will be updated in a future revision, as appropriate: 4.4.2.1, Economic Characteristics; 9.2.2.1, Wind; 9.3.2.2.1.7, Transportation; 10.4.2, Costs; 9.4.1.3, Summary of Alternative Heat Dissipation Evaluation.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17 2008

INFO NEED NUMBER: **SE-D**	TOPIC AREA: **Socioeconomics/EJ**
COMMENT/ISSUE:	
What are the additional impacts expected related to logging and other construction-related transport on existing roadways.	
Transportation issues associated with logging traffic. Need to confirm with Kimley Horn whether their construction truck estimates included logging trucks. If not, what would the potential impacts be due to logging trucks, such as likely number of logging trucks, number of contractors, anticipated routes, and estimated loads for timber distribution.	

RESPONSE:

See pending action below.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Additional impacts expected related to logging and other construction-related transport on roadways will be provided.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17 2008

INFO NEED NUMBER: **SE-E**	TOPIC AREA: **Socioeconomics/EJ**
COMMENT/ISSUE: **Table 5.4-5 (Agricultural Statistics). An explanation is required regarding how the numerical values were generated and for what purpose (i.e., what do the numerical values feed into).**	

RESPONSE:

Explanation of numerical generation:
Agricultural data for the counties within a 50 mile radius of HAR were distributed into radial sectors. These sectors are based on 16 cardinal direction points with concentric rings consisting of 1 mile increments from 0-10 miles and 10 mile increments from 10-50 miles. These rings radiate from the centerpoint of Units 2 and 3. Diagrams showing the radial sector grids are provided in ER Section 2.5. The final agricultural statistics were calculated from county level agricultural data. If a county was bisected by a sector (i.e., parts of the same county fell within 2 or more sectors) agricultural production statistics were proportioned by the percent of the county area. For example, if the geographical information system (GIS) determined that the North 0-1 mile sector cell contained 1% of Wake County, then 1% of the total agricultural production data for Wake County was applied to this sector cell. This implicitly assumes production is fairly uniform within the county, since production data was only available at the county level. A summation of the distributed data was used to estimate the total agricultural output for the 50 mile radius.

Purpose of agricultural statistics:
The agricultural statistics from ER Table 5.4-5 were input directly into the GASPAR computer code (NUREG/CR-4635, GASPAR II Technical Reference and User Guide, March 1987. NRCDOSE [GASPAR module]). The code calculates the radiation exposure to man from external exposure to airborne radioactivity, external exposure to deposited activity on the ground, inhalation of airborne activity, and ingestion of contaminated agricultural products including ingestion of milk contaminated through the grass-cow-milk pathway and ingestion of foods (meat and vegetables) contaminated by gases and particulates. Specifically, the ER Table 5.4-5 values are used for the ingestion pathways total body and worst case organ (bone) 50 mile population doses provided in HAR ER Table 5.4-11.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

Cultural Resources

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-1**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide a tour of the area surveyed to date related to the addition of Units 2 and 3 and any cultural resources identified during this effort.**	

RESPONSE:

Took tour of known sites. Some sites will be inundated, others not. A general view of the cultural resources for the project was made.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-2**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide a tour of all cultural resources identified on Progress Energy land associated with the Harris site.**	

RESPONSE:

Took tour of known sites. Some sites will be inundated, others not. A general view of the cultural resources for the project was made.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-3**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide a knowledgeable expert that can explain how the area of potential effect (APE) was defined for the COL effort.**	

RESPONSE:

The APE, approval process with State Historic Preservation Office (SHPO), and SHPO concurrence letter were discussed (letter was available in the library during the Audit). The NRC asked questions about future work: laydown areas, access roads that have not been defined, and the process of approval with the SHPO.

Future work could include logging roads along the lake, as an example. The NRC would like confirmation of the process for additional work areas not known at this time.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Consider sending a letter to SHPO reiterating the approved survey plan and confirming the process for the approval of additional survey areas and the probable expansion of the APE (includes infrastructure construction). Letter should address Phases I, II, and III cultural resources surveys and PE's standard policy for cultural resources. (NRC would like to see the concurrence letter from SHPO with this additional letter).

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-4**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide a knowledgeable expert that can explain "preconstruction" activities and how cultural resources will be impacted.**	

RESPONSE:

The survey will identify cultural resources that will be impacted by the project. The proposed new letter to the SHPO (under consideration) will confirm preconstruction activities and future construction activities and cultural resources surveys as a result of the work.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Consider conducting Phase I survey and preparing draft report of results. Consider preparing and sending letter to the SHPO reiterating the cultural resources identification process prior to preconstruction and construction activities, as mentioned in CR-3. Include schedule for surveys.
2) Archaeological Phase I Makeup Water Line Survey Report and Survey Plan for Harris Lake has been provided in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-5**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE:	
Provide a knowledgeable expert that can characterize the cultural resources at the site (areas listed below) and the impacts from construction and operation of the new unit, to include discussions of the following: (1) Land to be inundated; (2) New transmission line corridor; (3) intake pipeline from Cape Fear River to plant; (4) Area to be used for intake structure.	

RESPONSE:

Discussed surveys that had been performed and the results of those surveys; discussed the need to complete the Phase I survey for additional areas.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) See pending actions in CR-4.
2) ER References 4.1-028 and 4.1-025 have been provided in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-6**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide a knowledgeable expert that can explain cultural resource impacts associated with infrastructure reconfiguration due to raised reservoir levels (new roads, bridges, etc.).**	

RESPONSE:

Discussed potential impacts of infrastructure reconfiguration and potential impacts to cultural resources.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

See CR-3.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-7**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide a knowledgeable expert that can explain the cultural resources scope of work to date and what remains to be completed.**	

RESPONSE:

Discussed survey work to date and the survey work that needs to be completed.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

See CR-4.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-8**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide a procedure or plan for evaluation and mitigation or avoidance of resources identified during any of the above investigations (if they are likely to be impacted).**	

RESPONSE:

Progress Energy's standard procedures for cultural resources was made available in the library during the Audit for NRC review.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

See CR-3.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-9**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide a procedure for post licensing cultural resource protection and management.**	

RESPONSE:

Discussed Progress Energy's standards for the protection of cultural resources post-licensing.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

See CR-3.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-10**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Provide copies of all consultation correspondence with the SHPO and/or Tribes.**	

RESPONSE:

Discussed correspondence; correspondence was available in the library for NRC review during the Audit.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-11**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE:	
Provide copies of all survey reports referenced in ER Sections 4.1.3 & 5.1.3.	

RESPONSE:

Discussed existing reports and references in the ER; these documents were available in the library for NRC review during the Audit.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **CR-12**	TOPIC AREA: **CULTURAL RESOURCES**
COMMENT/ISSUE: **Describe the process used to identify interested Tribes and parties regarding cultural resources.**	

RESPONSE:

Discussed process of identifying tribes and interested parties. Confirmed the NRC mailed letters to tribes. List of tribes that had been identified was discussed with the NRC and is included in the ER.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

Alternatives

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Alt-1**	TOPIC AREA: **ALTERNATIVES (POWER)**

COMMENT/ISSUE:

Provide a knowledgeable expert on the alternative power assessment for Progress Energy. This expert should be able to:

(1) Provide a quantified review of power purchasing addressing power across all sectors of the generation resources of the region given the no-alternative action (9.1).

(2) Quantify PURPA qualifying entities and capacity in the ROI (9.2.1.3).

(3) Address why a circulating fluidized bed boiler was chosen for analysis at 250 MW/unit, and comparative cost to subcritical or supercritical pulverized coal plant with significantly higher capacity (ex. dry bottom/wall fired unit) (9.2.3.1).

(4) Address if impacts of alternate plants were assessed against each other or proposed Harris project. Example: waste management from HAR is SMALL and from coal alternative is MEDIUM (Table 9.2-2).

(5) Clarify natural gas fired analysis including consumptive water use comparison to traditional steam only bottoming cycle units (same consumption?), co-firing biomass implies gasification which was already eliminated, and ultimate exclusion methodology and reasoning (9.2.3.2.4).

(6) Clarify discrepancies, describe exclusion methodology, or supply references in land-use estimates: ex. 9.2.3.2.3 indicates 70 total acres where 9.2.3.2.4 indicates 110 acres; inundated land uses would also be expected to be small with a combined cycle unit(s) with the bottom cycle providing 1/3 of total power; 3600 acres for ancillary services (9.2.3.2.3 and 9.2.3.2.4).

RESPONSE:

An expert was present to discuss the issues identified above. The following resulted:

(1) PEC currently (2008) has no company mandated percentage to purchase power. VACAR does not have much available surplus power to purchase. Additionally, interties would limit power purchases to 400-500 MW with transmission upgrades.

(2) The US Congress passed an energy bill in 1978 titled the Public Utility Regulatory Policies Act ("PURPA"). PURPA dealt with several energy industry issues and required investor-owned electric utilities to interconnect and purchase power from non-utility owned generating facilities as long as those facilities meet a set of guidelines. A facility that meets those standards and guidelines is deemed to be a "Qualifying Facility" or "QF" under PURPA. PURPA broadly defined two types of QFs, Cogenerators and Small Power Producers. Cogenerators produce electricity and another useful form of thermal energy (such as heat or steam) that can be used for industrial, commercial, residential, or institutional purposes.

This two-fold use of a fuel source is more efficient than just producing heat or steam for a process or just generating electricity alone. Small Power Producers produce energy from renewable resources such as wind, solar, hydroelectric, geothermal, biomass, or some waste product. Through the IRP process, PEC periodically assesses various generating technologies to ensure that projections for new resource additions capture new and emerging technologies over the planning horizon. This analysis involves a preliminary screening of the generation resource alternatives based on commercial availability, technical feasibility, and cost. The alternative screening process is generic in nature, not site-specific. The IRP process looks at the commercial availability, the technological feasibility for commercially available technologies, and the levelized

cost of energy production. To accomplish this, the PEC IRP process incorporates sophisticated resource optimization computer models to evaluate future generation alternatives.

As of December 2007, PEC's IRP includes purchased power from two municipal solid waste (MSW) facilities and contracts with landfill gas facilities. PEC is also actively engaged in a variety of projects to develop new alternative sources of energy, including solar, hydrogen, biomass, and landfill gas technologies. In addition, wind and solar, as well as other renewables, are being evaluated for their ability to meet renewable energy requirements on a case-by-case basis and included as a resource option if appropriate. PURPA QF entities and capacity in the service territory are presented in Tables 1-1 and 1-2 of the PEC's December 2007 IRP. PURPA QF (NUG QF Cogen, NUG QF Renewable, and NUG QF Other) entities in North Carolina from 2008-2022 are listed under Purchases and Other Resources in Table 8.1-2 of the HAR ER.

(3) Fluid bed combustion technology will be removed and substituted with the pulverized coal boiler technology discussion.

(4) Will be resolved by changes to text indicated above in (3).

(5) The consumptive water use is considerably lower for a steam plant than for a combined cycle plant. Water quality impacts are still SMALL.

(6) After further review, the 110-acre value for inundated land used in ER Subsection 9.2.3.2.4 is the correct value and can be supported and referenced in the NRC GEIS, NUREG 1437. Where necessary, the 70-acre value will be removed from ER Section 9.2.3.2.4 and replaced with the 110-acre value as stated in ER Subsection 9.2.3.2.4.

STATUS: Open

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

(Issue 1) Add sentence explaining purchase power in Chapter 8, Section 8.3.3 to reflect December 2007 IRP data
(Issue 2) None.
(Issue 3) Provide supplemental text for ER Section 9.2.2.10 discussing both coal burning technologies, revise and incorporate new Table 9.2-3, revise Section 9.2.3.1.1.
(Issue 4) Supplemental text as reflected above in (3) will resolve issue.
(Issue 5) Supplemental text to be provided.
(Issue 6) Supplemental text will be provided for ER Subsection 9.2.3.2.3 to reflect correct acreage numbers.

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INFO NEED NUMBER: **Alt-2**	TOPIC AREA: **ALTERNATIVES (SITE)**

COMMENT/ISSUE:

Provide a knowledgeable expert on the alternative sites assessment for Progress Energy. This expert should be able to:

(1) Provide access and review of the 2006 site selection study.

(2) Describe how the ROI was screened to provide legitimate potential sites (ex. "the first phase of the site evaluation process involved screening the ROI using the exclusionary criteria identified above." If the ROI was screened using EPRI exclusionary criteria such as cooling water supply, how would the Pee Dee River sites have qualified as potential sites) (9.3.1.1).

(3) Confirm weighting and ranking factors were applied with consistency across rough (to determine candidate sites) and fine screening (to develop final proposed/preferred site) (9.3.1.1).

(4) Describe and validate how 3 of 4 candidate sites had "considerable overloads identified with the addition of 1100 MW" were screened as being viable candidates with the proposed output of the HAR project at 2200 MW (9.3.1.1) and quantify as needed the transmission assessment.

(5) Describe and provide access to quantified data demonstrating how potential sites were evaluated to provide candidate sites and exclusionary methodology (ex. the Marion Country site was carried forward as an alternative likely requiring a supplemental reservoir supplied from the Pee Dee River, where three potential sites on the Pee Dee River were eliminated in part due to likely requiring a supplemental reservoir) (9.3.2.1).

(6) For future documents: In carbon footprint discussion in Subsection 9.2.3.2.1, would be nice to quantify impact. Consider using the following reference in future documents: 9.2-032 Parliamentary Office of Science and Technology, "Carbon Footprint of Electricity Generation," No. 268, October 2006.

In the IGCC discussion, the paragraph discussing construction of Southern Plant will be omitted from the EIS.

(7) On page 9-103, "HgA" is incorrectly spelled out as "heat generating assembly."

RESPONSE:

An expert was present to discuss the issues identified above. The following resulted:

(1) Progress Energy will provide siting study as a restricted document in the Progress Energy-provided Reading Room.

(2) The information need was to clarify the site selection and screening process going from: (Step 1) the region of interest (PEC service area plus the Savannah River Site), (Step 2) getting to 11 potential sites, (Step 3) applying exclusionary criteria, and (Step 4) getting to four candidate sites. The selection/screening process (see Steps 1-4 identified above) will be documented, including a graphic showing potential sites, water bodies, and other exclusionary criteria used to deselect the potential sites. The siting study and ER will be updated with that information.

(3) See Response 2.

(4) Resolved. Detailed transmission system information, as found in Attachment VI "Navigant Transmission System Impact" in Progress Energy New Nuclear Baseload Generation Addition, Evaluation of Carolina Sites

(Jan. 13, 2006), was not available at the time the candidate sites were identified. The Navigant Transmission study was provided to the NRC for review during the Audit.

(5) See Response 2.

(6) See Alt-A.

(7) See Alt-B.

STATUS: Open

DOCUMENTS ATTACHED:

None

PENDING ACTIONS:

(Issue 1) Progress Energy will provide siting study as a restricted document in the Progress Energy-provided Reading Room.
(Issue 2) Create a graphic showing potential sites, water bodies, and other exclusionary criteria used to deselect the potential sites. Progress Energy will consider updating the siting study and ER with that information.
(Issue 3) See Pending Action 2.
(Issue 4) Item is resolved
(Issue 5) See Pending Action 2.
(Issue 6) Refer to response in Alt-A
(Issue 7) Refer to response in Alt-B.

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INFO NEED NUMBER: **Alt-3**	TOPIC AREA: **ALTERNATIVES (9.4: PLANT AND TRANSMISSION)**

COMMENT/ISSUE:

Provide a knowledgeable expert on the alternative plant and transmission assessment for Progress Energy. This expert should be able to:

(1) Describe alternate intake, water supply, water treatment, fixed and variable costs of proposed systems (9.4.2).

(2) Describe and reconcile differences between proposed HAR transmission corridors with additional 100' of ROW (SMALL impact), and the two alternate nuclear sites that would situate additional transmission capacity in existing corridors but described as having a LARGE impact.

(3) Discuss alternate transmission corridors; describe and confirm projected ROW expansion to include discussion if this will also require an additional 50' of ROW. If possible, provide transmission assessment or study.

RESPONSE:

An expert was present to discuss the issues identified above. The following references were provided to address the issues:

(1) Attachment VI "Navigant Transmission System Impact" in Progress Energy New Nuclear Baseload Generation Addition, Evaluation of Carolina Sites (Jan. 13, 2006)

(2) Attachment VI "Navigant Transmission System Impact" in Progress Energy New Nuclear Baseload Generation Addition, Evaluation of Carolina Sites (Jan. 13, 2006)

(3)

- 9.4-001 Progress Energy Carolinas, Inc. and Sargent & Lundy, LLC, "Engineering and Economic Evaluation of the Integrated Heat Rejection Cycle, Harris Location-Proposed Two Unit AP1000, Final Issue, Not Safety Related," Report HAG-G2-GER-001, Rev. 0, March 2007.
- 9.4-006 Worley Parsons, "Conceptual Design and Calculations for Harris Raw Water and Circulating Water Systems for Harris Advanced Reactors Units 2 & 3," Report No. HAG-CWS-GER-001, Revision 0, January 5, 2007.
- 9.4-007 Worley Parsons, "SPX Cooling Technologies, Final Water Usage, Progress Energy," Worley Parsons Design Information Transmittal (DIT) No. WP-007, March 8, 2007.
- 9.4-012 Sargent & Lundy, LLC, "Recommendation for the Conceptual Design of the Harris Lake Makeup Water Intake," S&L Letter No. SLPEC-2006-005, June 26, 2006.

STATUS: Resolved

DOCUMENTS ATTACHED:

None

PENDING ACTIONS:

The references listed for Items 1, 2, and 3 above have been made available in the Progress Energy-provided Reading Room.

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INFO NEED NUMBER: **Alt-A**	TOPIC AREA: **ALTERNATIVES (POWER)**

COMMENT/ISSUE:

For future documents:

In carbon footprint discussion in ER Subsection 9.2.3.2.1, would be nice to quantify impact. Consider not using the following reference in future documents: 9.2-032 Parliamentary Office of Science and Technology, "Carbon Footprint of Electricity Generation," No. 268, October 2006.

In the integrated gasification combined cycle (IGCC) discussion in ER Subsection 9.2.2.12, the paragraph discussing construction of an IGCC facility by the Southern Company and the Orlando Utilities Commission (OUC) will be omitted from the EIS.

RESPONSE: The carbon footprint point was an editorial comment from PNNL and the NRC. No action is required at this time. It is fine to have this reference and discussion remain in the ER; this discussion will not be part of the NRC's EIS.

The IGCC comment was also an editorial comment and no action is required at this time. It is fine to have the discussion in the ER; however, the discussion related to the proposed construction of the IGCC facility by Southern Company and OUC will be omitted from the EIS because the facility is not scheduled for construction.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **Alt-B**	TOPIC AREA: **ALTERNATIVES (POWER)**
COMMENT/ISSUE: **On page 9-103, "HgA" is incorrectly spelled out as "heat generating assembly."**	

RESPONSE:

The last sentence in the second paragraph on Page 9-103 will be revised from "7.4 in. heat generating assembly" to "7.4 inches of mercury (absolute) (HgA)."

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

On page 9-103, revise the last sentence in second paragraph from "7.4 in. heat generating assembly" to "7.4 inches of mercury (absolute) (HgA)" in a future revision to the ER.

Rad/Fuel Cycle/Waste/Decommissioning

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INFO NEED NUMBER: **HP-1**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **LADTAP input/output codes and calculation packages.**	

RESPONSE:

The codes and calculations were provided at the time of the Audit for review by the NRC.

STATUS: Resolved

DOCUMENTS ATTACHED:

Input and output codes for HP-1-001_LADTAP are supplied electronically in a DVD provided under a separate cover.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-2**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **GASPAR and BIOTA input/output codes and calculation package.**	

RESPONSE:

The codes and calculations were provided at the time of the Audit for review by the NRC.

STATUS: Resolved

DOCUMENTS ATTACHED:

Input and output codes for HP-2-001_GASPAR_BIOTA are supplied electronically in a DVD provided under a separate cover.

PENDING ACTIONS:

GASPAR and Biota calculation packages have been provided in the Progress Energy-provided Reading Room.

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INFO NEED NUMBER: **HP-3**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**

COMMENT/ISSUE:

Provide a knowledgeable expert to discuss the calculation of doses to construction workers. Areas of interest include the likely liquid and gaseous radiological source terms and release points from HAR-1 including _/Q data, as well as the identification of exposure pathways, assumptions, and models used to determine dose once nuclear fuel arrives on site.

(1) What are the criteria for EAB for each unit? How was EAB established?

(2) What is the basis for the differences in Table 2.5-1 vs. DCD in the source term identification (number of nuclides)?

(3) ER references 2004 Effluent Operating Report. Why was report used?

RESPONSE:

An expert was present for the discussion and ER Section 4.5 contains all of the assumptions and references used to calculate doses to the construction workers from active Shearon Harris operations and the contribution from Harris Unit 2 operations. X/Q data are provided in ER Section 2.7 and appropriate AP1000 source terms and release points are provided in the DCD.

The HNP facility releases airborne effluents via four gaseous effluent discharge points: Plant Vent Stack 1, Turbine Building Vent Stack 3A, and the Waste Processing Building Vent Stacks 5 and 5A. The expected radiation sources in the gaseous effluents are listed in Chapter 3 of the HNP's *Annual Radioactive Effluent Release Report* for 2004.

The liquid effluent release point is at the point of discharge from the cooling tower blowdown line into Harris Reservoir.

During the period of January 1, 2004, through December 31, 2004, the estimated maximum individual off-site dose due to radioactivity released in liquid effluents was 1.86E-02 millirem (mrem), whole body, as compared with a limit of 3.0 mrem, whole body. The estimated maximum individual off-site dose was 2.632E-02 mrem, Gastrointestinal tract (lower large intestine wall) (GI-LLI), as compared with a limit of 10.0 mrem, GI-LLI. Doses were calculated using the methodology presented in Subsection 2.2.1 of the HNP ODCM.

During the period of January 1, 2004, through December 31, 2004, the estimated maximum individual off-site dose due to radioactivity released in gaseous effluents for the following items were:

- **Noble gases**. 1.1E-04 millirad (mrad) Beta as compared with a limit of 20.0 mrad and 4.84E-05 mrad Gamma as compared with a limit of 10.0 mrad.
- **Tritium (H-3), iodine-131 (I-131), iodine-133 (I-133), particulates with greater than an 8-day half life**. 2.38E-01 mrem/year (critical organ is the lung) as compared with a limit of 15.0 mrem/year.
- **Doses from gaseous emissions**. Doses resulting from gaseous emissions were calculated using the methodology presented in Subsection 3.3.1 of the HNP ODCM.

Annual potential radiological dose impacts to construction workers have been conservatively estimated based on the following factors:

- The estimated maximum individual off-site dose due to radioactivity released in the HNP's liquid effluent release pathway (described in Subsection 4.5.3.2.1) was 1.86 E-02 mrem per year (mrem/yr), whole body, and 2.63E-02 mrem/yr, GI-LLI. Even if doubled for two operating units (HNP and Harris Unit 2) the doses would be negligible contributors.

- The estimated radiological exposure to a construction worker from the operation of the HNP via the gaseous effluent release pathway (described in Subsection 4.5.3.2.2) was less than 2.38E-01 mrem/year. Even if doubled for two operating units (HNP and Harris Unit 2) the doses would be negligible contributors.

- The direct radiation exposure, as presented in Subsection 4.5.3.3, was based on a 2080-hour work year and an exposure rate of 11.1 µrem/hr or 24 mrem/yr.

- Based on data from the 16 protected area fence line TLD locations shown on Figure 4.5-2, the annual collective dose to the construction workforce is estimated to be 72.8 person-rem (that is, the maximum individual dose multiplied by the number of people exposed). This estimate assumes 3150 persons based on 2080 working hours per year at an exposure rate of 11.1 µrem/hr.

- No credit for the reduction in potential dose rate is given for the distance from the HNP protected area fence line TLD locations to the HAR facility construction areas.

Dose rates from unirradiated fuel do not pose an external radiological hazard to construction workers or operating personnel.

Additional information will be provided in the form of the REMP reports and yearly liquid effluent release reports for Shearon Harris.

(1) Referenced FSAR Chapter 2.

(2) Discussion resolved issue.

(3) 2004 was most current available data when ER generation started. 2004 data were consistent and representative of previous years.

STATUS: Resolved

DOCUMENTS ATTACHED:

2004 Effluent Operating Report (ER Reference 4.5-002) has been provided electronically with the ER References in the Progress Energy-provided reading room (see HP-10).

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-4**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**

COMMENT/ISSUE:

Provide a knowledgeable expert to discuss exposure pathways and the calculation of doses to the public and populations, gardens, wells, water intakes, fisheries, including knowledge of seasonal variations in the exposure pathways.

NRC staff asked the following questions:

1) Possible population doses not addressed in the ER - Theses include impact on population dose of site people drinking site water, the sport fishing tournament, etc. Were the doses excluded in the ER and what were the justifications?

2) No information is given for the impact on population dose of irrigation of residential vegetable gardens downstream of the site. It they are excluded, then give the basis.

3) Regarding the mixing methodology for LADTAP why was the entire lake volume used vs. the volume in the vicinity of the discharge; are the radionuclide concentrations in the lake distributed homogenously? Historical data supposedly has been collected that shows concentrations of radionuclides in the lake is uniform. Historical data needs to be recovered and ensure that it applies to the cesium and tritium in the lake.

RESPONSE:

1) **50 mile Population Dose:** 50-mile population doses from liquid effluents only considered the downstream drinking pathway as significant. This is consistent with the expected dose contributors in the current licensing basis for the existing HNP site (See SHNPP U1 ER and SHNPP Unit 1 FSAR). As noted in SHNPP Unit 1 FSAR, 2nd page, Note 3, the Harris reservoir as a source of drinking water is essentially for the plant workers with limited availability to the public. The plant workers were not considered as members of the public and the potential dose to the workers was not included in the population dose. The cumulative population dose to the workers could conservatively be included **in the total 50 mile population dose**. A preliminary un-reviewed LADTAP run assuming 1000 equivalent full-time adult individuals (workers) gives a dose of about 0.7 person-rem/yr compared to the downstream (Lillington, Erwin and Fayetteville) population dose from water consumption of 6.78 person-rem/yr.

2) **Maximum Exposed Individual (MEI) Dose:** This issue recently arose in the industry via a Bellefonte RAI and response (RAI BLN-P02-RAI-DR-11_02-003 BLN RAI ID: 0519). The Bellefonte response showed that this pathway is not significant (<10% of the total dose). A preliminary un-reviewed LADTAP run using assumptions similar to those used on Bellefonte with HAR site specific factors for transit time and dilution indicates that the dose from this pathway would be <1% of the total body dose (0.015 mrem/yr from garden versus 2.09 mrem/yr from fish and water consumption and recreational activities).

3) As noted in the SHNPP U1 ER, commercial fishing within 50 miles is negligible. In addition, sportfishing is also not considered significant, estimated to be somewhere around 25,000 kg/yr. Mixing in the volume of the lake is consistent with the SHNPP U1 current licensing basis (CLB) as shown in SHNPP U1 ER and SHNPP Unit 1 FSAR. In addition, it was noted that with measurements based on tritium measurements, the lake is well mixed. SW-26 DW-51 locations shows that the monitor points are essentially on opposite ends of the lake. Natural seasonal lake turnovers also significantly contribute to the mixing. Even though the

measurements are based on tritium it is expected that all released materials will be well mixed. This is especially pertinent since the calculated doses and releases are based on average annual values. Using a well mixed lake is also considered conservative in calculating the individual doses. The majority of the calculated dose (approximately 95 percent) is due to fish consumption with Cs being the primary dose contributor. As noted in SHNPP U1 ER for the reasons discussed therein, fishing in the area of the discharge would be poor and not productive. The area is not a favorable habitat for the fish spend time. If it is assumed that the Cs for some reason does not mix in the lake and concentrates at the discharge location, the population of sport fish in the lake would actually have a lower intake of Cs. The Cs would most likely migrate to the bottom sediment. The predominant species of fish caught in the lake are largemouth bass and sunfish species which are not bottom feeders. Combined with the fact that the discharge area is not conducive to a productive fishing location, this would result in lower calculated doses for the Harris lake fish pathway. If the released Cs activity were concentrated in this area, this means the concentration in the remainder of the lake would be lower, thereby decreasing the other pathway doses (water ingestion, swimming, shoreline, etc.). Therefore, there are a number of qualitative considerations that support our opinion that it is more conservative to use mixing in the entire lake volume. Additionally, historical gamma spectroscopy results performed on surface water samples have always shown non-detectable activity.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-5**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss the projected population five years from the time of the licensing action, the present annual milk, vegetable, and meat production, and the estimated direct radiation doses from sources within the site for each radial sector out to distances of 50 miles from the reactor.**	

RESPONSE:

An expert was present and a CD with the LADTAP and GASPAR input/output files and the supporting calculation packages, with all associated assumptions, was made available at the time of the Audit (see HP-1).

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-6**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss the present commercial fish and invertebrate catch from waters within 50 miles downstream of the facility radwaste discharge; major catch locations, their distance from the facility radwaste discharge, and the amount caught within 50 miles of the facility that is consumed, the transit time, and dilution.**	

RESPONSE:

An expert was present and a CD with the LADTAP and GASPAR input/output files and the supporting calculation packages, as well as all assumptions used in the calculations, was made available at the time of the Audit (see HP-1).

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-7**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss whether there will be onsite out-of-plant storage of solid waste, and if so, the exposure rates.**	

RESPONSE:

HAR FSAR Subsection 11.4.5 states that there will be no on-site out-of-plant storage of radioactive material.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-8**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss how spent fuel will be stored and handled.**	

RESPONSE:

An expert was present for the Audit discussion; however, most of this type of information is contained in the DCD and the ER defers to the DCD for this information. Spent fuel handling and storage is discussed in Subsection 9.1.2 of the DCD.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-9**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss the uranium fuel cycle impacts and the comparison to Table S-3 of 10 CFR 51.51 presented in the ER.**	

RESPONSE:

An expert was present (ER Section 5.7 provides all of this information in detail).

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-10**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss the radiological environmental monitoring program.**	

RESPONSE:

An expert was present during the Audit and ER Section 6.2 provides all of this information in detail. Supplemental supporting information will be provided in the form of the *Annual Radiological Environmental Operating Report* and the *Annual Radioactive Effluent Release Report.*

STATUS: Resolved

DOCUMENTS ATTACHED:

HNP *Annual Radiological Environmental Operating Report* (amended) and the *Annual Radioactive Effluent Release Report* for the year 2004 are supplied electronically in Attachment 1 as HP-10-001_REMP_LEM_2004.pdf, HP-10-002_REOR_2004.pdf and HP-10-003_AREOR_2004_Amended.pdf.

PENDING ACTIONS:

None

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INFO NEED NUMBER: **HP-11**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE:	
Provide a knowledgeable expert to discuss waste systems, including seasonal variations of principal constituents of intake and receiving waters, and the concentration factor on a seasonal basis for evaporative cooling systems.	

RESPONSE:

An expert was present during the Audit discussion and a CD was available containing information obtained from Westinghouse regarding chemicals added to process waste streams and the plant water balance diagram including concentration factors. Information pertaining to this question is provided in Sections 2.3 and 5.5 of the ER.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-12**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **Provide a knowledgeable expert to discuss ambient concentrations in the receiving water body of the chemicals and other materials contained in the waste discharges, as well as the receiving water body water-quality criteria for domestic industrial, agricultural, and recreational uses.**	

RESPONSE:

An expert was present during the Audit discussion and a CD was available containing information obtained from Westinghouse regarding chemicals added to process waste streams and the plant water balance diagram including concentration factors. Information pertaining to this question is provided in Sections 2.3 and 5.5 of the ER.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

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INFO NEED NUMBER: **HP-13**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**

COMMENT/ISSUE:

Provide a knowledgeable expert to discuss non-radiological health issues, noise, dust control, and electric and magnetic fields.

Pages 4-98 and 4-99 state criteria to be used and expected dBA for noise levels. Criteria per Wake County Noise Ordinance Article 17 states that the limit for audible noise is 55 dBA, while discussion in the ER states that we expect intermittent noise levels to be on the average of 83 dBA. Clarify the discrepancy of why 83 dBA is acceptable while we have a 55 dBA limit.

RESPONSE:

An expert was present during the Audit discussion. Information regarding non-radiological health issues (for example, noise and dust control) is presented in ER Section 5.10 and information regarding electric and magnetic fields is presented in ER Section 3.7.

Supplemental text revising and clarifying the issue will be provided.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Supplemental text for the applicable ER section will be provided in a future revision to the ER to resolve the apparent conflict in noise levels as specified in 29 Code of Federal Regulations versus the North Carolina regulations.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **HP-A**	TOPIC AREA: **Rad/Fuel Cycle/Waste/Decommissioning**
COMMENT/ISSUE: **Provide a reference for the statements made regarding the GEIS on p. 5-179 of the ER (Decommissioning Section).**	

RESPONSE:

Existing text will be augmented with the reference requested in the comment/issue.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Provide supplemental text in a future revision of the ER with the reference stated in the comment/issue.

Accidents

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-1**	TOPIC AREA: **ACCIDENTS**
COMMENT/ISSUE:	
Design Basis Accident (DBA)-1: Provide or make available the complete PAVAN calculation package used to support the DBA analysis in the ER, including documentation on any supporting calculations or assumptions, input and output files to the PAVAN code, and the meteorological file used in the analysis. In addition provide a knowledgeable expert to discuss the DBA analysis.	

RESPONSE:

The PAVAN analysis presented in the ER and the FSAR are based on the guidance provided in RG 1.23, Revision 0. Progress Energy Calculation Package #HAG-0000-N5C-001 summarizes this calculation and was provided on July 15, 2008, for review. Also available for review was Progress Energy Calculation Package #HAG-0000-N5C-008, which provided the equivalent calculation using the guidance in RG 1.23, Revision 1, which was performed after the HAR FSAR was finalized. A spreadsheet that summarizes the results of the two calculations was also made available for review on July 15, 2008.

The DBA analysis provided in the ER will be revised to reflect calculations that were performed using the RG 1.23, Revision 1 guidance in a future amendment to the ER.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

1) Progress Energy will revise the DBA analysis in the ER to reflect calculations that were performed using the RG 1.23, Revision 1 guidance in a future amendment to the ER.
2) Calculation package has been provided in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-2**	TOPIC AREA: **ACCIDENTS**
COMMENT/ISSUE:	
Design Basis Accident (DBA)-2: Inputs to PAVAN include a Minimum Building Cross Section and Containment Height (ER Pages 2-451 and 2-452) yet the text implies PAVAN was run "without building wake" (Section 2.7.6.3). Provide a knowledgeable expert to discuss:	
(1) Whether or not credit is being taken for building wake in PAVAN.	
(2) Building dimensions used in the calculations.	

RESPONSE:

The PAVAN model was run with and without building wake for the 5 percent X/Qs and the values without building wake were used for the 50 percent values since they were determined to be limiting. The PAVAN calculation packages were provided on July 15, 2008, for review during the Audit. The building dimensions, which were identified in the calculation packages, are as follows:

Height: 43.9 meters
Area: 2730 square meters

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-3**	TOPIC AREA: **ACCIDENTS**
COMMENT/ISSUE:	
Design Basis Accident (DBA)-3: Provide the location of the DBA release point.	

RESPONSE:

As stated in ER Subsection 2.7.6.2, the HAR EAB, which is also discussed in ER Section 2.5, is defined as two overlapping circles, each centered on the reactor building of each unit. The radius of each circle is 1245 meters (4085 feet). The overall shape of the HAR EAB is defined by the outermost boundary of each unit's circle. For purposes of calculating the EAB X/Qs, the minimum distance of 1245 meters used in all sectors is based on the center point of each of the reactor buildings.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-4**	TOPIC AREA: **ACCIDENTS**
COMMENT/ISSUE:	
Severe Accident - 1: Provide or make available the complete MACCS2 calculation package used to support the severe accident analysis, including documentation on any supporting calculations or assumptions, input and output files to the MACCS2 code, and the meteorological file (2003 met data) used in the analysis. Provide a knowledgeable expert to discuss the severe accident analysis.	

RESPONSE:

A knowledgeable expert was present to discuss the severe accident analysis. A CD was made available with the requisite files. A CD was provided at the time of the Audit that contained the following:

- Supporting Excel Calculation Spreadsheets (CI, ECON, ECONSITE, EVAC, CCDF, RESULTS, SAMA, and EI).
- MACCS2 Input and Output Files.
- Technical Report.

STATUS: Resolved

DOCUMENTS ATTACHED:

MACCS2 Input and Output Files are provided on DVDs transmitted under a separate cover.

PENDING ACTIONS:

Calculation package, Technical Report, and supporting excel calculation spreadsheets (CI, ECON, ECONSITE, EVAC, CCDF, RESULTS, SAMA, and EI) have been provided in the Progress Energy-provided Reading Room.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-5**	TOPIC AREA: **ACCIDENTS**

COMMENT/ISSUE:

Severe Accident - 2: Meteorological data from 2003 were used in the MACCS2 analysis. Provide a knowledgeable expert to discuss:

(1) The consistency of these data with the 1994-1999 data discussed in Section 2.7.

(2) Average wind speeds being calculated in the 2003 dataset.

RESPONSE:

As stated in ER Section 7.2, "The meteorological data used in the MACCS2 model MET file consisted of 5 years of hourly observations of wind speed, wind direction, stability class (derived from vertical temperature gradient), and precipitation. HNP/HAR site-specific meteorology data was obtained from the existing HNP on-site meteorological monitoring station that is located east of the existing and proposed reactor sites as described in Sections 2.7 and 6.4 of the ER. The period of record for the MACCS2 MET file data is 2001 through 2005. Based on an analysis of all 5 years of meteorological data, the worst year (i.e., the year that resulted in the highest predicted off-site impacts) was determined to be 2003 and was subsequently used as the base case for additional analysis. The meteorological data used in these analyses are identical to what was used as input to the MACCS2 model for the HNP license renewal application environmental report. While the meteorological data period of record used in the MACCS2 analysis differs from the period of record used in the X/Q analysis provided in Section 2.7 of the ER (March 1, 1994 through February 28, 1999), it is noted that the MACCS2 modeling analysis and associated results are focused on 50-mi. impacts (cost and dose). At these distances, MACCS2 calculations tend to be driven by higher wind speeds and precipitation related deposition impacts, whereas X/Q impacts are typically driven by low wind speeds and at closer downwind distances." A comparative analysis of the 1994 – 1999 with the 2001 – 2005 data was not performed.

The average annual wind speed for each year of data used in the HAR MACCS2 analysis is presented in the table below.

Year	Annual Average Wind Speed	
	(m/s)	(mph)
2001	1.52	3.41
2002	1.47	3.29
2003	1.50	3.35
2004	1.44	3.22
2005	1.47	3.29

A CD was provided at the time of the Audit that contained the following:

- Supporting Excel Calculation Spreadsheets (CI, ECON, ECONSITE, EVAC, CCDF, RESULTS, SAMA, and EI).

- MACCS2 Input and Output Files.
- Technical Report.

See Acc-4.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-6**	TOPIC AREA: **ACCIDENTS**
COMMENT/ISSUE: **Severe Accident - 3: Provide accident-specific table of population dose from water ingestion, similar to Table 7.2-3 in the ER.**	

RESPONSE:

Water ingestion dose risk as calculated by MACCS2 is summarized in ER Subsection 7.2.5.4. The more detailed requested data are presented in the table below. The data of the first four columns are from ER Table 7.2-3 and represent the dose from all contributors as calculated by MACCS2. The water dose and water dose risk for each source term are from the Excel spreadsheet Calc 573070001-RESULTS contained on the CD provided at the time of the Audit.

Source Term	Freq. (/yr)	Dose (person-sv)	Dose Risk (person-sv/yr)	Water Dose (person-sv)	Water Dose Risk (person-sv/yr)	% Water Dose
ST1 - CFI	1.89E-10	6.27E+04	1.19E-05	3.37E+02	6.37E-08	0.54%
ST2 - CFE	7.47E-09	6.70E+04	5.00E-04	5.51E+02	4.12E-06	0.82%
ST3 - IC	2.21E-07	2.44E+02	5.39E-05	2.57E-01	5.68E-08	0.11%
ST4 - BP	1.05E-08	1.50E+05	1.58E-03	2.54E+03	2.67E-05	1.7%
ST5 - CI	1.33E-09	6.27E+04	8.34E-05	4.81E+02	6.40E-07	0.77%
ST6 - CFL	3.45E-13	2.94E+04	1.01E-08	4.00E+01	1.38E-11	0.14%
Total	2.41E-07	--	2.22E-03	--	3.15E-05	1.4%

A CD was provided at the time of the Audit that contained the following:

- Supporting Excel Calculation Spreadsheets (CI, ECON, ECONSITE, EVAC, CCDF, RESULTS, SAMA, and EI).
- MACCS2 Input and Output Files.
- Technical Report.

See Acc-4.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-7**	TOPIC AREA: **ACCIDENTS**
COMMENT/ISSUE: **Severe Accident - 4: Provide a knowledgeable expert to discuss how population estimates for 2060 were made and why they were used in the MACCS2 analysis (instead of population estimates that are 5 years from the time of the licensing action under consideration).**	

RESPONSE:

An expert was provided at the time of the Audit. The population estimates for the year 2060 are based on ER Tables 2.5-2 and 2.5-4 and include resident and transient population for the 50-mile radius region. ER Section 2.5 discusses the development of the population projections.

Year 2060 data were selected for the MACCS2 analysis since they represent an approximate end of life for the initial license period (i.e., 40-year license period) of the Harris Unit 2 and 3 reactors, assuming a license start date of approximately year 2020.

The MACCS2 analysis is used to support the cost benefit decision making associated with the Severe Accident Mitigation Design Alternatives (SAMDA) evaluation performed in ER Section 7.3. Use of population data associated with the approximate end of the license period tends to maximize the cost benefit of potential design changes due to the typical population growth around a plant through the years. Use of a population based on the approximate end of license period is consistent with many existing plant life extension MACCS2 analyses submitted to the NRC.

Section 4.2 of the ERIN MACCS2 Technical Report provides the following results of a sensitivity analysis using year 2010 population data. The sensitivity case demonstrates the population dependence of dose risk and cost risk, and that for the Harris Unit 2 and 3 analysis use of the year 2060 data provides analysis margin with respect to the early portions of the plant's license period.

Year	Population	Dose Risk (person-sv/year)	Cost Risk ($/year)
2060	~ 6,800,000	2.22E-03	$2,010
2010	~ 2,600,000	7.95E-04	$687
% Change	- 62%	- 64%	- 66%

A CD was provided at the time of the Audit that contained the following:

- Supporting Excel Calculation Spreadsheets (CI, ECON, ECONSITE, EVAC, CCDF, RESULTS, SAMA, and EI).
- MACCS2 Input and Output Files.
- Technical Report.

See Acc-4.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-A**	TOPIC AREA: **ACCIDENTS**
COMMENT/ISSUE:	
Design Basis Accident (DBA)-4: Provide a knowledgeable expert to speak to and provide the following: (1) The isotopic source term for each DBA listed in Table 7.1-1; (2) The highest doses at the EAB, including the identification of the two-hour period that results in the highest dose at the EAB.	

RESPONSE:

An expert was present during the session and provided the following discussion. The source term used in the analysis was obtained directly from the DCD. The analysis approach for evaluating the AP1000 DBAs is based upon the EAB and LPZ doses provided by Westinghouse and given in Chapter 15 of the AP1000 DCD. The ratio of the HAR site X/Q value to the AP1000 site X/Q value for each post-accident time period is given in ER Table 7.1-3 and was used to adjust the doses for each accident identified in the DCD. Note that the X/Q value for 1.2 to 3.2 hr. at the HAR site was not calculated. To calculate the EAB dose for the LOCA accident, the X/Q value for the period between 0 and 2 hr. was used instead, to discuss the isotopic source term for each DBA listed in ER Table 7.1-1. Adjusted doses for the time period in question for the EAB and LPZ are presented in ER Tables 7.1-4 through 7.1-12. The calculation package that supports this section, HAG-0000-N5C-007 ER 7.1 DBA, was provided at the time of the Audit.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **Acc-B**	TOPIC AREA: **ACCIDENTS**
COMMENT/ISSUE:	
Design Basis Accident (DBA)-5: Provide a knowledgeable expert to discuss if the source-term data used in the MACCS2 calculation are consistent with source-term data from the AP1000 PRA.	

RESPONSE:

An expert was present at the session. The Harris COL core inventory is based on the AP1000 DCD Table 15A-3 (for 3468MWth, 3400MWth + 2%). Co-58 and Co-60 values are not provided in DCD Table 15A-3 and are therefore based on MACCS2 Sample Problem A (scaled to 3468 MWth). The source term release fractions are based on Westinghouse-supplied ATMOS files. The Westinghouse ATMOS files use four plume segments. For the Harris COL MACCS2, the last two plume segments are combined and three plume segments are modeled.

A CD was provided at the time of the Audit that contained the following:

- Supporting Excel Calculation Spreadsheets (CI, ECON, ECONSITE, EVAC, CCDF, RESULTS, SAMA, and EI).
- MACCS2 Input and Output Files.
- Technical Report.

See Acc-4.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

None.

Transportation

PROGRESS ENERGY HAR ER POST-COLA AUDIT
JULY 14-17, 2008

INFO NEED NUMBER: **T-1**	TOPIC AREA: **Transportation**

COMMENT/ISSUE:

Provide a knowledgeable expert to speak to the following:

- **10 CFR 51.52(b) states that license applications for reactors that do not meet the conditions specified in 10 CFR 51.52(a) must provide a "full description and detailed analysis of the environmental effects of transportation of fuel and waste to and from the reactor." The Applicant's Environmental Report (ER) indicates that the reactor does not meet the 10 CFR 51.52(a) conditions, that is, it exceeds the fuel enrichment and fuel exposure conditions. In the ER, the Applicant stated that, in NUREG-1555, the NRC generically considered higher fuel enrichment and exposure conditions than those specified in 10 CFR 51.52(a) and concluded that the environmental impacts of spent nuclear transport are bounded by the impacts in 10 CFR 51 .52, Table S-4. However, as stated in the three previous Early Site Permit EISs, these statements apply to current generation LWRs and do not address advanced reactors. This position is made clear in the draft revisions to NUREG-1555 (see http://adamswebsearch2.nrc.gov/idmws/doccontent.dll?library=PU_ADAMS^PBNTAD01&ID=072130133, which states that the analyses that support these conclusions (see NUREG-1437 and NUREG-1437 Addendum 1) cannot serve as the initial licensing basis for new reactors.**
- **Applicant plans to provide, or a description of, a full description and detailed analysis of the environmental effects of transportation of fuel and waste to and from the Shearon-Harris Units 2 and 3 sites.**

RESPONSE:

An expert was available during the discussion and a CD was provided that contains the supporting calculation package used as the basis for Sections 3.8 and 7.4 of the ER for HAR 2 and 3, as well as the alternative sites. The RADTRAN and TRAGIS input and output files are included for review, as well as all assumptions used in the analysis that are contained in HAG-GW-GLC-001. See pending action below.

STATUS: Resolved

DOCUMENTS ATTACHED:

None.

PENDING ACTIONS:

Calculation package used to support the transportation of waste and fuel to and from the reactor have been provided in the Progress Energy-provided Reading Room.

Enclosure 2 to NPD-NRC-2008-036

Listing of Files Included on DVD Provided as Attachment 1

0_Data_Attachments_Index_09_08_2008.pdf
AQ-3-002_ESC_Manual(1of8).pdf
AQ-3-002_ESC_Manual(2of8).pdf
AQ-3-002_ESC_Manual(3of8).pdf
AQ-3-002_ESC_Manual(4of8).pdf
AQ-3-002_ESC_Manual(5of8).pdf
AQ-3-002_ESC_Manual(6of8).pdf
AQ-3-002_ESC_Manual(7of8).pdf
AQ-3-002_ESC_Manual(8of8).pdf
AQ-3-003_BMP_Manual.pdf
AQ-3-004_NWP12_Conditions.pdf
AQ-3-005_MCFR_Watershed_Plan.pdf
AQ-4-001_Jones_2000.pdf
AQ-7-002_1983_Monitoring_Report_(1of3).pdf
AQ-7-002_1983_Monitoring_Report_(2of3).pdf
AQ-7-002_1983_Monitoring_Report_(3of3).pdf
AQ-7-002_1984_Monitoring_Report_(1of2).pdf
AQ-7-002_1984_Monitoring_Report_(2of2).pdf
AQ-7-002_1985_Monitoring_Report.pdf
AQ-7-002_1986_Monitoring_Report.pdf
AQ-7-002_1987-88_Monitoring_Report.pdf
AQ-7-002_1989_Monitoring_Report.pdf
AQ-7-002_1990_Monitoring_Report.pdf
AQ-7-002_1991_Monitoring_Report.pdf
AQ-7-002_1992_Monitoring_Report.pdf
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AQ-7-002_2000_Monitoring_Report.pdf
AQ-7-002_2001_Monitoring_Report.pdf
AQ-7-002_2002_Monitoring_Report.pdf
AQ-7-002_2003_Monitoring_Report.pdf
AQ-7-003_2008_Mussel_Sampling.pdf
AQ-7-004_2008_Invertebrate_Sampling.pdf
AQ-7-007_CFR_Fish_Sampling.pdf
AQ-7-006_HNP1_316b.pdf
G-B-001_HNP_NPDES_Permit.pdf
G-B-002_HNP_NPDES_Permit_Notification_for_Instream_ Monitoring.pdf
G-B-003_HNP_Impoundment_and_Maintenance_of_Impounded_Water_Permit.pdf
G-B-004_HNP_USACE_Reservoir_Construction_Permit.pdf
G-B-005_HNP_Synthetic_Minor_Air_Permit.pdf
G-B-006_HNP_Oil_Terminal_Registration.pdf

G-C-001_PEC_Presentations_on_07.14.08.pdf
G-C-002_PEC_Alt_Sites_Presentation_on_07.15.08.pdf
G-C-003_PEC_TIA_Presentation_07.15.08.pdf
HAR Final Report 07.09.08 with Redaction.pdf
HP-10-002_REOR_2004.pdf,_
HP-10-003_AREOR_2004_Amended.pdf
HP-10-001_REMP_LEM_2004.pdf
HP-10-002_REOR_2004.pdf
HP-10-003_AREOR_2004_Amended.pdf
LU-B-001_Cooling_Tower_Construction.pdf
LU-B-001_HNP_Aerial_Looking_North_January_1986.pdf
LU-B-001_HNP_Aerial_Looking_South_January_1986.pdf
LU-B-001_HNP_Aerial_Looking_South_September_1979.pdf
LU-B-001_HNP_Aerial_with_Main_Reservoir_Clearing_1979.pdf
LU-B-001_HNP_Construction_Aerial.pdf
LU-B-001_HNP_Construction_Aerial_Lkg_West.pdf
LU-B-001_HNP_Construction_Aerial_Lkg_WNW.pdf
LU-B-001_Main_Dam_and_Spillway_Construction_Lkg_SE.pdf
LU-B-001_Main_Dam_and_Spillway_Construction_Lkg_SW.pdf
LU-B-001_Main_Dam_Construction_January_1981.pdf
LU-B-001_Main_Dam_Construction_Lkg_North_May_1981.pdf
LU-B-001_Main_Dam_Diversion_Canal_Lkg_North_1978.pdf
LU-B-001_Main_Dam_Reservoir_Filling_April_1981.pdf
LU-B-001_Main_Dam_Spillway_Construction_May_1981.pdf
LU-B-001_Main_Reservoir_Clearing.pdf
LU-B-001_Main_Reservoir_Clearing_August_1980.pdf
LU-B-001_Main_Reservoir_Clearing_June_1979.pdf
LU-B-001_Main_Reservoir_Clearing_Lkg_NW_September_1979.pdf
LU-B-001_Main_Reservoir_Clearing_October_1978.pdf
LU-B-001_Main_Reservoir_January_1985.pdf
LU-B-001_Main_Reservoir_Nearing_220_Elevation_March_1982.pdf
LU-B-001_Power_Block_Construction_March_1980.pdf
LU-B-001_Power_Block_Construction_September_1979.pdf
LU-B-001_Power_Block_Excavation_Looking_SE.pdf
LU-B-001_Power_Block_Excavation_Looking_South.pdf
LU-B-001_West_Aux_Dam_Construction_Lkg_East_June_1979.pdf
LU-B-001_West_Aux_Dam_Looking_East_January_1983.pdf
LU-B-001_West_Aux_Reservoir_Looking_East.pdf
LU-B-001_West_Aux_Reservoir_March_1982.pdf
TE-C-001_Bird_Collisions.pdf
TE-D-001_Pesticides.pdf
TE-D-002_Env_Policy.pdf
TE-D-003_Federal_Depredation_Permit.pdf
TE-D-003_NC_Migratory_Bird_Permit.pdf
TE-D-004_Land_Disturbing.pdf
TE-D-005_Erosion_Control.pdf
TE-D-006_Migratory_Bird.pdf
TE-D-007_Veg_Maintenance_Plan.pdf
TE-D-008_TandE_Species.pdf
TE-E-001_Holly_Springs_SCI.pdf

Enclosure 3 to NPD-NRC-2008-036

Pre-Flight Report for Files Included on DVD Disc Provided as Attachment 1

This document serves as a pre-flight report for the responses and attachments submitted to the NRC as a result of the Harris COLA environmental audit. The following files do not pass pre-flight, but text is word searchable and clarity/legibility is of high quality. Most of the files that do not pass pre-flight, either have photos embedded into the documents or have been rescanned and had OCR run.

No.	File Name	Preflight Status	Reason
1	AQ-3-002_ESC_Manual(2of8).pdf	Error/Failed	< 300 ppi - (due to embedded photos)
2	AQ-3-002_ESC_Manual(3of8).pdf	Error/Failed	< 300 ppi - (due to embedded photos)
3	AQ-3-002_ESC_Manual(4of8).pdf	Error/Failed	< 300 ppi - (due to embedded photos)
4	AQ-3-002_ESC_Manual(5of8).pdf	Error/Failed	< 300 ppi - (due to embedded photos)
5	AQ-3-002_ESC_Manual(6of8).pdf	Error/Failed	< 300 ppi - (due to embedded photos)
6	AQ-3-002_ESC_Manual(7of8).pdf	Error/Failed	< 300 ppi - (due to embedded photos and images)
7	AQ-3-002_ESC_Manual(8of8).pdf	Error/Failed	< 300 ppi - (due to embedded images)
8	AQ-3-003_BMP_Manual.pdf	Error/Failed	< 300 ppi, fonts not embedded - (due to embedded images and OCR process)
9	AQ-3-004_NWP12_Conditions.pdf	Error/Failed	< 300 ppi – (due to one embedded image)
10	AQ-3-005_MCFR_Watershed_Plan.pdf	Error/Failed	< 300 ppi - (due to embedded photos and images)
11	AQ-4-001_Jones_2000.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
12	AQ-7-002_1983_Monitoring_Report_(1of3).pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
13	AQ-7-002_1983_Monitoring_Report_(2of3).pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)

No.	File Name	Preflight Status	Reason
14	AQ-7-002_1983_Monitoring_Report_(3of3).pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
15	AQ-7-002_1984_Monitoring_Report_(1of2).pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
16	AQ-7-002_1984_Monitoring_Report_(2of2).pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
17	AQ-7-002_1985_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
18	AQ-7-002_1986_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
19	AQ-7-002_1987-1988_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
20	AQ-7-002_1989_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
21	AQ-7-002_1990_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
22	AQ-7-002_1991_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
23	AQ-7-002_1992_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
24	AQ-7-002_1993_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
25	AQ-7-002_1994_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)

No.	File Name	Preflight Status	Reason
26	AQ-7-002_1995_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
27	AQ-7-002_1996_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
28	AQ-7-002_1997_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
29	AQ-7-002_1998_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
30	AQ-7-002_1999_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
31	AQ-7-002_2000_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
32	AQ-7-002_2001_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
33	AQ-7-002_2002_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
34	AQ-7-002_2003_Monitoring_Report.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
35	AQ-7-003_2008_Mussel_Sampling.pdf	Error/Failed	< 300 ppi – (due to company logos)
36	AQ-7-004_2008_Invertebrate_ Sampling.pdf	Error/Failed	< 300 ppi – (due to company logos and embedded images)
37	AQ-7-007_CFR_Fish_Sampling.pdf	Error/Failed	< 300 ppi - (due to embedded photos and images)
38	AQ-7-007_HNPI_316b.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)

No.	File Name	Preflight Status	Reason
39	G-B-001_HNP_NPDES_Permit.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
40	G-B-002_HNP_NPDES_ Permit_Notification_for_Instream_ Monitoring.pdf	Error/Failed	Fonts not embedded – (due to re-scanning and OCR process)
41	G-B-003_HNP_Impoundment_and_ Maintenance_of_Impounded_Water_ Permit.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
42	G-B-004_HNP_USACE_Reservoir_ Construction_Permit.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
43	G-B-005_HNP_Snythetic_Minor_Air_ Permit.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
44	G-B-006_HNP_Oil_Terminal_ Registration.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
45	G-C-001_PEC_Presentations_on_ 07.14.08.pdf	Error/Failed	< 300 ppi - (due to embedded photos and images)
46	G-C-002_PEC_Alt_Sites_Presentation_ on_07.15.08.pdf	Error/Failed	< 300 ppi – (due to embedded images)
47	G-C-003_PEC_TIA_Presentation_ 07.15.08.pdf	Error/Failed	< 300 ppi – (due to embedded images)
48	HAR Final Report 07.09.08 with Redaction.pdf	Error/Failed	< 300 ppi – (due to company logos, embedded photos and images)
49	HP-10-001_REMP_LEM_2004.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning and OCR process)
50	HP-10-002_REOR_2004.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning, OCR process, and embedded images)
51	HP-10-003_AREOR_2004_Amended.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning, OCR process, and embedded images)
52	LU-B-001_ Cooling_Tower_Construction.pdf	Error/Failed	< 300 ppi – (photo)

No.	File Name	Preflight Status	Reason
53	LU-B-001_HNP_Aerial_Looking_North_ January_1986.pdf	Error/Failed	< 300 ppi – (photo)
54	LU-B-001_HNP_Aerial_Looking_South_ January_1986.pdf	Error/Failed	< 300 ppi – (photo)
55	LU-B-001_HNP_Aerial_Looking_South_ September_1979.pdf	Error/Failed	< 300 ppi – (photo)
56	LU-B-001_HNP_Aerial_with_Main_ Reservoir_Clearing_1979.pdf	Error/Failed	< 300 ppi – (photo)
57	LU-B-001_HNP_Construction_Aerial.pdf	Error/Failed	< 300 ppi – (photo)
58	LU-B-001_HNP_Construction_Aerial_ Lkg_West.pdf	Error/Failed	< 300 ppi – (photo)
59	LU-B-001_HNP_Construction_Aerial_ Lkg_WNW.pdf	Error/Failed	< 300 ppi – (photo)
60	LU-B-001_Main_Dam_and_Spillway_ Construction_Lkg_SE.pdf	Error/Failed	< 300 ppi – (photo)
61	LU-B-001_Main_Dam_and_Spillway_ Construction_Lkg_SW.pdf	Error/Failed	< 300 ppi – (photo)
62	LU-B-001_Main_Dam_Construction_ January_1981.pdf	Error/Failed	< 300 ppi – (photo)
63	LU-B-001_Main_Dam_Construction_ Lkg_North_May_1981.pdf	Error/Failed	< 300 ppi – (photo)
64	LU-B-001_Main_Dam_Diversion_Canal_ Lkg_North_1978.pdf	Error/Failed	< 300 ppi – (photo)
65	LU-B-001_Main_Dam_Reservoir_Filling_ April_1981.pdf	Error/Failed	< 300 ppi – (photo)
66	LU-B-001_Main_Dam_Spillway_ Construction_May_1981.pdf	Error/Failed	< 300 ppi – (photo)
67	LU-B-001_Main_Reservoir_Clearing.pdf	Error/Failed	< 300 ppi – (photo)
68	LU-B-001_Main_Reservoir_Clearing_ August_1980.pdf	Error/Failed	< 300 ppi – (photo)
69	LU-B-001_Main_Reservoir_Clearing_ June_1979.pdf	Error/Failed	< 300 ppi – (photo)
70	LU-B-001_Main_Reservoir_Clearing_ Lkg_NW_September_1979.pdf	Error/Failed	< 300 ppi – (photo)
71	LU-B-001_Main_Reservoir_Clearing_ October_1978.pdf	Error/Failed	< 300 ppi – (photo)
72	LU-B-001_Main_Reservoir_ January_1985.pdf	Error/Failed	< 300 ppi – (photo)
73	LU-B-001_Main_Reservoir_ Nearing_220_Elevation_March_1982.pdf	Error/Failed	< 300 ppi – (photo)
74	LU-B-001_Power_Block_Construction_ March_1980.pdf	Error/Failed	< 300 ppi – (photo)
75	LU-B-001_Power_Block_Construction_ September_1979.pdf	Error/Failed	< 300 ppi – (photo)
76	LU-B-001_Power_Block_Excavation_ Looking_SE.pdf	Error/Failed	< 300 ppi – (photo)
77	LU-B-001_Power_Block_Excavation_ Looking_South.pdf	Error/Failed	< 300 ppi – (photo)

No.	File Name	Preflight Status	Reason
78	LU-B-001_West_Aux_Dam_ Construction_Lkg_East_June_1979.pdf	Error/Failed	< 300 ppi – (photo)
79	LU-B-001_West_Aux_Dam_Looking_ East_January_1983.pdf	Error/Failed	< 300 ppi – (photo)
80	LU-B-001_West_Aux_Reservoir_ Looking_East.pdf	Error/Failed	< 300 ppi – (photo)
81	LU-B-001_West_Aux_Reservoir_ March_1982.pdf	Error/Failed	< 300 ppi – (photo)
82	TE-C-001_Bird_Collosions.pdf	Error/Failed	< 300 ppi, fonts not embedded – (due to re-scanning, OCR process, and embedded images)
83	TE-D-003_Federal_Depredation_ Permit.pdf	Error/Failed	< 300 ppi, embedded fonts – (due to OCR process, signature and logo)
84	TE-D-003_NCMigratoryBirdPermit.pdf	Error/Failed	< 300 ppi, embedded fonts – (OCR process and embedded images)
85	TE-D-005_Erosion_Control.pdf	Error/Failed	< 300 ppi, embedded fonts – (due to OCR process, signatures, and blank page)
86	TE-D-007_Veg_Maintenance_Plan.pdf	Error/Failed	< 300 ppi – (due to four embedded images)
87	TE-E-001_Holly_Springs_SCI.pdf	Error/Failed	< 300 ppi – (company logos and embedded images)