

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of )  
 )  
DUKE ENERGY CAROLINAS, LLC ) Docket Nos. 52-018-COL  
 ) 52-019-COL  
(William States Lee III Nuclear Station, )  
Units 1 and 2 )

NRC STAFF RESPONSES TO COMMISSION PRE-HEARING QUESTIONS

Pursuant to the Commission's "Order (Transmitting Pre-Hearing Questions)" of September 1, 2016, the staff of the U.S. Nuclear Regulatory Commission hereby responds to the questions posed in that Order. These questions generally pertain to subjects discussed in the staff's final safety evaluation report (SER)<sup>1</sup> or final environmental impact statement (FEIS).<sup>2</sup>

The Commission's Order directed some questions only to the staff and some to both the staff and the applicant. The attachment to this filing presents the staff's responses.

**/Signed (electronically) by/**

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Dated at Rockville, Maryland  
this 14th day of September, 2016

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<sup>1</sup> Final Safety Evaluation Report for Combined Licenses for William States Lee III Nuclear Station, Units 1 and 2 (May 31, 2016).

<sup>2</sup> NUREG-2111, Final Environmental Impact Statement for Combined Licenses (COLs) for William States Lee III Nuclear Station, Units 1 and 2 (Dec. 20, 2013).

# **Attachment**

## **Staff Responses to Commission Pre-Hearing Questions**

## NRC STAFF RESPONSES TO COMMISSION PRE-HEARING QUESTIONS

1. **The analysis and evaluation of downstream dam failure (Final Safety Evaluation Report (FSER) at 2-139) is focused on impacts to safety-related equipment. Please describe the impacts to other structures, systems, and components (SSCs) that are important to safety but not specifically safety-related. Would downstream dam failure impact other systems that could supplement safety-related equipment, such as regulatory treatment of non-safety systems (RTNSS) structures, systems and components? If so, how is the loss of availability of this equipment due to downstream dam failure accounted for in the application, analysis by DEC, and the Staff's evaluation?**

**Staff Response:** Duke Energy Carolinas, LLC (DEC) selected the AP1000 certified plant design for the William States Lee Nuclear Station (WLS) Units 1 and 2 combined licenses application (COLA). For the WLS site, downstream dam failures do not impact SSCs that are considered important to safety or to supplement safety-related equipment. The passive containment cooling system (PCS) functions as the safety-related ultimate heat sink and does not rely on an external safety-related water supply. The passive containment cooling water storage tank, incorporated in the shield building structure above the containment vessel, provides the PCS with a 3-day supply of water following a design basis event. Post 72 hours, continued passive cooling will be provided using nonsafety-related ancillary equipment, by accessing water stored in the onsite passive containment cooling ancillary water storage tank (PCCAWST) which has sufficient water inventory to last until 7 days past the initial event. Neither the ancillary equipment nor the PCCAWST is affected by downstream dam failures.

Dams located downstream of the WLS site are the Lockhart Reservoir Dam and the Ninety-Nine Islands Reservoir Dam (FSER at 2-104). Both of these dams are run-of-river structures and not used for flood control (FSER at 2-104). The Lockhart Reservoir Dam is sufficiently far downstream that its failure is unlikely to affect water-surface elevation near the WLS site. A potential failure of the Ninety-Nine Islands Reservoir Dam could result in lowering of the water-surface elevation in the Broad River near the proposed circulating water system intake structure. Nevertheless, the proposed reactors at the WLS site would not depend on any external source of water supply for safe shutdown (FSER at 2-167). The Staff considered potential failures of dams downstream of the WLS site and concluded that these postulated events would not affect the safety of the proposed WLS units.

2. **The Staff concluded “that the quality and completeness of the AP1000 [probabilistic risk assessment (PRA)] are adequate and satisfy the regulatory requirements” (FSER at 19-24). Please describe what measures are in place to ensure that any changes in the as-built configuration of the William States Lee III Nuclear Station (WLS) Units 1 and 2 will be reflected in the final probabilistic risk assessments for events such as internal and external fires, floods and nearby facility accidents.**

**Staff Response:** The Staff has proposed License Condition (19-2) for WLS, consistent with the license condition included in other AP1000 COLs, to evaluate the plant-specific PRA-based insight differences and modify the plant-specific PRA model as necessary to account for the plant-specific design and any design changes or departures from the design certified in Revision 19 of the AP1000 Design Control Document. When applying for a COL referencing AP1000, the applicant's plant-specific PRA is essentially the same as the generic PRA for the AP1000

certified design. For WLS, the generic PRA bounds the internal and external hazards and is a sufficient basis for issuing a license.

Furthermore, Title 10 of the *Code of Federal Regulations* (CFR), Section 50.71(h)(1) states:

*No later than the scheduled date for initial loading of fuel, each holder of a combined license under subpart C of 10 CFR part 52 shall develop a level 1 and a level 2 probabilistic risk assessment (PRA). The PRA must cover those initiating events and modes for which **NRC-endorsed consensus standards on PRA exist** one year prior to the scheduled date for initial loading of fuel. [Emphasis added.]*

The PRA Standard (ASME/ANS RA-Sa-2009), as endorsed by the NRC in Revision 2 of Regulatory Guide 1.200, provides specific guidance on how and when to update and upgrade the PRA for both internal and external hazards. The PRA Standard includes guidance for internal and external fires, floods, and nearby facility accidents.

- 3. NSIR/DPR-ISG-01, “Interim Staff Guidance – Emergency Planning for Nuclear Power Plants” (ML113010523) (ISG), “supplements and/or replaces previous guidance given in various documents and generic communications, including several NUREGs, bulletins, information notices (INs), and regulatory issue summaries (RISs), as indicated in the sections that discuss each of the guidance topics” (ISG at 1). Although the ISG is referenced throughout section 13.3 of the FSER, the conclusion statements for some subsections do not document the Staff’s review using the ISG. For example, the Staff’s interpretation of Planning Standard 10 C.F.R. § 50.47(b)(14), as reflected in NUREG-0654 section II.N, was revised extensively in the ISG (ISG at 27-28). Section 13.3.4.14 of the FSER, however, does not mention the ISG, and in the conclusion for this subsection, the Staff stated “that the information provided in the [combined license application] is consistent with the guidelines in NUREG-0654, Planning Standard N. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, Section IV.F, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations” (FSER at 13-93). Please explain how NSIR/DPR-ISG-01 was used with respect to the Staff’s review for this planning standard.**

**Staff Response:** By letters dated February 18, 2013, and May 9, 2013 (ADAMS Accession Nos. ML13050A650 and ML13131A150), DEC submitted its proposed changes to the WLS Emergency Plan (Revision 5) to address its compliance with the final rule on “Enhancements to Emergency Preparedness Regulations,” effective December 23, 2011. Subsequently, in a letter dated January 30, 2014 (ADAMS Accession No. ML14030A187), the Staff issued Request for Additional Information (RAI) 7398 requesting clarifications on how the Emergency Plan has addressed the new guidance in NSIR/DPR-ISG-01. In the response to RAI 7398, DEC sent letters dated February 28, 2014, and June 26, 2014 (ADAMS Accession Nos. ML14064A286 and ML14182A440), providing the requested clarifications to the implementation of the guidance in NSIR/DPR-ISG-01. The Staff reviewed the responses to RAI 7398 using NSIR/DPR-ISG-01 and found them to be acceptable, as documented in FSER Section 13.3.4.14, “Exercises and Drills,” on page 13-93. As explained for this example, the staff did use NSIR/DPR-ISG-01

throughout the review process. However, it was an administrative omission not to include the reference to NSIR/DPR-ISG-01 in the conclusion statements in Section 13.3 of the FSER, including Section 13.3.4.14.

4. **DEC requested approval to have the WLS Emergency Operations Facility (EOF) located in the Charlotte General Office, where the current EOF for DEC's McGuire, Catawba, and Oconee Nuclear Stations resides. NRC approval is required in accordance with 10 C.F.R. Part 50, Appendix E, IV.E.8.b, because the location of the Charlotte EOF is greater than 25 miles from the Lee site. DEC proposed what is now License Condition 13-7 to demonstrate the integrated capability and functionality of the EOF.**
  - a. **Did the Staff consider the possibility that additional sites could be impacted by a common event?**
  - b. **Please explain whether Emergency Response Organization (ERO) training would be required to address events at multiple facilities with possibly different reactor designs.**
  - c. **What changes, if any, will be required to the EOF to meet any AP1000-specific requirements for the Lee Nuclear Station?**

**Staff Response:**

- a. The Staff considered the possibility that a regional event could affect more than one site. In the supplemental response to RAI 7398 dated June 26, 2014 (ADAMS Accession No. ML14182A440), DEC stated that it would revise Emergency Plan Sections II.H.2 and II.N.2, and include License Condition 13-7 to address the changes in the Emergency Planning regulations, in Section IV.E.c(3) of Appendix E to 10 CFR Part 50, that were published in the *Federal Register* (FR) on November 23, 2011 (76 FR 72560). License Condition 13-7, which can be found in Section 13.3.5, "Post Combined License Activities," on page 13-123 of the FSER, states:

*Prior to fuel load, DEC will demonstrate the integrated capability and functionality of the EOF for activation and operation of the facility to respond to emergency events at WLS and one additional nuclear site that is supported by the EOF. Integrated communication and data capability and functionality will include the Technical Support Centers for WLS and one additional nuclear site, and other Federal, State, and local coordination centers as appropriate.*

DEC updated the Emergency Plan to Revision 7 in November 2015 (ADAMS Accession No. ML15336A127), and Section II.H.2 of the Emergency Plan, page II-40, now states:

*Duke Energy maintains the capability for the EOF to simultaneously acquire, display and evaluate radiological, meteorological, and plant system data pertinent to offsite protective measures for each of the facilities that rely on the EOF for offsite emergency response support.*

In addition, Section II.N.2 of the Emergency Plan, page II-66, now states:

*In at least one drill or exercise during each eight-year exercise cycle, the EOF staff will demonstrate their ability to perform consolidated EOF functions.*

The Staff documented its findings in FSER Sections 13.3.4.8 and 13.3.4.14, where it found the responses to RAI 7398 and the changes to the Emergency Plan acceptable because DEC described provisions for conducting periodic exercises and drills to evaluate multiple events that could occur as a result of a common cause. The Staff concluded that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, "Planning Standards H and N," NUREG-0696, NUREG-0737, and NSIR/DPR-ISG-01. Therefore, the Staff found the information acceptable and that it met the relevant requirements of 10 CFR 50.47(b)(8) and (14), and 10 CFR Part 50, Appendix E, Sections IV.E, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

- b. Section II.O.4.i of Revision 7 of the Emergency Plan, page II-72, describes the required training for the corporate office support personnel, which includes emergency condition assessment and classification, notification systems and procedures, and organizational interfaces. As indicated above in response to Question 4.a., the capabilities for which the licensee is required to be prepared include responding to an event affecting more than one site. The development of the training program occurs after the license is issued and before the plant is operational. Staff will have the opportunity to review the training once it is developed and will be able to determine its effectiveness during the drills that exercise the consolidated EOF functions. See response to Question 5.b. below for additional information on ERO training.
  - c. There are no required changes to be made to the EOF based on the AP1000 design. Revision 7 of the Emergency Plan, including Appendix 9, "Justification for a Common EOF," provides a general description of the EOF, and its capabilities are subject to the same guidance irrespective of the reactor technologies employed at a nuclear power plant site.
5. **DEC filed a request to have the WLS EOF located in the DEC Charlotte General Office, which is greater than 25 miles from the affected reactor sites. The Staff notes in the FSER that DEC corporate staff provides management and technical support to the ERO and EOF. Currently the EOF is used for DEC's McGuire Nuclear Station, Catawba Nuclear Station, and Oconee Nuclear Station, and DEC and Duke Energy Progress have submitted a license amendment request to the NRC seeking approval to integrate four additional reactors. The reactor technologies for the existing and proposed nuclear plants for the DEC EOF are well known and understood by a large number of DEC corporate and site staff because those reactor technologies have been in operation for many years.**
- a. **Will the WLS EOF be staffed by ERO members from both the corporate and site staff?**
  - b. **Will the corporate EOF staff supporting WLS require additional technical knowledge or training on the AP1000-specific reactor design? If so, what, if**

**any additional reactor technology training is required for corporate EOF support staff?**

**Staff Response:**

- a. Yes. Appendix 9 to Revision 7 of the Emergency Plan on page A9-4 states:

*The Lee Nuclear Station EOF is staffed with experienced EOF staff from the Duke Power Nuclear General Office in Charlotte, and personnel from Catawba Nuclear Station and McGuire Nuclear Station.*

- b. Revision 7 of the Emergency Plan does not specifically state what AP1000 training will be required for the EOF staff. However, DEC states in Emergency Plan Section II.O.4 that:

*Duke Energy conducts a program for instructing and qualifying all personnel who implement this Plan. Each individual completes the required training prior to assignment to a position in the emergency response organization. The training program establishes the scope, nature, and frequency of the required training and qualification measures. The training program includes practical drills, consistent with Section II.N of this Plan, during which each individual demonstrates the ability to perform the assigned emergency response function. The instructor/evaluator immediately corrects any erroneous action noted during these practical drills and, if appropriate, demonstrates proper performance consistent with approved procedures and accepted standards.*

*Duke Energy implements a program to provide position-specific emergency response training for designated members of the emergency response organization. The content of the training program is appropriate for the duties and responsibilities of the assigned position.*

The Staff evaluated the content in Section II.O.4 of Revision 7 of the Emergency Plan and documented its results in FSER Section 13.3.4.15, "Radiological Emergency Training," on page 13-95. The Staff concluded that the information contained in the Emergency Plan was consistent with the guidance in NUREG-0654 and meets the requirements of 10 CFR 50.47(b)(15) and 10 CFR Part 50, Appendix E, Section IV.F.1. Furthermore, ITAAC 8.1 requires DEC to conduct a full-scale exercise to evaluate the emergency response capabilities. The ITAAC includes accident and radiological assessment and control objectives, which will demonstrate the adequacy of training, including design-specific training for the AP1000.

- 6. Please explain the basis for the determination that the Unit Supervisor would be qualified and available during an accident to act as the Emergency Coordinator when the Shift Manager is unable to fill that role (FSER at 13-29). How would the role and duties of the Unit Supervisor in the control room be fulfilled during an accident if he/she is an Emergency Coordinator?**

**Staff Response:** The Staff evaluated the Emergency Coordinator line of succession as described by DEC in Section II.B.3 of Revision 7 of the Emergency Plan, page II-13. For WLS,

the Operations Shift Manager is the senior member of the on-shift crew and holds an NRC Senior Reactor Operator (SRO) license. The Unit Supervisor is the NRC-Licensed SRO responsible for the operations of the assigned reactor plant or unit. The Staff determined that the Unit Supervisor would be available to assume the responsibilities from an Operations Shift Manager should he or she be suddenly incapacitated and unable to continue his or her responsibilities while acting as the Emergency Coordinator, which is consistent with NRC guidance. The accredited training programs are developed post licensing and will be subject to NRC inspection and operator licensing.

10 CFR Part 50, Appendix E, Section IV.A.9 requires the performance of a detailed analysis demonstrating that on-shift personnel can provide for timely performance of their emergency plan responsibilities. NEI 10-05, as endorsed by NSIR/DPR-ISG-01, Section IV.C, "Assessment of On-Shift Staffing Analysis," establishes a standard methodology for a licensee to perform the staffing analysis required by 10 CFR Part 50, Appendix E, Section IV.A.9. NEI 10-05, Section 3.1, "Assumptions and Limitations," specifically states that although the temporary absence of a position may be allowed by Technical Specification, the analysis should be performed assuming that all required on-shift positions are filled. Therefore, for purposes of the on-shift staffing analysis, licensees do not have to address the unavailability of one member of the on-shift operating crew.

With the Operations Shift Manager unavailable, the Unit Supervisor as the senior license holder would be responsible for both safe plant operation and emergency plan implementation. Under this scenario, the Emergency Plan would be implemented, but specific actions could be affected based on the complexity of the emergency. Since the time to augment shift staffing or for the activation of the TSC and EOF is expected to be 75 minutes or less, the Staff determined that it is permissible for the Unit Supervisor to carry the roles and duties of both the Unit Supervisor and Emergency Coordinator during this interim period until relieved.

- 7. Based on DEC's response to RAI 25, Question 13.03-55(A), the FSER states that public information (coordination and dissemination) is handled by the EOF (FSER at 13-30). The Emergency Plan, Section G (Emergency Plan at II-36), however, indicates that this role is the responsibility of the Joint Information Center (JIC). Please clarify whether the EOF or the JIC would handle the coordination and dissemination of public information during an emergency.**

**Staff Response:** The JIC will be responsible for the dissemination of the public information during an emergency. DEC's initial response to the RAI 25, Question 13.3-55(A) stated that the EOF was responsible for public information coordination and dissemination. DEC subsequently revised the Emergency Plan. In Revision 7 of the Emergency Plan Section II.G.3.a, DEC states that:

*... the Joint Information Center, located at the Duke Energy Center in Charlotte, North Carolina, will be responsible for the dissemination of public information during an event.*

In Section II.G.3.b, DEC states:

*a larger media center, also located in the Duke Energy Center (near the EOF) can be activated as needed to support additional media.*

In consideration of the information in Section 13.3.4.2, and as further discussed in Section 13.3.4.7 of the FSER, the staff reached its conclusion that the Emergency Plan is clear that the dissemination of public information is the responsibility of the JIC during an emergency.

8. **Based on the Emergency Plan and DEC’s responses to RAI 25, Questions 13.3-55(M), (P), (P.2), and (Q), the Staff found that there will be “on-shift capability to perform dose assessment in the determination of emergency classification, onsite protective action, and offsite protective action recommendations” (FSER at 13-30), although it does not appear that there is a designated individual to perform dose assessment functions. Given that Section E.IV.A.4 of 10 C.F.R. Part 50, Appendix E requires “Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making offsite dose projections,” please explain the basis for the Staff’s finding.**

**Staff Response:** As a result of the Staff’s initial review of on-shift dose assessment capability, the Staff asked RAI 25 (ADAMS Accession No. ML082690889). In August 2014, the Staff determined that the original responses to RAI 25, Questions 13.3-55(M), (P), (P.2), and (Q) (ADAMS Accession No. ML12166A288) were insufficient and that DEC had not revised the emergency plan to reflect the response given. The Staff held a public meeting with DEC in November 2014, at which DEC committed to provide a supplement to its earlier responses. In a January 8, 2015, letter (ADAMS Accession No. ML15014A034), DEC supplemented its earlier responses by indicating that it would add a note in Table II-2 to address the insufficiency. DEC provided Revision 7 of the Emergency Plan in November 2015, which included the relevant note on page II-21 at the bottom of Table II-2:

*3. This coverage is initially provided by personnel assigned other functions and is assumed by the additional personnel when they arrive on-site.*

*A Radiation Protection (RP) qualified individual assigned other duties is required to be on-shift with the qualification to perform off-site dose projections until relieved by staff augmentation of the dose assessor position.*

On page 13-30 of the FSER, the Staff documented its evaluation and its conclusion that the revision to the Emergency Plan contains a description of the on-shift capability to perform dose assessment.

9. **Please explain whether all relevant Emergency Action Levels (EALs) are in place to support the installed spent fuel pool instrumentation required under Commission Order EA-12-051 and discussed in FSER Chapter 20. Specifically, how will the Staff and DEC assure that EALS addressing the spent fuel pool (AA2.3, AS2, and AG2) specified in NEI 99-01, Revision 6, are implemented?**

**Staff Response:** Commission Order EA-12-051 required the installation of reliable spent fuel pool instrumentation. However, it did not specify EALs to be in place to support the installed spent fuel pool instrumentation.

NEI 99-01, Revision 6, “Development of Emergency Action Levels for Non-Passive Reactors,” (ADAMS Accession No. ML102326A805) is not applicable to the AP1000 design (because it is a passive design), and DEC has not committed to implementing any EALs from NEI 99-01, Revision 6.

The Staff reviewed the contents of Section II.D of Revision 7 of the Emergency Plan, page II-24, which included License Condition 13-3, which requires DEC to fully develop a set of plant-specific EALs for the WLS site in accordance with NEI 07-01, Revision 0, "Methodology for Development of Emergency Action Levels – Advanced Passive Light Water Reactors," (ADAMS Accession No. ML092030210) with no deviations.

NEI 07-01, Revision 0, page 30, contains EALs that address spent fuel pool levels. Initiating Condition AU2, "Unplanned Rise In Plant Radiation Levels," contains EAL AU2.1. This EAL relates to an unplanned water level drop in a refueling pathway, as indicated by a spent fuel pool low-level alarm or by visual observation and valid area radiation monitor reading rise from either the fuel handling area radiation monitor, the containment high range radiation monitor, or the refueling bridge portable radiation monitor. Initiating Condition AA2, "Damage to Irradiated Fuel or Loss of Water Level that Has Resulted or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel," contains EAL AA2.1. This EAL relates to a water level drop in the reactor refueling pathway that results in irradiated fuel becoming uncovered. These EALs will be used to develop the set of plant-specific EALs for the WLS site to satisfy License Condition 13-3.

10. **DEC describes the use of a satellite phone as a communication method during an emergency. Please discuss whether DEC will install a repeater system that would allow for satellite phone use inside a building.**

**Staff Response:** Sections 9.5.2.2.3.1 and 9.5.2.2.3.2 of the FSAR discuss the emergency offsite communications systems to State, local, and corporate offsite interfaces as well as to the NRC. The primary means for communication to the State, local, and corporate offsite interfaces as well as to the NRC are the selective signaling system and the emergency telephone system. The backup communications systems are commercial telephone company lines and a radio system. The Staff finds that these communications systems meet the requirements of 10 CFR Part 50, Appendix E, Section IV.E.9. Section 9.5.2.2.3.1.3 of the FSAR states:

*As an alternative to ground-based communications, in the event of a natural disaster the Lee Station also maintains a satellite phone system. This phone system is portable, self-contained, and intended for use with communications with the NRC.*

The Staff considers this as a tertiary backup that is not required to meet the requirements of 10 CFR Part 50, Appendix E, Section IV.E.9. DEC does not discuss the installation of a repeater system to allow use of a satellite phone inside a building, nor do current regulatory requirements and guidance provide expectations for installation of such a repeater system.

11. **In RAI 25, Question 13.03-62(D)(2), the Staff asked DEC to identify the person responsible for making source term estimates at various stages of the event. DEC responded that "Dose Assessors in the EOF, under the direction of the Radiological Assessment Manager, are responsible for evaluating source terms until the event is terminated" (FSER at 13-72). Who does this work before the EOF is activated (first 75 minutes of the event, assuming a radiological release is in progress)?**

**Staff Response:** As described in the response to Question 8, an RP-qualified individual is required to be on-shift at all times, and this individual would assume source term and dose assessment responsibilities until relieved.

12. **With regard to the seismic design of the Lee Nuclear Station, WLS DEP 2.0- 1 discusses a departure from the AP1000 certified design which is necessary because the WLS site-specific horizontal and vertical spectra exceed the Certified Seismic Design Response Spectra and the hard rock high frequency spectra for the AP1000. DEC used Appendix 3I of the AP1000 Design Control Document to identify WLS-specific equipment for which high frequency amplification was important. The Staff's review concluded that DEC adequately demonstrated that the test response spectra for representative high frequency sensitive equipment bound the site-specific required response spectra (RRS). In SECY-16-0094, the Staff noted that DEC also committed to ensure that the future qualification testing for high frequency sensitive equipment identified in WLS Units 1 and 2 COLA Appendix 3I will envelope the WLS site-specific RRS. Where is this commitment discussed in the Staff's FSER or DEC's Final Safety Analysis Report (FSAR)? Did DEC or the Staff consider whether this activity should result in a license condition since the WLS site-specific conditions for higher frequencies exceed the AP1000 certified design?**

**Staff Response:** DEC committed in its FSAR Section 3.7.2.15 to ensure that all seismic qualification testing, including future testing for high frequency sensitive equipment identified in WLS Units 1 and 2 COLA Appendix 3I, will envelope the WLS site-specific RRS. The RRS defines the response spectra or seismic demand for which the equipment must remain functional during a Safe Shutdown Earthquake. The WLS site-specific horizontal and vertical spectra exceed the Certified Seismic Design Response Spectra and the hard rock high frequency spectra for the AP1000 design; however, there is margin in the equipment test response spectra currently being used to qualify AP1000 high frequency sensitive equipment. Because of the margin in the required test response spectra, the Staff concluded that the test response spectra used for completed testing for representative high frequency sensitive equipment bound the site-specific RRS. There are system-based ITAAC that require the seismic Category I high frequency sensitive equipment to withstand seismic design basis loads without loss of safety function. The ITAAC and WLS FSAR commitment provide reasonable assurance that the high frequency sensitive equipment will be qualified for the WLS site-specific RRS.

In addition, during long-term plant operation, replacement equipment will be required to meet purchase specification requirements for seismic capability that will be controlled through the Quality Assurance Program established in accordance with 10 CFR Part 50, Appendix B. In particular, Criterion II, "Quality Assurance Program," of 10 CFR Part 50, Appendix B states in part that the applicant/licensee shall identify the SSCs to be covered by the Quality Assurance Program. Criterion IV, "Procurement Document Control," states in part that measures shall be established to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of equipment or services. Therefore, the licensee will be required to procure equipment to satisfy the seismic capability requirements in accordance with Appendix B. The Staff reviewed DEC's Quality Assurance Program description in Section 17.5 of the FSAR and concluded it met the regulatory requirements of Appendix B. Therefore, a license condition is not necessary.

13. **As discussed in the FSER Chapter 2, several legacy structures from the Cherokee project require removal. Draft License Condition 2.D.(12)(d)12 would require confirmation that a single legacy Cherokee project stormwater drain line and any associated bedding material representing a potential preferential groundwater pathway have been removed and that the excavation has been backfilled with compacted native soil.**
- a. **Please describe why addressing this stormwater drain line resulted in a license condition.**
  - b. **Are other conditions or commitments required for additional legacy Cherokee project structures? If not, why not?**

**Staff Response:**

- a. The license condition is necessary because the Staff's safety conclusion is predicated on the removal and backfill of the drainline. DEC's analysis in the FSAR assumed the removal and backfill of the legacy drainline, which could have provided a preferential pathway for radionuclide transport to a potential receptor. Because of the removal and backfill of the legacy drainline, the Staff determined that an evaluation considering radionuclide transport including the storm drain pathway was not necessary. Other legacy stormwater drainlines do not affect the transport of radionuclides. The license condition accordingly provides a targeted measure of assurance that an important factor in the Staff's safety analysis and conclusions will be met.
  - b. No, none of DEC's plans to retain or remove additional legacy structures affect the Staff's hydrologic safety review; therefore, no additional conditions or commitments are required.
14. **In its environmental review, the Staff found that DEC's initial water balance calculations did not include data from the 2002-2007 drought years. DEC subsequently revised its water balance calculations to incorporate the 2002-2007 drought years and this led to the proposal to add Make-Up Pond C, which significantly expanded the environmental review of the project. How did this error in the initial water balance calculations affect the Staff's review of the safety aspects of the WLS Units 1 and 2 combined license application?**

**Staff Response:** The limitation in the DEC's initial water-balance analysis identified during the environmental review did not affect the Staff's safety review. The ultimate heat sink for the AP1000 units is the atmosphere (FSER at 2-99). The AP1000 reactor design does not rely on an external safety-related water supply. The makeup water for the nonsafety-related circulating water system of the proposed units will be supplied from Make-Up Pond A during normal discharge conditions in the Broad River (FSER at 2-99). During low-flow conditions in the Broad River, water stored in Make-Up Ponds B and C would be used, in that order, to provide water to Make-Up Pond A (FSER at 2-99). As discussed in the response to Question 1, the circulating water system is not a safety-related system, and the proposed reactors at the WLS site would not depend on any external source of water supply for safe shutdown (FSER at 2-167).

**15. Please describe the issues that the Staff considered in its review of new and potentially significant information since publication of the Final Environmental Impact Statement (FEIS) in 2013.**

**Staff Response:** None of the new and potentially significant information that was considered by the Staff was deemed significant and therefore the information did not warrant a supplement to the FEIS. The following are notable examples from among the 42 items the Staff considered:

- a. In September 2014, the NRC published a revised rule at 10 CFR 51.23 and the associated NUREG-2157, “Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel.” In accordance with the revised rule, the impacts in NUREG-2157 are deemed incorporated into an environmental impact statement (EIS) for a COL application. The Staff conducted an analysis (ADAMS Accession No. ML15212A327) and concluded that NUREG-2157 does not present a seriously different picture of the environmental impacts of the proposed action when compared to the impacts that were described in the FEIS for WLS Units 1 and 2.
- b. The staff considered the Commission’s May 4, 2016, adjudicatory decision regarding severe accident mitigation alternatives (SAMA) decontamination costs in the Indian Point license renewal proceeding (CLI-16-07). The staff considered the potential relevance for certain input values for the WLS SAMA analysis, specifically the decontamination cost per person for non-farm land and the time to complete decontamination. The staff performed a sensitivity analysis and concluded that the results of the sensitivity analysis do not present a seriously different picture regarding potentially cost-beneficial SAMAs from what was described in the FEIS for WLS Units 1 and 2.
- c. The U.S. Fish and Wildlife Service’s (FWS) published its final rule (80 FR 17974) for listing the northern long-eared bat (*Myotis septentrionalis*) as threatened under the Endangered Species Act since completion of the FEIS. In a letter dated October 19, 2015, DEC submitted to the NRC Docket the results of the Bat Acoustic Monitoring Report – Summer 2015 (ADAMS Accession No. ML15294A123), which documents the results of the bat survey conducted at the WLS and Make-Up Pond C sites during June 2015. The survey results identified no acoustic bat calls to indicate the presence of the northern long-eared bat or other Federally or State-protected bat species at the WLS or Make-Up Pond C sites. On March 15, 2016, the NRC sent a letter to FWS (ADAMS Accession No. ML15337A529) requesting concurrence with NRC’s findings. The NRC received a concurrence letter from the FWS dated April 7, 2016 (ADAMS Accession No. ML16208A246), that found that the proposed project may effect, but is not likely to adversely effect any Federally endangered, threatened, or proposed species nor result in adverse modifications to designated or proposed critical habitat.

**16. Please describe the site-selection process for Make-Up Pond C, including the consideration of possible alternate locations. To what extent were environmental impacts a factor in the location selection process for Make-Up Pond C?**

**Staff Response:** DEC selected the location for Make-Up Pond C. In accordance with the guidance in NUREG-1555, “Environmental Standard Review Plan,” the Staff evaluated alternatives that might either eliminate or reduce the environmental impacts associated with Make-Up Pond C as part of the review discussed in FEIS Section 9.4. In this regard, the Staff

considered a range of options including: employing existing storage capacity upstream of the WLS site in the Broad River Drainage; expansion of Make-Up Pond B; relocating Make-Up Pond C to a nearby watershed; assuming a loss-of-generation during low flow periods; and employing cooling systems with lower makeup water demands. To reduce the impacts of Make-Up Pond C the staff considered the following options: increasing the capacity of Make-Up Pond B; redesign of Make-Up Pond C footprint to avoid wetlands; and reduction of the size of Make-Up Pond C by using hybrid cooling. The Staff concluded that none of the feasible alternatives was environmentally preferable to the proposed Make-Up Pond C.

**17. Did the decision to add Make-Up Pond C affect the alternative site analysis?**

**For DEC:**

- a. **If so, please describe how that analysis changed.**

**For the Staff:**

- b. **If so, please describe how the change impacted the Staff's review of alternative sites.**

**Staff Response:**

- a. [DEC]

b. Make-Up Pond C was added to the project before the Staff finished preparation of the draft EIS (DEIS). Therefore, Make-Up Pond C was included in the Staff's initial evaluation of the alternative sites, as documented in the DEIS, published in December, 2011, and ultimately in the FEIS. The Staff's alternative site review considered drought conditions when looking at water availability. As shown in Table 9-18 of the FEIS, there are only minor differences in impacts among the sites. All of the sites are in rural areas with similar physiographic, ecological, cultural resource, and socioeconomic characteristics. Moreover, use of any of the sites would require building one or more large, supplemental cooling-water reservoirs that would inundate stream valleys. Based on that comparison, none of the alternative sites was environmentally preferable to the Lee site.

**18. DEC's decision to include an additional offsite reservoir, Make-Up Pond C, as supplemental storage to Make-Up Ponds A and B required extensive consideration by the Staff as well as the U.S. Army Corps of Engineers (USACE) and the State of South Carolina. The Staff noted that the creation of Make-Up Pond C would "inundate most of the London Creek stream network and forested valley," and would impact "12.46 miles of streams, 3.55 acres of wetlands, and 17.58 acres of open water." In addition, the proposed disturbance of approximately 1100 acres needed to build the reservoir and buffer around Make-Up Pond C would result in "terrestrial impacts of habitat loss and wildlife mortality disturbance and displacement" that "would be substantial and mostly permanent in nature. Creation of Make-Up Pond C would also alter the functionality of the London Creek corridor as a wildlife travel corridor." The Staff noted that impounding the London Creek stream network and building Make-Up Pond C would replace an existing creek system with a deep water lake habitat and that, in time, "the aquatic habitat of the new reservoir would be valuable for other**

reasons, but it would not mitigate the loss of adjacent terrestrial habitat within the region.” Considering all of these facts, the Staff determined that the construction of Make-Up Pond C would have MODERATE aquatic and terrestrial impacts.

- a. The Staff noted that the impacts of Make-Up Pond C would “noticeably alter these resources, but the important aspects of these attributes would not be destabilized as habitat and wildlife resources found in the London Creek watershed are also found in other areas in the upstate Piedmont region.” What are the “important attributes” of the subject resources?
- b. The Staff noted that “though the stream ecosystem in the watershed will be impacted by the construction of Make-Up Pond C, it will be transformed into a deep water ecosystem which would have aquatic ecological value.” To what extent did the “crediting” of the creation of a new deep water ecosystem offset potential impacts from the construction of Make-Up Pond C? Would the impacts have been LARGE if such “credit” was not given?

**Staff Response:**

- a. Important attributes of the terrestrial and aquatic habitats in the London Creek watershed, which includes the Make-Up Pond C site, include those resources’ biotic condition (i.e., the ecological communities present, trophic structure, health and size of populations), their landscape condition (pattern and structure of habitat types), and their chemical and physical characteristics. Other important attributes include the ecological processes (e.g., primary production, organic carbon cycling); hydrology (surface and groundwater flows, sediment transport) and geomorphology (landforms); and natural disturbances (fires, floods, and droughts) influencing the habitats. The Staff determined that these attributes would not be destabilized.
- b. The “crediting” of the creation of a new deep water (lentic) ecosystem was not considered in determining whether or not there should have been a LARGE impact. The reason that it was not considered is because the ecological characteristics of the reservoir would not be comparable to the stream and the stream valley habitats lost. Therefore, the creation of Make-Up Pond C was not considered to offset the impacts of the loss of stream habitat.

No, the Staff does not believe that the impact would have been LARGE. London Creek and its tributaries have been affected by past land uses such as agriculture and forestry and its headwaters have been cut off and managed by the creation of the Lake Cherokee reservoir. Available evidence suggests that none of the affected habitats are regionally unique and that the affected species occur in similar habitats in the nearby landscape. The FEIS therefore does not conclude that the losses of aquatic or terrestrial habitat associated with London Creek would be destabilizing to the regional landscape (i.e., does not conclude that there will be LARGE aquatic or terrestrial impacts).

However, building Make-Up Pond C would still result in the permanent loss of substantial areas of each habitat occurring in the London Creek watershed and displace fish, wildlife, and vegetation. The FEIS therefore acknowledges that substantial habitat losses would result and therefore concludes that the impacts of building Make-Up Pond C on aquatic and terrestrial ecological resources would be

MODERATE. The lentic (lake-like) open water and shoreline habitat established as a part of Make-Up Pond C, while capable of providing habitat for some aquatic and terrestrial species, would not closely replicate the specialized stream (lotic) and riparian habitat lost and therefore do not function as compensatory mitigation offsetting the MODERATE aquatic or terrestrial impacts.

19. **The Staff noted that building Make-Up Pond C would “noticeably alter [aquatic and terrestrial] resources, but the important aspects of these attributes would not be destabilized as habitat and wildlife resources found in the London Creek watershed are also found in other areas of the upstate Piedmont region.” In section 4.3.1.2 of the FEIS, the Staff observes that “[v]irtually all” of the “high-quality” mixed hardwood and mixed hardwood-pine cover habitats in the London Creek lowlands would be lost (FEIS at 4-33). The affected forest habitat consists primarily of the bluff hardwood forest and lowland hardwood forest subtypes, and “[d]rastic declines of critical lowland hardwood habitats have occurred statewide over the years, but particularly in the upstate, and development of Make-Up Pond C would destroy more of this valuable habitat type and the transitional areas adjacent to it” (FEIS at 4-34).**

The FEIS also notes the habitat diversity and relatively high environmental integrity of the London Creek site, and the importance of such habitats to the conservation of certain migratory birds. Further, the FEIS states that “[t]he abundance of lowland hardwood forest habitat of this quality elsewhere in the upstate Piedmont is unclear” (FEIS at 4-34). The FEIS also states that “[a]lthough the aquatic resources found in London Creek are not unique to the region, the habitat type is becoming increasingly rare as development in the region increases” (FEIS at 4-78).

- a. **How did the Staff reach the conclusions that (1) the “important attributes” of the London Creek watershed are found in other areas of the upstate Piedmont region, and (2) the abundance of such high quality lowland hardwood forest habitat in other areas of the upstate Piedmont region is unclear?**
- b. **What is the relative quality and stability of the habitat and wildlife resources found in the London Creek watershed compared to similar habitats and wildlife resources in the upstate Piedmont region?**

**Staff Response:**

- a. From its characterization of land cover features in the landscape surrounding the WLS site, the review team could ascertain that London Creek and its associated forests are generally similar to other forested stream valleys in the South Carolina Piedmont. Quantitative land cover type data presented in Section 2.2 of the FEIS indicate that the forested cover types present in the London Creek watershed are also common in the surrounding landscape. These forest cover types include deciduous forest, evergreen forest, and mixed forest. Table 2-2 of the FEIS indicates that deciduous, evergreen, and mixed forest cover constitute approximately 65 percent of the 2110-acre Make-up Pond C Site (FEIS page 2-9), which includes the affected areas of the London Creek watershed. Table 2-1 of the FEIS indicates that deciduous, evergreen, and mixed forest cover constitute approximately 63.5

percent of land within 6 mi of the WLS site (vicinity of the site) and approximately 54 percent of land within 50 mi of the WLS site (region surrounding the site) (FEIS page 2-7).

While the review team reviewed published wetland data and data on known presence of rare species, it did not and could not conduct wetland delineations or species surveys necessary to detect the presence of valuable ecological features on private property in the surrounding landscape. However, based on the information available from regional maps and other published data sources, the Staff was able to conclude that the affected habitats were likely typical of the surrounding landscape, but the absolute abundance of lowland forest habitat was not quantitatively ascertained.

- b. The Staff estimates that the ecological quality and stability of the habitats associated with London Creek are typical of the surrounding landscape. The review team identifies in the FEIS other specific natural areas in the South Carolina Piedmont that possess many of the same ecological values as London Creek and its forested corridor. For example, the FEIS notes that the Kings Mountain National Military Park, constituting approximately 3946 ac of mostly forest and woodland located approximately 10 mi northeast of the WLS site, contains many of the same terrestrial habitats and rare species also found in the London Creek watershed (FEIS page 2-95). As another example, the FEIS acknowledges that the forests bordering London Creek provide a travel corridor facilitating movement of wildlife across the surrounding landscape, but it also explains that the London Creek corridor is only part of an even larger wildlife travel corridor formed by forests bordering the Broad River (FEIS page 2-96). The forested wildlife travel corridor associated with the Broad River will continue to function even after the proposed WLS facilities are built.

As indicated in the response to Part A of this question, the broad characteristics of vegetation cover and geography of the London Creek watershed are typical of and similar to other watersheds common to the surrounding upstate Piedmont landscape. However, conclusively determining the presence of wetlands, rare species, and other important ecological attributes in other geographically similar watersheds would require field survey data not available to the review team. The review team did consider the possibility that certain ecological features might be unique to the London Creek corridor when concluding that impacts to terrestrial and aquatic ecology from building Make-Up Pond C were MODERATE impacts. The possible presence of regionally unique ecological resources in the forested and stream habitats lost to build Make-Up Pond C was a key factor in the NRC's staff conclusions of MODERATE impacts for terrestrial and aquatic ecology in FEIS Chapter 4. However it was not the only basis for the MODERATE impacts conclusions. Even if the NRC staff had been certain that the affected habitats lacked regionally unique ecological resources, it would still have likely concluded MODERATE impacts because of the spatial extent of habitat losses.

20. **The FEIS states that the habitat type in the London Creek “is becoming increasingly rare” and that the aquatic habitat of Make-Up Pond C “would be valuable for other reasons, but it does not mitigate the loss of riparian habitat within the Piedmont watershed.” Explain how the Staff reached the conclusion that the deep water ecosystem of Make-Up Pond C would have aquatic ecological**

**value. How did the Staff compare the ecological value of this ecosystem to the ecosystem that would be lost with the inundation of London Creek?**

**Staff Response:** Make-Up Pond C would be a lentic system (lake-like system) whereas London Creek and its tributaries is a lotic system (flowing water) with an adjacent riparian corridor.

Once filled, Make-Up Pond C would contain three distinct zones: littoral zone (zone close to shore where light reaches to the bottom), limnetic zone (layer of open water where photosynthesis would occur) and profundal zone (deepwater zone where light does not penetrate). Over time, each zone would develop a characteristic community of organisms, a result of the interaction of the biotic (producers, consumers, and decomposers) and abiotic (organic and inorganic materials) components present.

Some wetlands in areas of shallow bathymetry around the margins and tributaries of Make-Up Pond C could potentially develop to further improve biological diversity, including the presence of amphibian and reptile species. There is also the possibility that some waterfowl and wading bird species may use suitable open-water and shoreline habitat. Water quality would improve over current conditions in London Creek. Because of the expected presence of an ecological community, the Staff concluded that the deep water ecosystem of Make-Up Pond C will have aquatic ecological value.

The ecological value of London Creek habitat cannot be replaced by the creation of Make-Up Pond C since they are two totally different aquatic ecosystems (i.e., lotic versus lentic), each with their own ecological value. While lotic (stream) habitats and adjoining riparian lands and forested stream valleys remain common geographic features in the surrounding Piedmont landscape, they are becoming increasingly rare because of past impoundment activity and past and ongoing urban development. Establishment of even more lentic (lake-like) habitat in the form of Pond C will exacerbate, not ameliorate, the ongoing trend of stream and floodplain habitat losses in the South Carolina Piedmont.

- 21. DEC developed a compensatory mitigation plan to comply with USACE mitigation requirements. The two compensatory mitigation sites are Turkey Creek Tract and Woods Ferry Tract, in the Lower Broad River watershed in the Sumter National Forest.**
- a. Are the habitat and wildlife resources found in the Turkey Creek Tract and Woods Ferry Tract similar to those of the London Creek site? If so, are the diversity and environmental integrity of those sites comparable to the London Creek site?**
  - b. Did the Staff provide input to the U.S. Forest Service on its EIS in which it assessed the impacts of issuance of the Special Use Permit to DEC for the mitigation projects at the Turkey Creek and Woods Ferry Tracts?**

**Staff Response:**

- a. Both the Woods Ferry study area and the Turkey Creek Tract exhibit landscape and habitat characteristics similar to the London Creek drainage. Preserving and managing the Turkey Creek Tract provides ecological diversity and environmental integrity similar to London Creek. The Turkey Creek Tract would provide regional

benefits in the form of wetland and stream preservation and buffer enhancement. The stream reaches within the four drainages of the Woods Ferry study area are more deeply incised and eroded. Past agricultural practices in the watersheds contributing overland flow to streams in the tract have created a history of increased runoff rates to the streams, causing the channels to become deeper and narrower (incised), with steeper and more eroded banks that separate stream flow from adjoining riparian forests and wetlands. Past runoff has caused scour and sedimentation of stream bottoms, reducing the communities of benthic organisms supporting aquatic and terrestrial food chains, and past bank erosion has damaged riparian vegetation that formerly contributed to the production of aquatic food chains.

The aim of the compensatory mitigation at the Woods Ferry Study area is to restore and enhance the hydrological and aquatic functions of approximately 18 miles of streams. The mitigation would include restoring naturally vegetated banks with a more natural grade, restoring connectivity between aquatic habitats in the channel and terrestrial habitats in the adjoining floodplains and allowing more diverse communities of aquatic and terrestrial organisms to return.

- b. No, the Staff did not provide input to the U.S. Forest Service (USFS) on its EIS. However, the USACE, a cooperating agency with the NRC in the development of the WLS EIS, also served as a cooperating agency in the development of the USFS EIS. The USACE reviewed and provided comments to the USFS on the DEIS and FEIS prior to public distribution. All comments from the USACE were incorporated into the USFS FEIS. The USFS FEIS had to meet USACE regulatory needs under the National Environmental Policy Act (NEPA), the Clean Water Act, and 33 CFR Parts 330-332.

**22. Please summarize the impacts the U.S. Forest Service found in the EIS for the Special Use Permit to complete compensatory mitigation work in the national forest. Were those impacts mostly beneficial or did they include some negative impacts too? If so, how were those negative impacts mitigated?**

**Staff Response:** As described in the USFS EIS, the beneficial impacts of the compensatory mitigation work consist of restoring approximately 18 miles of streams in four watersheds in a variety of methods to return natural channel form, floodplain function, and habitat conditions. Stream restoration would include planting native tree, shrub, and herbaceous vegetation to help stabilize the stream banks and adjacent areas, and provide habitat improvements. Mitigation measures would be chosen to accelerate recovery and stabilization rates to limit erosion and quickly restore native forest and vegetation types to areas temporarily disturbed by restoration activities. Restoration would involve earthmoving and shaping of the channel and floodplain. Connected actions that may have negative ecological impacts include system road maintenance, temporary roads and bridges (including possible bridge replacements), soil borrow and fill areas, and timber harvesting. This project is aligned with the aims of the Forest Plan, but requires a Forest Plan Amendment.

According to the USFS:

*The [Forest Plan] amendment would change current Forest Plan management direction to allow for implementation (construction, reconstruction, and maintenance) of the Project in and along Project streams only.*

While the end result of the compensatory mitigation work in the national forest will be highly beneficial, the USFS acknowledged that implementation of the preferred alternative will have some unavoidable adverse impacts because USFS would be managing the land for one resource at the expense or detriment of the other resources. Some of the adverse effects are short-term and necessary to achieve long-term beneficial effects. The USFS will implement its Forest Plan, including Best Management Practices (BMPs), along with site-specific mitigation measures to limit the extent, severity, and duration of potential impacts.

**23. In its comments on the Draft Environmental Impact Statement (DEIS) (Letter from Jay B. Herrington, U.S. FWS, to NRC (March 5, 2012) (ML12083A064)), the U.S. Fish and Wildlife Service (FWS) stated that “additional information is required to provide a complete analysis of the effects of the proposed project on fish and wildlife resources” and provided three recommendations to complete the analysis:**

- 1. A survey for snails should be conducted in London Creek and its tributaries, and downstream of the Ninety-Nine Island Dam in the Broad River.**
- 2. A comprehensive survey for the yellow lance below the dam in the Broad River, and downstream areas affected by the discharge from the hydroelectric project, should be conducted because the mussel is currently under a 90-Day Petition Finding for listing under the Endangered Species Act.**
- 3. The applicant should develop and implement a plan to collect the South Carolina State Conservation High and Moderate priority fish species in London Creek and relocate to nearby suitable streams prior to construction of Pond C.**

**For the Staff:**

- a. Did the Staff implement either recommendation 1 or 2?**
- b. What was the outcome of the 90-Day Petition Finding? Is the yellow lance still under review for potential listing?**

**For DEC:**

- c. Did DEC implement recommendation 3?**

**Staff Response:**

- a. No, the Staff did not pursue these survey recommendations because the subject species are not Federally listed. If the subject species are later listed during the building or operation of WLS, the NRC will continue to fulfill its obligations under the Endangered Species Act (ESA) of 1973, as amended, within the scope of its jurisdiction.
- b. At the conclusion of the 90 days, no decision was made by the FWS concerning Federal protection for the yellow lance (*Elliptio lanceolata*), and the species remains

“under review.” Should the species be granted Federal protection in the future, the NRC will continue to fulfill its obligations under the ESA as discussed in the environmental protection plan.

- 24. DEC has removed approximately 86 privately owned housing units from the Make-Up Pond C site since it acquired the land. The Staff concluded that the potential environmental justice impacts of the construction and preconstruction activities would be SMALL.**
- a. Did DEC determine whether the residents of the housing units were members of a minority group or of low income?**
  - b. Did the Staff assess the environmental justice impacts, if any, on the owners and tenants of the 86 housing units removed from the site? If so, what were those impacts specifically?**

**Staff Response:**

- a. [DEC]
- b. Yes, Executive Order 12898 instructs Federal agencies to assess the “disproportionately high and adverse human health or environmental effects of its programs” (ADAMS Accession No. ML13023A255). The staff assessed the environmental justice impacts of the displacement of 86 homes. First, as discussed on page 2-152 of the FEIS, the nearest Census block groups with minority or low-income populations are approximately 7 miles west of the WLS site in the town of Gaffney. The Staff did not identify any populations of interest for the environmental justice review closer to the plant, including the adjacent land that constitutes Make-Up Pond C. While it is possible that there were individual households that could be identified as minority or low-income among the 86 houses, staff’s guidance, NUREG-1555 Sections 2.5.4, 4.4.3, and 5.8.3, states that the consideration of environmental justice is based at the Census block group level, not on a house-by-house basis. In this case, based on the available data, no such disproportionate impact was found. Second, even if minority or low-income households were to have been identified in the Pond C area, the displaced residents were compensated by DEC at a level in excess of the fair market value of the properties, and staff determined the compensation to have fully ameliorated any potential adverse impacts any minority or low-income household might have experienced.

25. **The proposed intake and discharge structures for the Lee plant will be constructed in the Ninety-Nine Islands Reservoir, which is under the jurisdiction of the Federal Energy Regulatory Commission (FERC). According to the FEIS, Duke planned to submit an application to FERC in the summer of 2013 to cover the construction of the intake and discharge structures and the withdrawal and discharge of water to and from the reservoir. At the time the FEIS was issued, DEC had initiated early consultation with FERC on the project. Please provide an update on the current status of the project. Would the Staff need to account for any conditions of the FERC permit, if it is issued?**

**Staff Response:** The current status of DEC's application to FERC to cover the construction of the intake and discharge structures and the withdrawal and discharge of water to and from the reservoir is on hold in accordance with the Federal Power Act.

The Staff would not need to account for conditions in the FERC permit. FERC is responsible for permits and related conditions within its regulatory authority. If the FERC permit were issued prior to a final licensing decision on issuance of the WLS COLs, the Staff would consider the permit as new and potentially significant information in the context of the NEPA review.

26. **The FEIS states that the USACE entered into a Memorandum of Agreement (MOA) with DEC, the South Carolina State Historic Preservation Officer, and the Catawba Indian Nation as part of its development of a cultural resources management plan for the WLS site. Why isn't the NRC a signatory to the MOA?**

**Staff Response:** The NRC is not a signatory to the MOA because the NRC conducted its review in accordance with 36 CFR 800.8(c) by coordinating NHPA compliance with NEPA. The NRC in its coordination identified the MOA in Section 2.7.4 and in Appendix F of the FEIS and will reference the MOA in the Summary Record of Decision (ROD). The scoping and outreach conducted by the NRC and USACE as part of the consultation process, including interactions with the South Carolina SHPO and the Catawba Indian Nation, ensured appropriate public engagement in the identification of historic resources as well as the opportunity for public comment on the identification of potential effects to historic properties. The resulting MOA documents the specific measures that would be taken to prevent or mitigate impacts to historic properties. The Staff's approach, including the use of the FEIS and ROD to document the results of the consultation, is consistent with the Advisory Council on Historic Preservation regulations as well as NRC practice in previous COL proceedings.

27. **In its comments on the DEIS, the U.S. Environmental Protection Agency (EPA) requested that the Staff note in the FEIS that "the operational conditions in the applicant's water-management plan are less stringent" than the requirements in the EPA's Cooling-Water Intake Structure rule for new facilities: 40 C.F.R. § 125.84(a)-(e) (FEIS at 3-44). The EPA conditioned its approval of a National Pollutant Discharge Elimination System (NPDES) permit upon a demonstration that DEC's plan comply with the alternative requirements in 40 C.F.R. § 125.85. According to the FEIS, the South Carolina Department of Health and Environmental Control has since issued an NPDES permit that requires compliance with 40 C.F.R. §§ 125.80-125.89 and Section 316(b) of the Clean Water Act. Since the issuance of the NPDES permit, has the EPA provided any additional comments on DEC's water-management plan, the FEIS discussion, or the Staff's response to its comment in the FEIS?**

**Staff Response:** The EPA did not provide additional written comments on DEC's water-management plan, the FEIS discussion, or the Staff's response to its comment in the FEIS. As part of the process to obtain the NPDES permit, extensive discussions between EPA, DEC, and the South Carolina Department of Health and Environmental Control (SCDHEC) occurred and no further discussion is needed.

**28. Chapter 7 includes a discussion of cumulative impacts from future urbanization in the region surrounding the Lee Nuclear Station site. How did the Staff quantify, or define, this anticipated increased urbanization and its contribution to the cumulative impacts of the project?**

**Staff Response:** The Staff, as part of its review, determines the projected increase in population in its analysis for demography in the FEIS. The Staff used available data from the South Carolina Budget and Control Board, which provides annual population projections at the county level. Because more detailed data is not available, the population projections are assumed to have an even effect across each county, including urban areas, housing, infrastructure, and public services. The increase in urbanization was considered qualitatively in the cumulative impacts to the various resources.

**29. In CLI-09-21, 70 NRC 927, 930-31 (2009), we stated our expectation that environmental reviews for major licensing actions include a discussion of greenhouse gas (GHG) and carbon footprint impacts. Similar to the FEIS for the proposed Levy Nuclear Plant, the Staff referenced the U.S. Global Change Research Program's 2009 "Global Climate Change Impacts in the United States" in its discussion of GHG emissions. The U.S. Global Change Research Program issued an updated report in 2014. Did the Staff consider the impacts, if any, of the 2014 report on the findings in the FEIS?**

**Staff Response:** Yes, the Staff did consider the U.S. Global Change Research Program (GCRP) 2014 report in its assessment of new and potentially significant information. Climate change information in the GCRP 2009 report for the WLS site is not significantly different than the climate change information in the GCRP 2014 report, in light of the uncertainty in the predictions. For example, both the 2009 and 2014 reports predict temperature changes by the end of the century to be between 3 degrees Fahrenheit (low emissions scenario) and 8 degrees Fahrenheit (high emissions scenario) for the WLS area. Both 2009 and 2014 GCRP reports indicate uncertainty in precipitation patterns for the southeast region.

The WLS FEIS statements on climate change are consistent with those made in the GCRP 2014 report for the region. The Staff also determined that differences in climate change projections between the two documents did not warrant changes to the FEIS. The new information contained in the 2014 GCRP report does not meet either of the criteria in 10 CFR 51.92(a) that would require NRC to supplement the FEIS.

**30. With respect to the impacts of GHG emissions, in section 4.7.1 of the FEIS the Staff concluded that "[b]ased on its assessment of the relatively small construction equipment carbon footprint as compared to the United States annual CO2 emissions, the review team concludes that the atmospheric impacts of GHGs from construction and preconstruction activities would not be noticeable and additional mitigation would not be warranted." The Staff also reached similar conclusions regarding impacts of GHG emissions in sections 5.7.2.2 and 6.1.3 of the FEIS.**

**On August 1, 2016, the Council on Environmental Quality released its “Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews.” In its final guidance, CEQ advised that:**

**Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that the totality of climate change impacts is not attributable to any single action, but are exacerbated by a series of actions including actions taken pursuant to decisions of the Federal Government. Therefore, a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact. When considering GHG emissions and their significance, agencies should use appropriate tools and methodologies for quantifying GHG emissions and comparing GHG quantities across alternative scenarios. Agencies should not limit themselves to calculating a proposed action’s emissions as a percentage of sector, nationwide, or global emissions in deciding whether or to what extent to consider climate change impacts under NEPA.**

- a. Has the Staff considered whether CEQ’s recently released guidance on NEPA analyses of the impacts on GHG emissions and the effects of climate change constitutes new and potentially significant information?**
- b. Would following this guidance alter the Staff’s analyses and conclusions on the impacts of GHG emissions?**

**Staff Response:**

- a. Yes, the Staff evaluated the 2016 Council on Environmental Quality (CEQ) guidance to determine if it would impact the findings in the WLS FEIS, published in 2013. The staff did not find that the new information in the 2016 CEQ guidance met either of the criteria in 10 CFR 51.92(a) that would require NRC to supplement the FEIS. Additionally, the CEQ does not expect agencies to apply this guidance to concluded NEPA reviews and actions for which an FEIS or EA has been issued.
- b. No. The Staff determined that the final guidance did not impact the staff’s analysis of GHG emissions and climate change. While the FEIS did compare the project emissions to the national emissions, the staff did not use this indicator “in deciding whether or to what extent to consider climate change impacts under NEPA” (CEQ 2016). As suggested by both the draft and final CEQ guidance, the Staff used appropriate tools and methodologies to quantify GHG emissions and compared GHG

emissions across alternative scenarios. The Staff's GHG analysis is based on the approach in COL/ESP-ISG-026, and the staff's preceding guidance memos, which direct the Staff to compare the emissions of GHG from the proposed action to those from all competitive energy alternatives. The estimated GHG emissions of this project are several orders of magnitude less than those from the competitive alternative energy sources. The Staff did not use the comparison of project emissions to national emissions as a guideline for the decision to perform a quantitative analysis. In this regard, the Staff's analyses and conclusions would not be altered.

**31. Please provide any updates or changes to the Staff's list of authorizations, permits, and certifications since the publication of the FEIS.**

**Staff Response:** On January 2, 2014, the South Carolina Department of Health and Environmental Control issued its 401 Water Quality Certification, in accordance with the Section 401 of the Clean Water Act (33 U.S.C. § 1341). As mentioned in Appendix H of the FEIS, it pertains to Federally permitted activities that may result in a discharge to State waters. The State certifies water quality standards will not be violated. It is available at ADAMS Accession No. ML14013A196.

On September 29, 2015, the USACE issued its Department of the Army Section 404 permit, in accordance with the Clean Water Act (33 U.S.C. 1344). As mentioned in Appendix H of the FEIS, it pertains to construction of the cooling water intake structure, dredging in ponds and rivers, and construction in waters of the U.S. It can be found at ADAMS Accession No. ML16250A142.

**32. How do the impacts of an accident with a radionuclide release during transportation compare to the impacts of a severe accident for the facility (FEIS at 6-36)?**

**Staff Response:** The risk is low for both an accident with a radionuclide release during transportation and a severe accident for the facility. The impacts of a transportation accident involving a shipment of spent fuel are described in terms of risk in Table 6-11 of the FEIS and the risks of a severe accident for an AP1000 reactor at the WLS site are described in Table 5-14 of the FEIS. As documented in Section 6.2.2, "Transportation of Spent Fuel," of the FEIS, the NRC's analysis is based on shipment of spent fuel by legal-weight trucks in shipping casks with characteristics similar to casks currently available (i.e., massive, heavily shielded, cylindrical metal pressure vessels). Each shipment is assumed to consist of a single shipping cask loaded on a modified trailer. These assumptions are consistent with the assumptions made in the evaluation of the environmental impacts of transportation of spent fuel in Addendum 1 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Addendum to Main Report." Overall, based on the population dose, these tables show the risk from a transportation accident is  $7.1 \times 10^{-5}$  person-rem/year and from a severe accident is  $5.3 \times 10^{-2}$  person-rem/reactor-year. The principal reasons that the risk of a spent fuel transportation accident are less than the risk of a facility severe accident include the following considerations:

- There is a substantially smaller inventory of radionuclides that could be released from a damaged spent fuel truck shipping cask, which holds a single spent fuel assembly (and meets the 0.5 MTU analysis assumption of WASH-1238) relative to an AP1000 reactor core that contains 157 fuel assemblies.

- Prior to loading into a shipping cask, the fuel assemblies are stored in a spent fuel pool for at least five years, allowing radioactive decay to reduce the inventory of radionuclides that could be potentially released, especially of the more mobile gaseous radionuclides.
- Moreover, the lower decay heat remaining after five years of storage in the spent fuel pool limits the fraction of residual radionuclides that could be released from the fuel, because any potential release scenario for the shipping cask would be less energetic.
- In addition, the duration of possible release scenarios is much shorter for a shipping cask breach than from a reactor severe accident.
- The residual fraction of radionuclides in the shipping cask that could cause significant exposures is solid, not volatile and therefore would tend to be deposited locally. Moreover, this radioactive material would not be expected to be dispersed very far from the accident site because the release from the shipping cask that could cause significant exposures would be at ground level and the dispersion from the shipping cask is primarily caused by the impact kinetic energy rather than from the energy within the fuel.
- The potentially affected area of a release from a shipping cask accident would be localized as compared to potential regional contamination from a severe accident. This also significantly constrains the extent of population exposure.

Therefore the impacts, based on risk, from a spent fuel transportation accident are less than the low impacts for a severe accident at a reactor.

- 33. North Carolina requires an Integrated Resource Plan that will yield a “least cost mix of generation and demand reduction activities,” while South Carolina requires a program that is “economic and reliable” (FEIS at 8-7). Are the North Carolina and South Carolina regulations governing the development of an Integrated Resource Plan consistent with each other? If there are tensions between the two sets of requirements, how did DEC and the Staff address them for a project like Lee that services both states? Does Table 8-1 reflect the North Carolina process, the South Carolina process, or both processes?**

**Staff Response:** The North Carolina and South Carolina regulations governing the development of an Integrated Resource Plan (IRP) are nearly identical, and there has been cooperation between the governing entities of both states. As stated in the 2015 DEC IRP:

*The Company [DEC] files separate 2015 IRPs for South Carolina and North Carolina. . . . As such, the quantitative analysis contained in both the South Carolina and North Carolina filings is identical, while certain sections dealing with state-specific issues such as state renewable standards or environmental standards may be specific to that state’s IRP (Duke Energy Progress South Carolina Integrated Resource Plan (Annual Report) November 1, 2015, p. 2).*

There was no tension between the two sets of requirements, and Table 8-1 in the FEIS reflects both the North Carolina and the South Carolina IRP development processes.

- 34. For the Combination Alternative, the text suggests that “Make-Up Pond C may not be required” but Table 9-3 indicates, “Land would be required for even a smaller version of Make-Up Pond C” (FEIS at 9-35). Would this alternative require Make-Up Pond C? If not, would the impacts on historic and archeological resources still be SMALL?**

**Staff Response:** The water use for the natural gas plant (1530 mega-watts electric (MW(e)) used in the combination of alternatives analysis would be less than the water use for the natural gas plant (2400 MW(e)) alone. Therefore, Make-Up Pond C could be made smaller or might not be needed. However, the combination also involves the addition of significant generation from renewable sources, which would impact large areas of land at other locations. As stated on page 9-35 of the FEIS:

*However, the review team considered that environmental impacts are likely to be noticeable for land-use and ecology impact categories due to the significant build-out of renewable energy sources as well as any remaining biomass-based capacity resources, which would not be co-located at the Lee Nuclear Station site.*

In addition, in Table 9-3 of the FEIS, for historic and cultural resources, the Staff stated:

*Impacts resulting from ground-disturbance and visual intrusions would likely increase dependent on the siting, construction, and operation of renewable power-generation facilities, which would not be co-located on the site.*

Therefore, although impacts to historic and cultural resources may decrease at the WLS site, they would likely increase at the locations affected by the new renewable resources. On balance the Staff concluded that such impacts would remain MODERATE.

- 35. The Environmental Justice analysis for each alternate site notes, “The review team did not identify any Native American communities or other minority communities with the potential for a disproportionately high and adverse impact due to their unique characteristics or practices” (FEIS at 9-84; see also FEIS at 9-140, and 9-191). Does this determination include a consideration of subsistence hunting, fishing, or gathering?**

**Staff Response:** Yes, the Staff did consider subsistence practices as part of its environmental justice evaluation for the alternative sites, using information that was available at a reconnaissance level, consistent with the guidance in the NUREG-1555, Section 9.3, and COL/ESP-ISG-26, Attachment 6.

- 36. Please explain why the “[i]mpacts on aquatic resources from the transmission lines and rail-road spur installation [for the Keowee site] would be similar to those described for the proposed Lee Nuclear Station site in Section 4.3.2” (FEIS at 9-130) when the WLS site would require 31 miles of additional transmission lines (FEIS at 4-73) while the Keowee site would require just 1.3 miles of transmission lines (FEIS at 9-106).**

**Staff Response:** Despite the substantially greater length of stream channel traversed by new transmission lines for the WLS site relative to the Keowee site, impacts on aquatic resources from installation of transmission lines at the WLS Site and the Keowee site would be similar because at both locations there would be no work performed within streams or open-water habitats. The transmission-line structures would be located within upland areas and the streams and open water would be spanned by the transmission lines. The transmission lines would be installed in accordance with DEC Stormwater BMP manuals and SCDHEC BMPs.

- 37. Please account for the variation in size of the proposed cooling reservoirs for the WLS site (1100 acres (FEIS at 7-12)) and the alternative sites at Middleton Shoals (3700 acres (FEIS at 9-162)), Keowee (1300 acres (FEIS at 9-106)), and Perkins (1500 acres (FEIS at 9-54)).**

**Staff Response:** The amount of cooling water required for the plant would be the same at all of the sites. The reservoirs at each site were sized based on the local topography and on the flows in the source river for each site, under drought conditions. As such, the surface areas of the reservoirs vary among the sites. The basis for the size of the reservoirs is discussed in detail in the DEC response to NRC RAI 206 (ADAMS Accession No. ML103360419).

- 38. For water supply alternatives, was an expansion of Make-Up Pond A considered (in addition to the discussed expansion of Make-Up Pond B (FEIS at 9-215))? If so, what were the results of that consideration; if not, why was that alternative not explored further?**

**Staff Response:** Yes. Based on its small area, existing topography, and proximity to various proposed plant structures, Staff determined that expansion of Make-Up Pond A was not practicable. It would not be feasible to expand Make-Up Pond A sufficiently to contribute appreciably to the make-up volume storage requirements.

- 39. A general license for an independent spent fuel storage installation (ISFSI) is issued under 10 C.F.R. § 72.210 to all combined license holders.**
- a. Did the Staff explicitly consult with the South Carolina State Historic Preservation Officer (SHPO) and Tribes on the issuance of a general license to DEC for an ISFSI at WLS?**
  - b. If the Staff did not inform the SHPO and Tribes about the general license for an ISFSI during consultation, did the Staff inform them after consultation? If so, what was their response?**
  - c. If the Staff did not inform the SHPO and Tribes of the general license for an ISFSI during consultation, explain why the Staff's NHPA consultation was adequate.**
  - d. What requirements or procedures would ensure that historic and cultural resources are adequately protected if DEC constructs an ISFSI?**

## **Staff Response:**

- a. The Staff carried out its NHPA consultation consistent with NRC guidance. The Staff did not explicitly discuss with the SHPO and Tribes the issuance of a general license to DEC for an ISFSI at WLS during consultations prior to issuance of the FEIS, but did reference this information as a part of the consultation record and, as discussed in the response to part b below, conduct additional post-consultation outreach to the SHPO regarding the availability of an ISFSI general license to DEC at WLS.
- b. The issuance of the FEIS effectively concluded NRC's NHPA consultations because the NRC coordinates compliance with its NHPA responsibilities through its NEPA process for COL applications. As documented in a letter dated January 20, 2012 (ADAMS Accession No. ML12048A671), the South Carolina SHPO noted that it believed the proposed WLS, Make-Up Pond C, railroad spur, and transmission line corridors would cause no adverse effect on the identified historic properties if conditions were met as outlined in the Cultural Resource Management Plan and Agreement (CRMP). A telephone call was made to the South Carolina SHPO on July 21, 2016, in which the Staff stated that 10 CFR 72.210 issued a general license for licensees to build and operate ISFSIs. The SHPO expressed no concerns. The Staff determined that further outreach was not necessary.
- c. The post consultation phone call to the South Carolina SHPO was conducted by the Staff as an additional outreach step but was not necessary to satisfy the NRC's NHPA consultation obligations. The phone call served solely to remind the SHPO that when the NRC issues a COL, NRC regulations also authorize other related activities, such as the option to build and operate a ISFSI to store spent nuclear fuel under 10 CFR Part 72.

The Staff's NHPA consultation was adequate because NRC consulted on the entirety of the WLS site. The Staff included in the WLS FEIS a reference to an analysis in the Generic Environmental Impact Statement for License Renewal (NUREG-1437) that supports a conclusion that the impacts of building and operating an ISFSI on the site would be minor. The Staff did not identify any site-specific considerations for the WLS site that call into question the applicability of the NUREG-1437 analysis for considering impacts at that site. Thus, the Staff has a sound factual basis to expect that the potential use of the general license issued under 10 CFR 72.210 to construct and operate an ISFSI would not contribute to adverse effects.

The Staff's conclusion is further reinforced by the provision in the CRMP and the DEC's corporate procedures that call for DEC to stop work and coordinate with the SHPO if it inadvertently discovers cultural or historic objects on the site (see FEIS at page 4-111). In addition, as noted in part d below, the USACE permit, the MOA and its associated CRMP, procedures, and the NRC license (with conditions incorporated under 10 CFR 50.54(aa)) ensure that historic and cultural resources are protected. The FEIS is a part of the NHPA consultation materials because for COL applications the NRC coordinates compliance with its NHPA responsibilities through its NEPA process. The Staff has not included an explicit discussion of 10 CFR 72.210 in its consultations for new reactors, but the regulation providing for the general license to construct and operate an ISFSI is publicly available and the impacts from construction and operation of an ISFSI are addressed in NUREG-1437, which is referenced in the FEIS, and is therefore a part of

the consultation record. The first page of FEIS Appendix H includes a reference to Part 72 ISFSI.

- d. If DEC constructs an ISFSI, historic and cultural resources would be protected through a MOA, conditions in the USACE permit, and the NRC license. The USACE executed an MOA among DEC, the South Carolina SHPO, and the Catawba Indian Nation. This MOA formalized the CRMP. The CRMP addresses how DEC will identify, assess, and protect cultural resources that could potentially be impacted by construction, operation, and maintenance of WLS and associated transmission lines. The MOA also establishes procedures for inadvertent discoveries along with appropriate notification – which includes USACE, South Carolina SHPO, and the Catawba Indian Nation. The MOA is a condition of the USACE permit (Permit No. SAC-2009-122-SIR).

Additionally, the State of South Carolina included two permit conditions related to inadvertent discovery of archaeological or paleontological resources in its Clean Water Act Section 401 Certification (see ML14013A196). In accordance with 10 CFR 50.54(aa), the NRC license shall be subject to all conditions deemed imposed as a matter of law by sections 401(a)(2) and 401(d) of the Federal Water Pollution Control Act, as amended 33 U.S.C.A. 1341 (a)(2) and (d).

The USACE permit, the MOA and its associated CRMP, procedures, and the NRC license (with conditions incorporated under 10 CFR 50.54(aa)) ensure that historic and cultural resources are protected.

**40. The possible grave site identified in the direct, physical Area of Potential Effects of transmission line Route O is protected by several South Carolina statutes. Further, the requirements of the Native American Graves Protection and Repatriation Act (NAGPRA) may apply if the remains are Native American.**

- a. **Have any further investigations revealed whether the remains in this grave site are Native American?**
- b. **Briefly describe the NAGPRA requirements that would apply if the remains are Native American. What NAGPRA requirements would specifically apply to the NRC, if any?**

**Staff Response:**

- a. No further investigations have been pursued related to the grave site.
- b. The NAGPRA requires that agencies consult with the appropriate Indian tribe when Native American remains are found on Federal or tribal lands. Because the possible gravesite, 38CK172, is not located on federal or Indian tribal lands, NAGPRA would not be applicable. There are no NAGPRA requirements that would specifically apply to the NRC.

The Applicant has agreed to avoid the gravesite during construction of the transmission lines by protective measures implemented through a MOA signed by

DEC, USACE, South Carolina SHPO, and the Catawba Indian Nation Tribal Historic Preservation Officer (THPO). The MOA also covers any additional inadvertent discoveries of human remains where DEC agreed to notify the USACE, SHPO, and THPO within 10 days.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of )  
 )  
DUKE ENERGY CAROLINAS, LLC ) Docket Nos. 52-018-COL  
 ) 52-019-COL  
(William States Lee III Nuclear Station, )  
Units 1 and 2) )

CERTIFICATE OF SERVICE

I hereby certify that the document entitled NRC STAFF RESPONSES TO COMMISSION PRE-HEARING QUESTIONS, dated September 14, 2016, has been filed through the E-Filing system this 14th day of September, 2016.

**/Signed (electronically) by/**

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Dated at Rockville, Maryland  
this 14th day of September, 2016