Steven M. Snider
Vice President
Oconee Nuclear Station

Duke Energy
ON01VP | 7800 Rochester Hwy
Seneca, SC 29672
o: 864.873.3478
f: 864.873.5791

Steve.Snider@duke-energy.com

RA-22-0002
January 7, 2022

10 CFR 50.4
10 CFR Part 54

ATTN: NRC Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Duke Energy Carolinas, LLC (Duke Energy)
Oconee Nuclear Station (ONS), Units 1, 2, and 3
Docket Numbers 50-269, 50-270, 50-287
Renewed License Numbers DPR-38, DPR-47, DPR-55
Subsequent License Renewal Application, Appendix E
Responses to Requests for Additional Information (RAI), and
Request for Confirmation of Information (RCI)

References:

1. Duke Energy Letter (RA-21-0132) dated June 7, 2021, Application for Subsequent Renewed Operating Licenses, (ADAMS Accession Number ML21158A193)
2. NRC Letter dated July 22, 2021, Oconee Nuclear Station, Units 1, 2, and 3 - Determination of Acceptability and Sufficiency for Docketing, Proposed Review Schedule, and Opportunity for a Hearing Regarding Duke Energy Carolinas' Application for Subsequent License Renewal (ADAMS Accession Number ML21194A245)
3. NRC Letter dated September 21, 2021, Oconee Nuclear Station, Units 1, 2, and 3 License Renewal Regulatory Audit Regarding the Environmental Review of the Subsequent License Renewal Application Review, (ADAMS Accession Number ML21263A031)
4. NRC Letter dated November 23, 2021, Oconee Nuclear Station, Units 1, 2 and 3 - Summary of the Environmental Remote Audit Related to the Review of the Subsequent License Renewal Application, (ADAMS Accession Number ML21323A113)
5. NRC Letter dated December 1, 2021, Oconee Nuclear Station, Units 1, 2 and 3 - Supplement to November 23, 2021, Summary of the Environmental Remote Audit Related to the Review of the Subsequent License Renewal Application (ADAMS Accession Number ML21335A285)

Ladies and Gentlemen:

By letter dated June 7, 2021 (Reference 1), Duke Energy Carolinas, LLC (Duke Energy) submitted an application for the subsequent license renewal of Renewed Facility Operating License Numbers DPR-38, DPR-47, and DPR-55 for the Oconee Nuclear Station (ONS), Units 1, 2, and 3 to the U.S. Nuclear Regulatory Commission (NRC). On July 22, 2021 (Reference 2), the NRC determined that ONS subsequent license renewal application (SLRA) was acceptable and sufficient for docketing. By letter dated September 21, 2021 (Reference 3), the NRC issued the regulatory audit plan for the environmental portion of the SLRA review.

The NRC environmental audit was conducted during the week of October 11, 2021. In a letter dated November 23, 2021 (Reference 4), NRC transmitted to Duke Energy, Requests for Additional Information (RAIs) and Requests for Confirmation of Information (RCIs) related to the environmental review of the subsequent license renewal application. By letter dated December 1, 2021 (Reference 5), NRC requested that the response to Reference 4 be provided by January 7, 2022.

Enclosure 1 provides the index of Duke Energy's responses. Enclosure 2 provides Duke Energy's responses to the RCIs. Enclosure 3 provides Duke Energy's responses to the RAIs. The documents requested per RAI 1 of Reference 4 are provided by a separate correspondence dated January 7, 2022.

Should you have any questions regarding this submittal, please contact Arun Kapur at (919) 793-4220 or by email at arun.kapur@duke-energy.com.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 7, 2022.

Sincerely,

Steven M. Snider
Site Vice President
Oconee Nuclear Station

Enclosures:

Enclosure 1: Index of Duke Energy's Responses
Enclosure 2: Responses to NRC Requests for Confirmation of Information
Enclosure 3: Responses to NRC Requests for Additional Information

CC: W/O Enclosures:

Laura A. Dudes Regional Administrator
U.S. Nuclear Regulatory Commission – Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, Georgia 30303-1257

Lance J. Rakovan, Project Manager
(by electronic mail only)
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20852

Shawn A. Williams, Project Manager
(by electronic mail only)
U.S. Nuclear Regulatory Commission
Mail Stop 8 B1A
11555 Rockville Pike
Rockville, Maryland 20852

Jared Nadel
(by electronic mail only)
NRC Senior Resident Inspector
Oconee Nuclear Station

Anuradha Nair-Gimmi,
(by electronic mail only: naira@dhec.sc.gov)
Bureau Environmental Health Services
Department of Health & Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

BCC: W/O Enclosures:

T.P. Gillespie
K. Henderson
S.D. Capps
T.M. Hamilton
P.V. Fisk
H.T. Grant
D.A. Wilson
M.C. Nolan
S.M Snider
R.K. Nader
G.D. Robison
T.M. LeRoy
P.F. Guill
R.V. Gambrell
A. Kapur
A. Pifer
S. Dalton
A. Breland
T. Garland
File: (Corporate)
Electronic Licensing Library (ELL)

ENCLOSURE 1

OCONEE NUCLEAR STATION
SUBSEQUENT LICENSE RENEWAL APPLICATION, APPENDIX E
ENVIRONMENTAL REPORT

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ENCLOSURE 2

OCONEE NUCLEAR STATION
SUBSEQUENT LICENSE RENEWAL APPLICATION, APPENDIX E
ENVIRONMENTAL REPORT

RESPONSES TO NRC REQUESTS FOR CONFIRMATION OF INFORMATION

Alternatives (ALT)

NRC RCI Number: ALT-1

Section 2.6.2 of the ER indicates that Duke Energy Carolinas, LLC., (Duke Energy) relied upon the 2020 South Carolina Integrated Resource Plan (IRP) for screening, selecting, and evaluating replacement power alternatives for Oconee Nuclear Station (Oconee). Duke Energy subsequently filed a Modified IRP on August 27, 2021, that includes additional scenarios for meeting system generation needs. Based on the NRC staff's review Section 7.2.1 and 7.2.2 of the ER and information discussed during the environmental audit session pertaining to alternatives for providing replacement power, please confirm:

The additional scenarios and results of the Modified IRP do not affect the underlying bases discussed in Section 7.2.1 supporting the range of reasonable alternatives to Oconee relicensing, or the bases discussed in Section 7.2.2 for eliminating the use of renewable energy sources as discrete alternatives for replacing the full capacity currently being provided by Oconee. The Modified IRP primarily focused on factors that would tend to drive higher levels of solar adoption, which in turn could possibly influence the relative contribution from renewables supporting a combination alternative.

Duke Response:

Duke Energy confirms the following with text changes:

The additional scenarios and results of the Modified IRP do not affect the underlying basis discussed in Section 7.2.1 supporting the range of reasonable alternatives to Oconee relicensing, or the basis discussed in Section 7.2.2 for eliminating the use of renewable energy sources as discrete alternatives for replacing the full capacity currently being provided by Oconee. The Modified IRP primarily focused on factors that would tend to drive higher levels of solar adoption, which in turn could possibly influence the contribution from solar, paired with energy storage, as a combination alternative for replacing a small portion of retiring coal generation. The Modified IRP illustrated that more favorable assumptions for solar and storage had minimal effect on the amount of dispatchable gas capacity needed to affordably and reliably replace coal generation due to the fact that extended winter peaks represent the most limiting conditions for resource planning decisions. Thus, these factors would not impact replacement alternatives for the baseload capacity capabilities of Oconee Nuclear Station.

References:

None

Associated Documents:

None

Alternatives (ALT)

NRC RCI Number: ALT-3

To support the audit, Duke Energy posted a new figure to the portal (NRC Audit_ALT-3 Alternatives_v2.pdf) depicting the areal extent and acreages associated with three expanses on and adjacent to Oconee that could serve as potential locations for siting replacement power alternatives. Duke Energy subsequently included this figure as Attachment 1 to environmental report (ER) Supplement 1 submitted on 11/11/2021. The total acreage and locations of the parcels depicted in the figure (135 acres, 107 of which are onsite) differ slightly from the total acreage and locations described throughout Chapter 7 of the ER (approximately 130 acres, of which approximately 100 are onsite). Please confirm that the 135-acre total depicted on the figure should supersede the 130-acre value presented in the ER.

Duke Response:

Duke Energy confirms the135-acre total depicted on the ER Supplement 1 figure submitted on November 11, 2021, should supersede the 130-acre value presented in the ER with the following clarification: Note, while the total acreage differs slightly from the ER, the locations discussed in the ER and depicted in the figure are the same.

References:

None

Associated Documents:

None

Air Quality and Noise (AQN)

NRC RCI Number: AQN-3

Section 3.4 of the ER identifies that Oconee did not receive noise complaints during the 2014-2018 time period. During the environmental audit, Air Quality and Noise breakout session, and in response to information need AQN-3, Duke Energy stated that there have been no noise complaints related to Oconee plant operations since 2018. Please confirm that Duke Energy has not received noise complaints as a result of Oconee plant operations since 2018.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Environmental Justice (EJ)

NRC RCI Number: EJ-1

Section 3.11.3 of the ER states that no additional subsistence studies have been conducted, but plant staff living and working in the area are not aware of any cases of subsistence activity in the vicinity of Oconee. During the environmental audit, environmental justice break-out session, and in response to information need EJ-1, Duke Energy discussed the process used to seek information from plant staff regarding subsistence activity. Please confirm that Duke Energy conducted desktop level reviews for articles or reports of subsistence populations in the Oconee vicinity and interviewed plant staff that live in proximity to Oconee that could have knowledge of local subsistence populations.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Human Health (HH)

NRC RCI Number: HH-2
Please confirm that Duke Energy conforms to Occupational Safety and Health Administration regulations including the citing of 29 CFR 1910.269, “Power Generation, Transmission, and Distribution,” in Duke Energy's electrical safety program and procedures.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Human Health (HH)

NRC RCI Number: HH-3

Please confirm that based on a search of available resources, such as South Carolina Department of Health and Environmental (SCDHEC) websites, there have been no changes to the conditions of Lake Keowee that would increase the risk of waterborne diseases.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Human Health (HH)

NRC RCI Number: HH-6

Please confirm that the transmission line clearance evaluation performed by ENERCON for the Oconee subsequent license renewal (SLR) application applied the 2017 issuance of the National Electrical Safety Code where all in-scope transmission lines were found to have adequate clearance.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Human Health (HH)

NRC RCI Number: HH-7

Please confirm that Oconee's electrical safety program has been reviewed and found satisfactory by outside organizations such as the Nuclear Safety Council (NSC) and the Institute of Nuclear Power Operations (INPO).

Duke Response:

Oconee complies with OSHA 1910.269 and implements the best practices of NFPA 70E (Standard for Electrical Safety in the Workplace) for occupational shock hazard avoidance. As stated in Section 4.9.2, “Electric Shock Hazards,” of the Environmental Report, Duke Energy confirms that health and safety programs are documented in fleet and site-specific procedures for work with and near energized electrical equipment and lines.

References:

None

Associated Documents:

None

Land Use (LU)

NRC RCI Number: LU-1

Please confirm construction of five new observation towers began and were completed in 2020, that the five towers were built on developed land (paved or gravel) requiring no clearing, and that the tower bases are 25x25 feet with heights of 30 feet (two towers), 40 feet (one tower), and 50 feet (two towers). In addition, confirm a total of 5.07 acres of onsite forested areas was cleared for line of sight for the towers and has now been converted to open space. Please confirm that for the line-of-sight cleared areas, the trees were chipped and used as mulch for ground cover and rip rap and sediment blankets used to control erosion.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Land Use (LU)

NRC RCI Number: LU-2

Please confirm that the new watercraft barrier design and construction plans were submitted to the SCDHEC in June 2019 for a construction stormwater permit. Confirm that after application review, a revised design was submitted August 11, 2020, and construction was completed November 30, 2020. In addition, confirm that a total of 1,800 square feet (.0413 acres) was disturbed for the construction of both concrete lock anchors, and that the operation of each anchor requires a 20x20 square foot footprint resulting in 800 square feet of impervious area (.0183 acres).

Duke Response:

Duke Energy confirms with the following clarification:

“In addition, confirm that a total of 1,800 square feet (.0413 acres) was disturbed for the construction of both concrete block anchors,”

References:

None

Associated Documents:

None

Land Use (LU)

NRC RCI Number: LU-3

Please confirm that the Oconee onsite Independent Spent Fuel Storage Installation (ISFSI) configuration was expanded with construction beginning in 2016 and completed in 2019. Confirm that a total of 2.42 acres of woodlands was cleared for construction and staging of the ISFSI expansion and an additional 3.2 acres was permanently cleared for the operation of the ISFSI expansion. In addition, confirm that no wetlands were impacted by construction or operation of the ISFSI expansion.

Duke Response:

Duke Energy confirms with clarification that a total of 2.4 acres were originally cleared for construction and staging of the ISFSI expansion and an additional 4.2 acres were permanently cleared for the operation of the ISFSI expansion. The total disturbed area for the ISFSI expansion is 6.6 acres.

References:

None

Associated Documents:

None

Land Use (LU)

NRC RCI Number: LU-4
Please confirm that the area north of the current ISFSI could be used to support expanded spent nuclear fuel storage capacity following the SLR term. Confirm that this northern expansion area is previously disturbed, developed land that is currently used for site support buildings. Confirm that no wetlands are anticipated to be disturbed in the construction or operation of the northern ISFSI expansion area.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Spent Nuclear Fuel (SNF)

NRC RCI Number: SNF-1 with link to LU-4 (a) and (f)
Please confirm that the Oconee Nuclear Station ISFSI currently has nine spent fuel storage pads accommodating 166 containers in concrete-and-steel horizontal storage casks, where each canister can store 24 fuel assemblies. Also confirm that there is enough storage capacity once it is expanded to 14 pads to store spent nuclear fuel for the subsequent license renewal period.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Socioeconomics (SOC)

NRC RCI Number: SOC-4

Section 2.5 of the ER states that during refueling outages, the workforce typically consists of 800 to 900 contingent workers onsite. Section 2.5 of the ER also states that the 2020 workforce at the Oconee site consists of 1,936 persons, including 698 Oconee full-time employees and additional 1,238 persons that include contingent and outage workers. During the environmental audit, Socioeconomics break out session, and in response to information need SOC-4, Duke Energy stated that of the 1,238 workers, 548 persons were contingent non-outage workers, and 690 persons were outage worker. Please confirm that in 2020, of the 1,238 workers, 548 persons were contingent non-outage workers, and 690 persons were outage worker.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Socioeconomics (SOC)

NRC RCI Number: SOC-5

Section 3.9.5 of the ER identifies that Duke Energy employees and the Duke Energy Foundation community grants have contributed over $109,000 to Oconee County. During the environmental audit, Socioeconomics break out session, and in response to information need SOC-5, Duke Energy clarified that the Oconee staff's community contributions is on an annual basis and the $109,000 contribution was for 2018. Please confirm that the Oconee staff's community contributions is on an annual basis and that the $109,000 contribution amount referenced in the ER was for 2018.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Special Status Species and Habitats (SSH)

NRC RCI Number: SSH-4

During the environmental site audit, NRC staff reviewed records of an April 2020 meeting between Duke Energy, ENERCON, and the U.S. Fish and Wildlife Service (FWS) concerning the proposed subsequent license renewal of Oconee. Please confirm that during this meeting, the FWS stated that no federally listed endangered or threatened species or designated critical habitats occur within six miles of the Oconee site and that the FWS has no objection to the proposed action.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Surface Water (SW)

NRC RCI Number: SW-1
Based on the staff's review of the ER, including ER Appendix B, and information presented during the environmental audit, please confirm: (1) the SCDHEC is still reviewing Duke's National Pollutant Discharge Elimination System (NPDES) permit renewal application (permit no. SC0000515) for Oconee that was transmitted to SCDHEC in March 2013. (2) Duke is not aware of any issues or problems with the renewal, and SCDHEC has not provided Duke with an expected issuance date.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Surface Water (SW)

NRC RCI Number: SW-2

Based on the staff's review of the ER, including Table 9.1-1, and information presented during the environmental audit, please confirm: (1) Duke applied for continued coverage under National Pollutant Discharge Elimination System (NPDES) General Permit No. SCG16006 for Oconee (issued under SCDHEC General Permit SCG160000) prior to the permit's expiration date and received notification from SCDHEC on April 1, 2021, that the permit coverage was extended. (2) Duke paid its annual fee for continued permit coverage under NPDES General Permit SCR000074 issued to Oconee, which provides Oconee with coverage under the SCDHEC-issued General Permit SCR000000. Although General Permit SCR000000 expired on September 30, 2021, permit coverage remains in effect (administratively extended) for Oconee's industrial stormwater while SCDHEC updates and renews the statewide-general permit.

Duke Response:

Duke Energy provides the following clarification:

Duke Energy paid the annual fee in September 2021 for ONS permit SCR000074 for continued coverage under the SCDHEC-issued NPDES General Permit SCR000000. SCDHEC established the expiration date of September 30, 2021 for the NPDES General Permit SCR000000. The NPDES General Permit SCR000000 Section 1.3.2 allows for it to remain in full effect, even after expiration, until renewed by SCDHEC. Please note that this expiration date was for the general permit for all facilities covered under this general permit in South Carolina and not just ONS. Evidence of coverage are the last digits of the permit number (for ONS, it is 74). SCDHEC updates and renews on their own schedule. SCDHEC will notify current permittees covered under the general permit within ninety (90) days of the general permit issuance so recertification can be obtained. The annual fee is paid each year by ONS to maintain the permit coverage for the site and is unrelated to the expiration date.

References:

None

Associated Documents:

None

Surface Water (SW)

NRC RCI Number: SW-4

Based on the staff's review of the ER and information presented during the environmental audit, please confirm: (1) Since October 2020, Duke has only received one Notice of Violation (NOV) for Oconee involving an exceedance of the oil and grease limit at NPDES Outfall 002. The exceedance was documented in Oconee's December 2020 Discharge Monitoring Report (DMR). SCDHEC issued Duke a NOV by letter dated February 23, 2021. The letter summarized the oil and grease exceedance at Outfall 002 where the discharge on December 31, 2020, at a concentration of 10.9 mg/L exceeded the daily maximum limit. SCDHEC stated in the letter that no response was required by Duke Energy since an explanation was submitted in the DMR.

Duke Response:

Duke Energy confirms with the following two exceptions:

1. A NPDES permit exceedance occurred during October 2021 for Daily Maximum Total Suspended Solids at Outfall 002 due to prolonged heavy rainfall at the site prior to sample collection. This exceedance was reported to SCDHEC via the October 2021 Discharge Monitoring Report.
2. A wastewater spill occurred on November 1, 2021 due to a cracked PVC pipe which has since been repaired. A Wastewater Sewer System Overflow or Pump Station Failure Report was submitted to the SCDHEC on November 3, 2021 for a 3-5 gallons spill of untreated clear water from a sewage air ejector cracked PVC pipe into the Unit 1 and 2 Turbine Building Sump (TBS). The spillage was diluted into Units 1 and 2 TBS. Units 1 and 2 TBS is pumped to Chemical Treatment Pond (CTP) 3 which discharges through NPDES Outfall 002. CTP 3 holds approximately 3 million gallons of additional dilution. NPDES Outfall 002 discharges into the Keowee River (Lake Hartwell). This item is complete and no further actions are required per SCDHEC. No NOV is associated with this spill.

References:

None

Associated Documents:

None

Terrestrial Resources (TER)

NRC RCI Number: TER-2

Please confirm that Duke Energy's pesticide management plans include procedures for recognizing and avoiding rare, threatened, and endangered species. Duke Energy's Pesticide Discharge and Management Plan has procedures for Adverse Incident to Threatened or Endangers Species or Critical Habitat. "If Duke Energy becomes aware that a spill has resulted in an adverse impact to a federally listed, threatened, or endangered species, or its federally-designated critical habitat, Duke Energy will immediately notify the NMFS [National Marine Fisheries Service] ... or the FWS ...."

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Terrestrial Resources (TER)

NRC RCI Number: TER-3

Please confirm that Duke Energy has performed five ecological studies associated with onsite projects within the past 10 years that included evaluations for State listed species or their habitats.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Terrestrial Resources (TER)

NRC RCI Number: TER-5

Please confirm that Duke Energy performed bald eagle surveys in June, July, and August 2015 in areas where timber was to be removed for the Operations Training Center and ISFSI expansion. Confirm that no eagles or eagle nests were observed.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Terrestrial Resources (TER)

NRC RCI Number: TER-6

Please confirm that Duke Energy scientists performing surveys for Federally listed species in the ISFSI expansion area did not observe any State-listed threatened or endangered species in the area.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Visual Resources (VIS)

NRC RCI Number: VIS-1

Please confirm that there are three private residences with Lake Keowee water frontage where Oconee structures and activities may be visible and that these residences are located approximately 1.2 miles northeast, 1.03 miles north northwest, and 1.04 miles northwest of Oconee.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Waste Management (WM)

NRC RCI Number: WM-3

Please confirm that there were no inadvertent radioactive liquid or gaseous releases between 2014 and 2018 other than those discussed in WM-1 and WM-2 in the information needs list for the audit.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Waste Management (WM)

NRC RCI Number: WM-4

Please confirm that there have not been any reportable unplanned releases of radioactive materials that would trigger a notification requirement since the ER was written.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Waste Management (WM)

NRC RCI Number: WM-5

Please confirm that there have not been any reportable inadvertent nonradioactive spills that would be classified as an incidental spill since the ER was written.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Waste Management (WM)

NRC RCI Number: WM-6

Please confirm that there have not been any discharges that triggered the reporting provisions of 40 CFR 110 since the ER was written.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Waste Management (WM)

NRC RCI Number: WM-8

Please confirm that no releases of hazardous waste subject to reporting under 40 CFR 262.34(d)(5)(iv)(C) have occurred at Oconee since the ER was written.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Waste Management (WM)

NRC RCI Number: WM-9

Please confirm that no releases subject to reporting under SC R. 61-92.280.60 have occurred from Oconee's underground storage tanks since the ER was written.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

Waste Management (WM)

NRC RCI Number: WM-10

Please confirm that the waste minimization measures applicable to solid waste and hazardous waste are listed in the plant's applicable waste management and recycling procedures. Confirm that the measures applicable to hazard waste include:

- Where possible, replace halogenated solvents used for cleaning with environmentally safe, non-halogenated cleaners.
- To minimize the volume of hazardous waste produced, segregate waste materials as much as possible to minimize the amount of non-hazardous waste that is mixed with hazardous waste.
- Minimize the use of halogenated solvents in spray cans and use substitutes where possible.
- Keep the number of chemical materials with a short shelf-life to a minimum.
- Use all the products in cylinders.
- Obtain only the amount of materials needed for a job.

In addition, confirm that other sections of the applicable waste management and recycling procedures specifically address waste stream recycling.

Duke Response:

This information has been confirmed to be correct as stated.

References:

None

Associated Documents:

None

ENCLOSURE 3

OCONEE NUCLEAR STATION
SUBSEQUENT LICENSE RENEWAL APPLICATION, APPENDIX E
ENVIRONMENTAL REPORT

RESPONSES TO NRC REQUESTS FOR ADDITIONAL INFORMATION

Cumulative Impacts (CI)

NRC RAI Number: CI-1

REQUIREMENT: 10 CFR 51.53(c)(3)(ii)(O) requires that applicants provide information about other past, present, and reasonably foreseeable future actions occurring in the vicinity of the nuclear plant that may result in a cumulative effect. Table B-1 of 10 CFR Part 51, Appendix B to Subpart A-Cumulative Impacts, requires that the NRC staff evaluate the cumulative impacts of continued operations and refurbishment associated with license renewal in conjunction with regional resource characteristics, the resource-specific impacts of license renewal, and the cumulative significance of other factors affecting the resource. Section 4.12 of NUREG-1555, Supplement 1, Revision 1, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Operating License Renewal," directs the staff to "identify and calculate the likely cumulative environmental impacts for the area(s) or region(s) currently or likely to be affected by power plant operations and/or refurbishment activities associated with license renewal."

ISSUE: An environmental audit breakout session was held on 10/15/2021 to address the NRC staff's Information Need CI-1, which requested the name, description, location, and status of any additional past, present, or reasonably foreseeable projects or actions that have been identified since the Environmental Report (ER) was prepared. Duke Energy staff identified one new proposed project at Oconee that was not previously addressed in Section 3.1.4 of the ER; specifically, the installation of bullet traps at the Oconee Firing Range. The NRC staff requires the information posted to the portal and discussed during the breakout session to be docketed in order to assess the potential cumulative impact of this project.

REQUEST: Please provide a summary of the environmental audit discussion held on 10/15/2021 addressing the narrative response to Information Need CI-1, including necessary excavation, removal the knee wall, and management of the associated hazardous waste.

Duke Response:

ONS has scheduled a project to install bullet traps for lead collection at the ONS firing range during the second quarter of 2022. The bullet trap installation will take place within the existing facility footprint. The gun range project is expected to be completed by the fourth quarter of 2022.

The project scope includes installation of a bullet trap collection system, a running man target control system, and removal of the present “knee wall,” which is a treated lumber wall used to protect the present ONS target system. After the knee wall is removed, an additional concrete pad will be poured for the installation of the bullet trap collection system and running man target control system. All soil excavated during construction will be utilized in the project installation.

State of South Carolina permitting required for the project will include an episodic hazardous waste disposal permit for “knee wall” disposal (discarding bullets in the treated lumber), and a construction stormwater permit for “less than 2-acre land disturbance.”

References:

None

Associated Documents:

None

Cumulative Impacts (CI)

NRC RAI Number: CI-2

REQUIREMENT: 10 CFR 51.53(c)(3)(ii)(O) requires that applicants provide information about other past, present, and reasonably foreseeable future actions occurring in the vicinity of the nuclear plant that may result in a cumulative effect. Table B-1 of 10 CFR Part 51, Appendix B to Subpart A-Cumulative Impacts, requires that the NRC staff evaluate the cumulative impacts of continued operations and refurbishment associated with license renewal in conjunction with regional resource characteristics, the resource-specific impacts of license renewal, and the cumulative significance of other factors affecting the resource. Section 4.12 of NUREG-1555, Supplement 1, Revision 1, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Operating License Renewal," directs the staff to "identify and calculate the likely cumulative environmental impacts for the area(s) or region(s) currently or likely to be affected by power plant operations and/or refurbishment activities associated with license renewal."

ISSUE: An environmental audit breakout session was held on 10/15/2021 to address the NRC staff's Information Need CI-2, which requested the current status of four projects discussed in Section 3.1.4 of the ER, specifically:

a) Implementation of Oconee thermal margin recapture uprates of 15 MWe per unit
b) Upgrades to add 335 MWe to the Bad Creek pumped storage hydro station
c) Installation of a water intake on Lake Keowee for the City Walhalla
d) Installation of new shoreline rock barrier and fencing at the Lake Keowee Fall Creek Landing Site

The NRC staff requires the information posted to the portal and discussed during the breakout session to be docketed in order to assess the potential cumulative impact of this project.

REQUEST: Please provide a summary of the environmental audit discussion held on 10/15/2021 addressing the narrative response to Information Need CI-2, including clarification that Item d was in reference to southern-most Fall Creek Landing site.

Duke Response:

The following is a summary of the current status of four projects discussed in Section 3.1.4 of the Environmental Report:

a) The ONS thermal margin recapture project for all units is expected to be complete by November 2022. The measurement uncertainty recapture (MUR) power uprate will increase core thermal power (CTP) by 1.67 percent. This results in an increase of CTP from 2,568 MWt (mega-watts thermal) to 2,610 MWT, which produces approximately 15 MWe (mega-watts electrical) per unit.
b) The Bad Creek upgrade project is currently ongoing, and September 2023 is the expected project completion date. The upgrade will provide 280 MWe in generation and 236 MWe in pumping-storage.

c) The water intake installation on Lake Keowee for the city of Walhalla is complete, and the plant has been operational since February/March of 2021. The approximate location of the water intake installation is latitude 34.739000 and longitude -83.00000.
d) The Lake Keowee Fall Creek Landing project was completed in 2019. The correct Fall Creek project site is the southernmost landing.

References:

None

Associated Documents:

None

Historic and Cultural Resources (HCR)

NRC RAI Number: HCR-3

REQUIREMENT: 10 CFR 51.53(c)(3)(ii)(K) requires that all applicants identify any potentially historic or archaeological properties and assess whether any of these properties will be affected by future plant operations and any planned refurbishment activities in accordance with the National Historic Preservation Act of 1966 (NHPA). Section 106 of the NHPA directs Federal Agencies to take into account the effects of their undertakings on historic properties. Section 106 of the NHPA requires that Federal Agencies consult with the State Historic Preservation Officer (SHPO) and in accordance with 36 CFR 800.1(c), the NRC must complete the Section 106 process prior to making a decision on the licensing action. In accordance with 36 CFR 800.4(b), in consultation with the SHPO, the NRC shall take the steps necessary to identify historic properties within the area of potential effect.

ISSUE: Appendix D of the ER includes correspondence from the SCDAH dated December 5, 2019, recommending in part, that Duke Energy: 1) evaluate Oconee structures for NRHP eligibility once they reach 50 years of age; and 2) develop a cultural resource management plan for the evaluation of the associated structures for NRHP eligibility, a plan for conducting cultural resources surveys if ground-disturbing activities are proposed, and any avoidance and buffering measures that are in place.

REQUEST: Please provide a summary of the environmental audit discussion held on 10/15/2021 addressing the narrative response to Information Need HCR-3 pertaining to 1) the survey of onsite structures for NRHP eligibility and 2) the handbook and multiple procedures that Duke Energy has in place to protect cultural resources. Also provide a copy of 1) the Oconee Architectural Survey/NRHP Evaluation Draft Report (redacted as necessary to remove sensitive or proprietary information); 2) the associated September 15, 2021, cover letter transmitting the draft report to the SHPO; and 3) the associated October 7, 2021, correspondence providing SCDAH's response to the report.

Duke Response:

1) Duke Energy contracted Terracon Consultants, Inc. to conduct an architectural survey and national register evaluation of ONS and Keowee Hydroelectric Station in January and March of 2021. The draft report of the survey and evaluation was submitted to the SCDAH on September 8, 2021. SCDAH provided comments to Duke Energy on October 7, 2021. Following the environmental audit, Duke Energy addressed SCDAH comments, finalized the report, and transmitted it to SCDAH on December 14, 2021. The report outlines Duke Energy procedures regarding cultural resources and land-disturbing activities on pages 9 to 11. The SCDAH concurred with the findings and recommendations of the report.

2) Duke Energy has multiple procedures in place to protect cultural resources. The corporate cultural resources procedure, the nuclear environmental checklist, and the nuclear land-disturbing activities procedure all guide Duke Energy, its contractors, and others working at the ONS property. These three procedures help to increase awareness of the importance to identify, protect and minimize disturbance to cultural

resources during the planning, scoping, and implementation of all potential ground disturbing activities. Section 1.0 (Introduction) of the architectural survey and national register evaluation of ONS and Keowee Hydroelectric Station report describes these procedures in detail and is provided as Document 1.

A copy of the December 14, 2021, cover letter transmitting the final report to the SHPO is provided as Document 2.

A copy of the October 7, 2021, correspondence providing SCDAH's response to the report is provided as Document 3.

References:

None

Associated Documents:

Document 1: Terracon. 2021. Architectural Survey and National Register Evaluation of the Oconee Nuclear Station and Keowee Hydroelectric Station, Oconee County, South Carolina. Final Report, November 2021.

Document 2: Duke Energy. 2021. Letter from Mr. Steven M. Snider, Duke Energy, to Ms. Elizabeth Johnson, South Carolina Department of Archives and History. Re: Final Architectural Survey and National Register Evaluation of the Oconee Nuclear Station and Keowee Hydroelectric Station, Oconee County, South Carolina. December 14, 2021.

Document 3: SCDAH. 2021. Letter from Ms. Elizabeth Johnson, South Carolina Department of Archives and History, to Mr. Arun Kapur, Duke Energy. Re: Oconee Nuclear Station Units 1, 2, and 3 Subsequent License Renewal; Pickens and Oconee Counties, South Carolina; Draft Architectural Survey and National Register Evaluation. October 7, 2021.

ENCLOSURE 3 ATTACHMENT 34

HCR-3

DOCUMENT 1

TERRACON. 2021. ARCHITECTURAL SURVEY AND NATIONAL REGISTER EVALUATION OF THE OCONEE NUCLEAR STATION AND KEOWEE HYDROELECTRIC STATION, OCONEE COUNTY, SOUTH CAROLINA. FINAL REPORT, NOVEMBER 2021. (85 pages)

ARCHITECTURAL SURVEY AND NATIONAL REGISTER EVALUATION OF THE OCONEE NUCLEAR STATION AND KEOWEE HYDROELECTRIC STATION

Oconee County, South Carolina

Terracon Project No. 73207166

November 2021

Prepared For:

Duke Energy Corporation
7800 Rochester Highway
Seneca, South Carolina 29672

Prepared By:

Terracon Consultants, Inc.
521 Clemson Road
Columbia, South Carolina 29229

terracon.com

Terracon

Environmental ■ Facilities ■ Geotechnical ■ Materials

ARCHITECTURAL SURVEY AND NATIONAL REGISTER EVALUATION OF THE OCONEE NUCLEAR STATION AND KEOWEE HYDROELECTRIC STATION OCONEE COUNTY, SOUTH CAROLINA

FINAL REPORT

Prepared For:

Duke Energy Corporation
7800 Rochester Highway
Seneca, South Carolina 29672

Prepared By:

521 Clemson Road
Columbia, South Carolina 29229

Project No. 73207166

Authors:
Mills Dorn, M.H.P., Bruce G. Harvey Ph.D., and William Green, M.A.

Mills Dorn, M.H.P.
Architectural Historian

William Green, M.A. RPA # 10387
Principal Investigator

November 2021

MANAGEMENT SUMMARY

Terracon Consultants, Inc. (Terracon), on behalf of Duke Energy Corporation (Client), has completed an Architectural Survey of the Oconee Nuclear Station (ONS) located eight miles northeast of Seneca, South Carolina on the southern shore of Lake Keowee (Figures 1 and 2). This investigation is intended to document and assess structures that could be eligible for inclusion in the National Register of Historic Places (NRHP). The project is being done as part of the operating renewal licenses for Oconee Nuclear Station Units 1, 2, and 3, and is intended for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 300101 et seq.). The project was conducted following recommendations provided by the South Carolina Historic Preservation Office (SHPO) in a letter to Duke Energy, dated December 5, 2019, and in general accordance with Terracon Proposal No. P73207166, dated September 15, 2020, and a Master Services Agreement (MSA) between Terracon and Duke Energy Business Services, LLC (MSA No. 25348), dated July 16, 2020.

Fieldwork for the Architectural Survey was conducted on January 25 and 26, and again from March 23–25, 2021. This survey included the identification of above-ground historic resources within the APE, which is considered to be the boundary of the Oconee Nuclear Station. As a result of the investigation, five resources were identified and evaluated for inclusion in the National Register of Historic Places (NRHP) (Figures 1 and 2, Table 1). The documentation of the resources included high resolution photography of the exterior of the buildings to capture the architectural details and plan of the site, as well as environmental views capturing the landscape and setting. Architectural drawings of the structures were provided by Duke Energy and included drawings of the interior and exterior of the structures. Historical research was conducted at the Oconee Nuclear Station using information provided by Duke Energy.

As a result of the investigation, one resource, the Old Pickens Presbyterian Church, was found to be listed in the NRHP. Three resources, the Oconee Nuclear Station (0148) and its associated buildings, the Keowee Hydroelectric Facility (0149), and a 1970s Commercial Building (0150), were found to be eligible for inclusion in the NRHP and contribute to the proposed Oconee Nuclear Station Historic District (Figures 1 and 2). One resource, a ca. 1900s cemetery, was found to be ineligible for inclusion in the NRHP. Currently, none of NRHP-listed or eligible resources are being affected by the undertaking.

Table 1. Historic Resources within the Oconee Nuclear Station APE.

SHPO Site No.	Description	NRHP Eligibility
0029/19960404	Old Pickens Presbyterian Church	Listed
0148	Nuclear Station, ca. 1970s	Eligible
0148.01	Turbine Building, ca. 1970s	Contributing
0148.02	Reactor Building, ca. 1970s	Contributing
0148.03	Reactor Building, ca. 1970s	Contributing
0148.04	Reactor Building, ca.1970s	Contributing
0148.05	Intake Structure, ca. 1970s	Contributing

Table 2 continued. Historic Resources within the Oconee Nuclear Station APE.

SHPO Site No.	Description	NRHP Eligibility
0148.06	Discharge Structure, ca. 1970s	Contributing
0148.07	Water Tower, ca. 1970s	Contributing
0148.08	Skimmer Wall, ca. 1970s	Contributing
0148.09	Steam Generator Retirement Facility, ca. 1970s	Contributing
0149	World of Energy, ca. 1970s	Eligible
0150	Keowee Hydroelectric Facility, ca. 1970s	Eligible
0150.01	Keowee Power House, ca. 1970s	Contributing
0150.02	Intake Structure, ca. 1970s	Contributing
0150.03	Spillway, ca.1970s	Contributing
0151/38OC706	Jenkins-Little Cemetery	Not Eligible

Note: Contributing means that it contributes to the historic character of the district but is not individually eligible for the NRHP on its own.

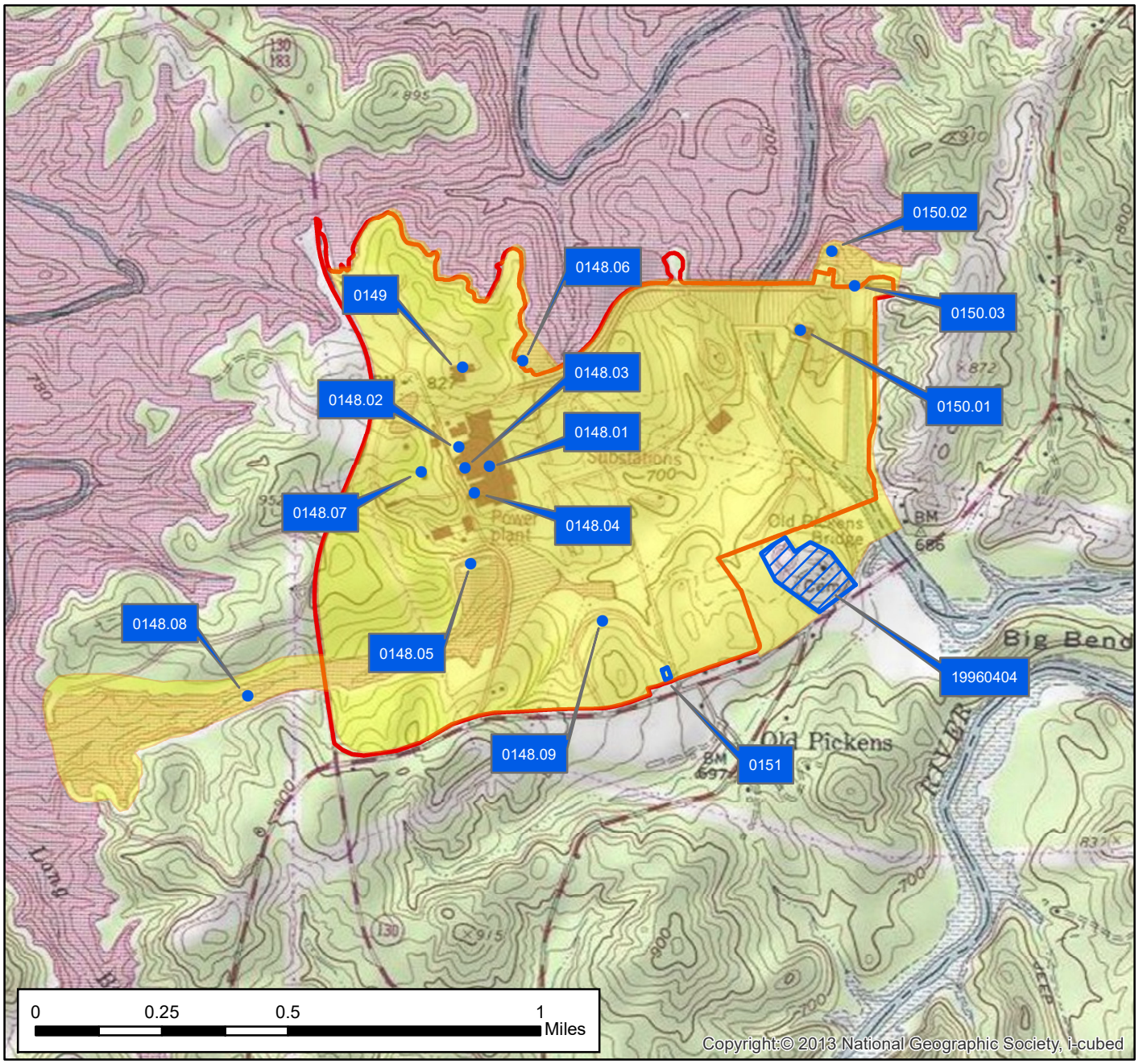
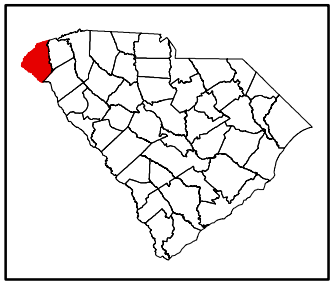


Figure 1. ONS project area and identified cultural resources.
Base Map: Old Pickens (1961, PR 1980) 7.5' USGS topographic quadrangle.

- Historic Resources - Points
- ONS Project Area
- Historic Resources - Polygons
- Historic District Boundary



Project No.	73207166
Date:	June 2021
Drawn By:	BGG
Reviewed By:	JMD

Terracon
521 Clemson Rd. Columbia, SC
PH. (803) 741-9000 terracon.com

USGS TOPOGRAPHIC MAP

OCONEE NUCLEAR STATION
OCONEE CO., SC

Figure
1

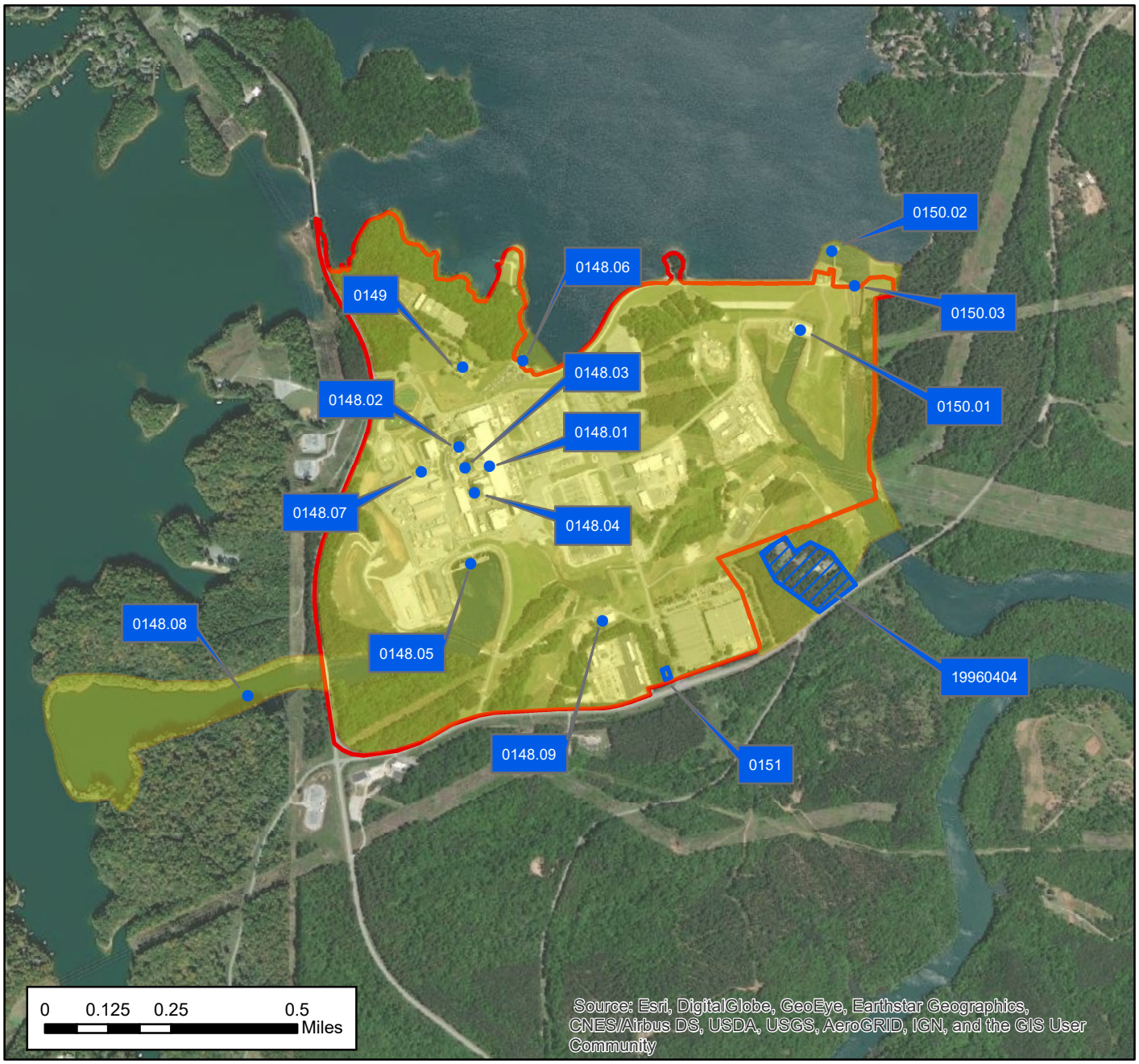
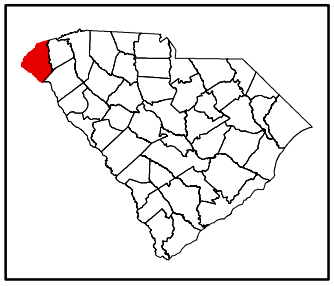


Figure 2. Aerial imagery depicting the ONS project area and identified cultural resources. Base Map: ESRI World Imagery.

- Historic Resources - Points
- ONS Project Area
- Historic Resources - Polygons
- Historic District Boundary



N W E S

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Reviewed By:	JMD

Terracon
521 Clemson Rd. Columbia, SC
PH. (803) 741-9000 terracon.com

AERIAL IMAGERY

OCONEE NUCLEAR STATION
OCONEE CO., SC

Figure
2

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Table 1. Historic Resources within the Oconee Nuclear Station APE. ii

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon), on behalf of Duke Energy Corporation (Client), has completed an Architectural Survey of the Oconee Nuclear Station (ONS) located eight miles northeast of Seneca, South Carolina on the southern shore of Lake Keowee (Figures 1 and 2). This investigation is intended to document and assess structures that could be eligible for inclusion in the National Register of Historic Places (NRHP). The project is being done as part of the operating renewal licenses for Oconee Nuclear Station Units 1, 2, and 3, and is intended for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 300101 et seq.) (NHPA). The project was conducted following recommendations provided by the South Carolina Historic Preservation Office (SHPO) in a letter to Duke Energy, dated December 5, 2019, and in general accordance with Terracon Proposal No. P73207166, dated September 15, 2020, and a Master Services Agreement (MSA) between Terracon and Duke Energy Business Services, LLC (MSA No. 25348), dated July 16, 2020.

Fieldwork for the Architectural Survey was conducted on January 25 and 26, and from March 23–25, 2021, by Mills Dorn M.H.P and Bruce Harvey Ph.D. William Green, M.A., RPA, was the Principal Investigator for the project. The report was prepared by Mills Dorn, Bruce Harvey, and William Green.

The report has been prepared in compliance with the NHPA, the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.); and procedures for the Protection of Historic Properties (36 CFR Part 800); and 36 CFR Parts 60 through 79, as appropriate. The investigation and report meet the qualifications outlined in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register 48:44716–44742). Photographic and architectural documentation has been completed in compliance with the South Carolina Statewide Survey of Historic Properties Program, as outlined in the *Survey Manual: South Carolina Statewide Survey of Historic Properties* (2018), and standards outlined by the *Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation (1983)*. The Architectural Historians for the project, Mills Dorn and Bruce Harvey, meet the Secretary of Interior's Professional Qualifications Standards as both a Historian and Architectural Historian (36 CFR Part 61).

Duke Energy and the Oconee Nuclear Station have several procedures in place regarding cultural resources and land disturbing activities. These procedures include: the corporate Cultural Resources Procedure (ADMP-ENV-EVS-00095), the nuclear Environmental Review process and Environmental Checklist (AD-EN-ALL-0900), the nuclear Land Disturbing Activities procedure (AD-EN-ALL-0440), and the Cultural Resources section associated with the corporate Environmental, Health and Safety Handbook. The purpose of the cultural resources and land disturbing procedures is to minimize impacts to sites, landmarks, and/or artifacts of potential cultural or archaeological importance. They are designed to protect historical sites, historical landmarks and artifacts, or archaeological sites during land-disturbing activities. The objective of

these procedures is to increase awareness of cultural resources and describe Duke Energy's and Oconee Nuclear Station's process for complying with local, state, and federal regulations. The cultural resources procedure applies to all facilities owned and operated by Duke Energy. Duke Energy employees and contractors who are involved in land-disturbing activities performed, assisted, permitted, or licensed by a federal or state governmental agency are subject to this procedure. Duke Energy employees and contractors have the responsibility to determine whether land disturbing activities will affect cultural resources. These activities are to be avoided and minimized at all times. Employees and contractors must contact Duke Energy's EHS department during the project-planning phase of any activities that have the potential to impact cultural resources. Permits and project specifications identify potential cultural resources within the project's scope and detail policies and procedures that must be followed by employees and contractors.

Cultural resource associated activities covered under these procedures include the following:

Constructing or expanding:

- buildings,
- facilities,
- substations,
- power plants,
- parking lots and roads,
- overhead or underground utility lines (electric, gas, etc.),
- mining and material removal,
- activities within a Federal Energy Regulatory Commission (FERC) regulated project boundary at FERC-licensed hydroelectric projects.
- Clearing rights-of-way for transmission and distribution overhead and underground utility lines.

Cultural resources include, but are not limited to, the following:

- Cemeteries, burial sites, graveyards (marked and unmarked), funeral monuments, or other sites with human remains
- Historic buildings, structures or building remains such as chimneys and foundations (typically at least 50 years old)
- Ancient sites containing cultural artifacts, such as the following:
    - Pottery, basketry, and bottles
    - Tools, iron objects, weapons, and weapon projectiles (e.g., arrowheads)
    - Ritual artifacts
    - Discarded materials (e.g., middens with shells and animal bones)
- Clusters or scatter of brick, stone, or shell (typically at least 50 years old)
- Large soil stains, or patterns of soil stains, that are associated with historic or prehistoric human occupation, including, but not limited to, such items as open campfires, charcoal, waste pits, garbage disposal, wells, trenches, and building remains

- Rock paintings, petroglyphs, or rock carvings
- Sites of historical significance to the community, state, or nation, such as battle grounds, encampments, villages, etc.
- Facilities determined to be eligible, or potentially eligible, for the National Register of Historic Places.

There is also a Historic Properties Management Plan (HPMP) for the Keowee-Toxaway Hydroelectric Project (FERC No. 2503) (August 2014) that includes the Keowee Hydroelectric Station and the Oconee Nuclear Station intake dike. This HPMP includes measures to protect and manage the associated historic properties. With the hydro HPMP and the nuclear procedures (mentioned above), Duke Energy has a robust process in place for protection and management of historic properties within the APE and are committed to compliance with the NHPA.

2.0 HISTORIC CONTEXT

2.1 SETTLEMENT OF SOUTH CAROLINA

The Spanish first explored what today is the South Carolina coast in 1521 with the expedition of Francisco Gordillo and his cousin, Pedro de Quexo. Through a ruse that lured a group of the Indians to their ships, they captured 70 men with the intent of selling them as slaves in Hispaniola. From one of these slaves, they were told stories of the region's natural bounty. Tales of the area's abundance spread throughout Europe, which inspired Spanish explorer Lucas Vázquez de Ayllón and 600 colonists, including Franciso de Chicora, to establish the colony of San Miguel de Gualdape in 1526, probably near present-day Georgetown. Although the colony failed, this was Europe's first settlement in continental North America.

The next attempted settlement of what became the southeastern U.S. occurred in 1562. French explorer Jean Ribault and 28 men established the outpost of Charlesfort on Parris Island in what is now Beaufort County. Ribault, who had sailed back to Europe for supplies, could not return to his newfound colony because war had broken out and he was detained as a prisoner in London. Due to the lack of supplies and leadership, Charlesfort failed within a year. Soon after, in 1562, the French, under the leadership of René Goulaine de Laudonnière, established a settlement called Fort Caroline along the banks of the St. John's River near Jacksonville, Florida. The settlement was destroyed in 1565 by troops under the command of Cuban governor Pedro Menéndez de Avilés.

in 1566, Avilés established the settlement of Santa Elena at the same location as Charlesfort on Parris Island. The settlement housed 650 Spanish settlers, including the family of Pedro Menéndez de Avilés, Jesuit missionaries, and soldiers. Santa Elena became the first Spanish capital of La Florida and was the base of operations for Spanish explorations into the interior led by Captain Juan Pardo. In 1587, Santa Elena was abandoned due to repeated attacks by local Indian groups and the survivors moved to St. Augustine, which then became the Spanish capital.

In 1585, the English made their first attempt at permanent settlement in North America on Roanoke Island. Two colonies were established in 1585 and 1587 by Sir Walter Raleigh, however both failed. The first large English colonization effort began in the early 1600s and was comprised of two different groups. The first group followed William Hilton from townships in the Massachusetts Bay Colony to establish a settlement along the Cape Fear River in North Carolina; however, this venture only lasted two months. In 1663, Carolana was renamed Carolina and it was granted to eight Englishmen: William Berkeley, John Colleton, Edward Hyde, George Monck, William Craven, and John Berkley, who were then known as the Lords Proprietors of Carolina. The Lords Proprietors had extensive powers to establish civil structures, collect taxes, and maintain order. However, due to their inefficient governance, settlement did not reach its potential. In 1663, Proprietor John Colleton first communicated with the Lords Proprietors concerning the settlement of the Carolinas by Barbadians. English planters from Barbados were restricted by the amount of land available in Barbados and wanted to acquire more land for farming. While waiting

for acceptance of their settlement proposal, an expedition of 200 Barbadians under Captain William Hilton on the ship *Adventure* set out in August 1663, to explore the Carolina coast. Hilton's expedition was organized to explore from the Cape Fear River southward. As a result of this expedition, a petition was sent to the Lords Proprietors requesting that the Barbadians from the expedition be allowed to purchase a tract of a thousand square miles in Carolina to be called the Corporation of the Barbadian Adventurers. Although the Proprietors rejected the proposal, the account of Hilton's voyage drew great interest in settling Carolina (Thomas 1930:75-80).

On May 29, 1664, John Vassall, a Barbadian Planter, landed a colony of settlers on the Cape Fear River in North Carolina, founding the first Charles Towne. A fortified town was built on the east side of the river just upstream from Old Town Creek. The colony grew rapidly, and by 1666 it was described as containing about 800 people living in scattered homesteads along the river. These settlers produced agricultural products for export primarily to Barbados. By the fall of 1667, however, the colony had been abandoned due to lack of support from England and dissension among the colonists. Although the colony failed, it became the impetus for the founding of a more permanent settlement to the south in South Carolina, also named Charles Towne.

In 1669, William Sayle, leading more than 100 colonists, briefly settled on the western side of the Ashley River in South Carolina. Port Royal was the original destination, though it was quickly determined to be undesirable for settlement. In 1670, Sayle reserved 600 acres at "Oyster Point" located at the convergence of the Ashley and Cooper rivers. By 1680, colonial officials had relocated the government there and named the settlement Charles Towne, which became Charleston in 1783 (Duff 2018). Two years later, laws were enacted to establish a militia and to build roads in Charleston and the surrounding area (Prentiss 1872:7).

2.2 EARLY SETTLEMENT OF OCONEE COUNTY

Prior to the American Revolution much of the area that makes up present day Oconee County was home to the Cherokee Indians. The name Oconee is derived from a Cherokee word believed to mean "land beside the water." In 1777, the lands belonging to the Cherokee were ceded through treaties signed in 1777 and 1816. (Oconee Public Library 2021). After the end of the American Revolution this land became part of South Carolina. It was first included in the Ninety-Six District, then tranferred to the Pendleton District, and lastly added to the Pickens District. One of the first settlements in the area was Oconee Station, constructed in 1792. Oconee Station, located in the present-day Oconee Station Park, was constructed as one of several militia blockhouses that were located along the South Carolina frontier (Badders 2017).

By the early 1800s many German immigrants from Charleston began to move to the area, founding the nearby town of Walhalla in 1850 (Oconee Public Library 2021). Many of these immigrants followed work associated with the railroad, establishing the Blue Ridge Railroad Company. In 1865 the company began a project to link railroad lines in South Carolina, traveling up from Charleston, with lines in Knoxville, Tennessee. Associated with this project was the construction of several tunnels passing through the Blue Ridge Mountains. Due to unforeseen

expenses and the start of the Civil War the project failed, leaving the tunnels unfinished. One of these unfinished tunnels known as the Stumphouse Tunnel still remains.

As more people began to move into the area, development in the county began to occur with the appearance of small farms and churches. One of these churches was the Old Pickens Presbyterian Church (SHPO Site No. 0029/19960404), constructed in 1827. Today the church is located within the boundary of the Oconee Nuclear Station (Figures 1 and 2). Throughout the mid- and late-nineteenth century, the area continued to grow in population and develop. With the arrival of the Atlanta Richmond Airline Railroad in the 1870s, an industrial movement in the area led to the rise of the textile industry. (Badders 2017).

2.3 FOUNDING OF SENECA

On August 14, 1873 the city of Seneca, South Carolina was founded in Oconee County. The name Seneca, an Iroquoian name, was taken from an Indian village located on the nearby Seneca River. The Atlanta Richmond Airline Railroad, which traveled through the middle of the town, was responsible for the establishment of Seneca. After the first year as an incorporated town the population was recorded as being approximately 200 residents, with about half being white and half African American. By 1880 the population had risen to 382. With the railroad traveling through the town commercial structures began to spring up. Since agriculture was a large industry in the surrounding area, many cotton and textile mills were constructed that used Seneca as a point to ship their products to the coast. The first school to be constructed in the town was built in 1874, and from 1898 to 1939 the area was home to the Seneca Institute, an African American college.

By the early twentieth century the textile and other manufacturing industries began to increase in the area and slowly replace farming as the most common occupation. In 1911, the town's population had increased to approximately 1,500 and was known as being the commercial center of Oconee County. New business and infrastructure improvements during this period included the Oconee Telephone Company, later purchased by Southern Bell in 1919, and the construction of the Tribble Field airport in 1924 (Roper 2016).

In the latter part of the twentieth century recreation became an important part of the city. Surrounding the area are two lakes constructed in the 1960s by Duke Power Company, Lake Keowee and Lake Jocasse, created as part of the Keowee-Toxaway complex. Other recreation and tourism assets to the area established during this period were the creation of four state parks, Oconee Lake Hartwell, Keowee-Toxaway, and Devil's Fork (Badders 2017). In August 1973 Seneca celebrated its 100-year anniversary as a town. A seven-block area was then designated as a National Register District to preserve historic buildings in the town center (Roper 2016).

3.0 HISTORY OF THE OCONEE NUCLEAR STATION

European scientists began experimenting with the nature of radioactive materials in the 1890s. Studies by Wilhelm Roentgen in 1895 led to an understanding of X-rays, Henri Becquerel in 1896 studied particles that were being emitted by radioactive materials and identified gamma rays, and Marie and Pierre Curie isolated both polonium and radium in 1898 and coined the word "radioactivity." Throughout the early twentieth century scientists were studying the process of nuclear rearrangement in which the bombardment of materials with radioactivity created different elements. The process of atomic fission, or splitting atoms to release energy, was first discovered in Germany by Otto Hahn and Fritz Strassman in 1938. The following year, scientists working under Niels Bohr first calculated the release of energy from atomic fission, splitting an atom into different components. Word spread to European émigré scientists in the United States by early 1939, and scientists at several universities, including Columbia University in New York and the University of California-Berkeley, confirmed and expanded on the German developments in 1939 and 1940. This included studies by the Italian scientist Enrico Fermi and the Hungarian scientist Leo Szilard that pointed to the possibility of chain reactions where neutrons released during fission could cause fission in the nuclei of other atoms. The German physicist Werner Heisenberg in late 1939 speculated that these chain reactions could be slowed down and controlled, through what is now a nuclear reactor, as a way to generate useful energy; if uncontrolled, they could release almost unimaginable amounts of destructive energy. Finally, in December 1942 a team led by Fermi in Chicago used graphite rods in a pile of uranium blocks to create a controlled and sustained nuclear chain reaction.

The possibilities of its military applications, particularly in the form of a bomb, spread quickly and in the fall of 1939 the United States government began providing official support for additional research. American and British scientists worked quickly and in concert through 1940 and 1941, and in January 1942 President Franklin D. Roosevelt gave his approval to begin development of an atomic bomb. By December 1942, research had progressed to the point that President Roosevelt gave his final approval to begin construction. In the spring of 1942, the program was put under the general direction of the U.S. Army Corps of Engineers, which in August 1942 established the Manhattan Engineer District to manage the project; it was soon known simply as the Manhattan Project. Massive facilities were built in Oak Ridge, Tennessee and Hanford, Washington to explore the best methods to supply sufficient quantities of the nuclear fuel, including the specific isotope of uranium that creates plutonium, while a bomb research and design laboratory was built at Los Alamos, New Mexico.

The work done at Oak Ridge, together with the plutonium enrichment process that the DuPont company was developing under contract to the Manhattan Project at Hanford, and the research into bomb technology being developed at Los Alamos under the direction of Robert Oppenheimer, allowed for the creation of the first atomic bomb in time for a test firing in July 1945 near

Alamogordo, New Mexico. Two atomic bombs were then used against Japan in August 1945, which led quickly to Japan's unconditional surrender and the end of World War II.

Even before the end of the war, scientists and government officials were already beginning to plan for the post-war uses of atomic energy. There were intense debates within the scientific community and within Congress throughout late 1945 and early 1946 regarding the balance between civilian and military uses, and which should take precedence in both planning and control of nuclear information. The nation's atomic program remained in the hands of the Army's Manhattan District throughout 1945 and into 1946; officials with the Manhattan District saw a need for continued research and development in the uses of atomic energy. During this time the War Department worked to create an atomic energy commission under its authority and helped to prepare a bill that was introduced in Congress in October 1945. Congress, under growing pressure from scientists and other members of the public, thwarted the proposed bill. In response, Senator Brian McMahon, a Democrat from Connecticut, introduced a bill in early 1946 that excluded the military from continuing to develop atomic energy. This in turn faced heavy opposition from Republicans in Congress. In February 1946 Senator Arthur Vandenburg, a Republican from Michigan, proposed a compromise that gave the military an active role in a proposed Atomic Energy Commission, but not the deciding vote. Further negotiations through the spring and summer of 1946 between Congress and the White House led to passage of the Atomic Energy Act of 1946, which President Harry S. Truman signed on August 1, 1946. The law created the Atomic Energy Commission (AEC), which held its initial meetings in January 1947.

While the U.S. military continued to oversee its own tests and experiments in atomic power, private companies also began to take part, initially through military contracts. Scientists working for these companies often had years of experience in working with atomic energy through the 1920s and 1930s. As noted earlier, the DuPont Company was called up during World War II to oversee the operations of the Hanford Plant in Washington State. In the immediate post-war years, both the General Electric Corporation (GE) and the Westinghouse Corporation worked with both the military and the AEC to gain experience in atomic power. Both companies also worked extensively with the United States Navy's nuclear reactors program under Commander Hyman Rickover. The Navy, working with the AEC, directed both companies to conduct research into nuclear reactors for submarines in the early 1950s, which provided additional experience in the use of atomic power for energy generation.

In particular, the Navy led the research into the pressurized water reactor. In this technology, water is pumped under high pressure to the nuclear reactor core, where it is heated in a closed system to prevent boiling, before being transferred to a steam generator. This super-heated water, which remains in a closed system, then heats lower-pressure water in a secondary system, with no contact with radioactive materials, to create steam which then drives turbines connected to an electric generator. This technology powered the world's first nuclear submarine, the *USS Nautilus*, in 1954. It was also used in the first demonstration reactor for the generation of electricity, which the AEC built at Shippingport, Pennsylvania. The Shippingport station continued to generate

electricity from 1957 until 1982 when it was decommissioned. Westinghouse then used this technology to develop the nation's first commercial nuclear-powered electric generating plant, the Yankee Rowe station in Rowe, Massachusetts, which began operations in 1960 and continued to 1992. Shortly after the technology of pressurized water reactors was established, the Argonne National Laboratory in Chicago developed the boiling water reactor, in which the heat from the nuclear reactor directly causes water to boil creating steam, which then drives the turbines. This technology was then implemented by GE in Unit 1 of the Dresden plant in northern Illinois, which also began operations in 1960.

3.1 COMMERCIAL USES OF ATOMIC ENERGY

In the wake of the work done by GE and Westinghouse in the early 1950s, the AEC challenged American industry to develop commercial nuclear power. In early 1953, a group of engineers, industrial leaders, and academics joined to form the Atomic Industrial Forum to support research leading to operational atomic energy production. A year later, the AEC announced a five-year reactor development program which provided $250 million for research and development into the possibility of atomic power production with five different reactor types (Atomic Industrial Forum 1955). The Duke Power Company was one of approximately 40 companies that took part in the Atomic Industrial Forum, and took part in the study teams that, in coordination with the AEC, studied the feasibility of atomic power generation. With its origins in the pioneering hydroelectric projects of the late 1890s in South Carolina led by William States Lee and Dr. Walker Gill Wylie, what became Duke Power Company had more than 50 years of experience in planning, developing, and operating hydroelectric plants throughout North and South Carolina by the time that it began investigating the possibilities of nuclear power.

In 1956, Duke Power Company joined with two other electric utilities—Carolina Power and Light Company and Virginia Electric and Power Company—to form the Carolinas-Virginia Nuclear Power Associates, Inc. (CVNPA). This was established as a non-profit organization that supported research and development for nuclear energy as a way to "'demonstrate the practical and economic use of nuclear energy. . .for the advancement of scientific knowledge for the public good and national defense'" (Aiken Standard and Review 1960:1) The CVNPA, which was joined by a fourth member, the South Carolina Electric and Gas Company, submitted an application to the AEC in 1959 for a license to create a demonstration nuclear power plant that would use a new technology developed by Westinghouse, a pressurized water reactor that used heavy water, a more dense form of water that allows for greater efficiency and does not require enriched uranium in the reactor.

The new plant would be located at Parr Shoals on the Broad River, northwest of Columbia, where South Carolina Electric and Gas already operated both hydroelectric and steam generating facilities; the demonstration nuclear reactor would generate steam to power the turbines in the existing coal-fired generating plant. The AEC issued the license in April 1960, which allowed the CVNPA to begin construction in October 1960 (Aiken Standard and Review 1960:12-A). The plant's reactor was designed by Westinghouse's atomic power division in Pittsburgh, while Stone

& Webster Engineering Corporation provided the architectural designs. The AEC provided $13 million toward its construction, while CVNPA's member companies spent $32 million. The nuclear generating plant, which included a hemispherical domed containment vessel to ensure that no steam escaped, was completed in October 1962. With the inclusion of a nuclear generating station, Parr Shoals was, according to an announcement at the dedication ceremony, "believed to be the only place in the world where electric power is generated by water, by coal, and by atomic energy" (Florence Morning News 1962:6-A). After extensive tests through the winter of 1962–1963, the plant first achieved a controlled chain reaction on March 30, 1963 (Florence Morning News1963:2-A). Nearly a year later, in January 1964, the Parr nuclear station first began generating electricity that was delivered to South Carolina Electric and Gas' transmission lines (Aiken Standard and Review 1964:4).

3.2 KEOWEE-TOXAWAY HYDROELECTRIC PROJECT: ORIGINS

Even before it joined the CVNPA in the development of the Parr nuclear station, Duke Power Company was planning for its largest energy development to date. As early as the 1920s, an engineer for Duke Power identified the Keowee-Toxaway valley as a potential hydroelectric site. By 1948, Duke Power began planning for a vast new hydroelectric project there. In 1963, shortly after the Parr station first achieved a chain reaction, Duke Power created the Crescent Land and Timber Company to begin purchasing the land that the company would need for the series of impoundments that it had planned. After nearly two years of land acquisitions, Duke Power President W.B. McGuire announced plans for the Keoweee-Toxaway Hydroelectric Project on January 2, 1965. This new development, estimated to cost approximately $700 million, would consist of three dams. A dam across the Little River near the small community of Newry, and a second dam on the Keowee River, would each form an impoundment that would be connected by a canal to form a single lake that covered more than 18,000 acres. The resulting Lake Keowee would serve as an impoundment for a conventional hydroelectric plant on the Keowee River. A third dam, which would be built after the first two were completed, was to be located further upstream on the Keowee River near the community of Jocassee. Lake Jocassee, which would cover approximately 3,400 acres, would extend into North Carolina and would serve as the upper impoundment for a pumped storage hydroelectric project.

While not a new approach to hydroelectric power stations, pumped storage hydroelectric projects were at that point only rarely used in the United States. Originally developed in Italy and Switzerland in the 1890s, the first pumped storage hydroelectric project in the United States was Rocky River, located on the Housatonic River in western Connecticut (completed in 1930), which created the massive Candlewood Lake. In pumped storage hydroelectric projects, the generating units in the powerhouse are reversible, allowing them to pump water from a lower reservoir to an upper reservoir during periods of low electrical usage, and then to allow water to pass through the generator turbines into the lower reservoir during periods of peak demand. While these projects ultimately consume more electricity than they generate, they can be profitable because of the enormous disparity in electricity unit costs between peak and off-peak hours. Particularly in cases where the principal source of water for the impoundment has low or irregular flows,

pumped storage facilities also allow the project's operators to have a more consistent quantity of water in the impoundment for generation during peak hours.

After Connecticut Power & Light's initial pumped storage plant in 1930, no other facilities went online in America until after World War II. Several projects were developed beginning in the 1950s. While not the first in this new wave of pumped storage projects, Duke Power's Jocassee project was one of several that were developed by the mid- to late 1960s. It remains one of the few pumped storage projects in the United States by combining a pumped storage facility at the upper dam, and a conventional hydroelectric generating station at the lower dam. Instead, most pumped storage projects constructed in the mid- and late twentieth century constructed an upper reservoir not located on a water course to serve as storage and draw from a lower reservoir that often is a natural stream, while generating electricity only at one station.

On January 4, 1965, Duke Power filed for a license to construct and operate the first phase of its planned development, the Keowee-Toxaway Hydroelectric Project, from the Federal Power Commission (FPC; precursor to the Federal Energy Regulatory Commission [FERC]). A second phase, which had not yet been defined, would include a steam generating plant. Almost immediately after its announcement, the proposed project generated opposition. The opposition came from two directions. First, the Tri-State Power Committee, a public power cooperative that represented the South Carolina Electric Cooperative Association, the North Carolina Electric Membership Corporation, and the Georgia Electric Membership Corporation, urged a delay in the licensing process to allow for public hearings. The outrage among South Carolina's government and corporate leaders was clear and immediate, fearing that the entire project would be jeopardized by the failure of the FPC to license the project with a loss of tens of millions of dollars in taxes. Despite assurances that the Tri-State Power Committee supported the project, the State Senator representing Oconee County, Marshall Parker, queried, "'Who dares oppose such a project?" (Florence Morning News 1965:4B).' As another newspaper put it, "Anyone opposing Duke Power Company's proposed Keowee-Toxaway power project...is the type who would shoot Santa Claus" (Aiken Standard and Review 1965:14A). By September 1965, with additional studies under way and in the face of political pressure, the Tri-State Power Committee agreed to withdraw its intervenor status, though the North Carolina and Georgia cooperatives continued their opposition to the project (Florence Morning News 1965:1).

Despite the fears from South Carolina's lawmakers that any delay would threaten the project, the FPC did not act immediately to license Duke Power's Keowee-Toxaway project. The delay was caused by conflicts over a wide range of proposed dams and hydroelectric projects in the upper Savannah River basin. The U.S. Army Corps of Engineers (USACE) had proposed a large dam for a multi-use project at Trotter's Shoals on the Savannah River near Abbeville, while Duke Power had proposed a steam generating plant further upstream on the Savannah River at Middleton Shoals. Both of these projects required Congressional approval, but Congress was delaying action. The Mead Paper Company, meanwhile, with Duke Power's support, had proposed a smaller dam for a manufacturing plant near the Trotter's Shoals site. What had

become the Bi-State Power Committee, consisting of Georgia and North Carolina electric cooperatives, supported the Trotter's Shoals project, the dam for which would have made both the Middleton Shoals and the Mead Paper Company project impossible. In June 1965, Secretary of the Interior Stewart Udall entered the fray when he filed a petition to oppose the project, initially on environmental grounds. In particular, he was concerned for the possibility of thermal pollution, when water that had been used for cooling purposes was allowed to flow downstream, raising the temperature of the river below the dam (Florence Morning News 1965:12). He was especially concerned that the policy that Duke Power had announced regarding drawing down the impoundment would exacerbate the problem. In addition, he created a six-member task force that would look into the effects of the project on the entire Savannah River basin, its impact on federal hydroelectric projects that were planned downstream of the project, and its impact on recreation and on fish and wildlife resources (Florence Morning News 1966:8). In his petition for intervention, however, Udall also claimed that with the construction of the federal Trotter's Shoals project, which the Department of the Interior favored, Duke Power would have no need for the Keowee-Toxaway project. Senator Strom Thurmond (Republican from South Carolina) then attacked Secretary Udall, calling him "'a socialist in his heart and a political blunderbuss in his head,'" (Aiken Standard and Review 1965:2).

Through the summer and fall of 1965, Udall and his staff held discussions with Duke Power, the USACE, and South Carolina's Congressional delegation. Late in July 1965 he withdrew his petition for intervention, instead proposing conditions that the FPC should include in a license and creating a six-person study team composed of high officials from the Department of the Interior, the Bureau of Outdoor Recreation, the National Park Service, the Department of Fish and Wildlife, and the Southeast Power Administration to study the competing proposals (Florence Morning News 1965:1,12). The study team worked throughout the fall of 1965, and in December 1965 Udall concurred with Duke Power's drawdown policies "rather than those of the Interior Department's Southeastern Power Administration." Then in a letter to the FPC in April 1966, Udall recommended that the license be issued (Florence Morning News 1966:8).

The FPC scheduled a hearing for the project on July 12, 1965. The hearing was postponed, however, to allow for continued discussions among Duke Power, the Department of the Interior, the USACE, South Carolina politicians, and the North Carolina and Georgia electric cooperatives. Finally, in late July 1965, through the offices of Senator Thurmond and Representative William Jennings Bryan Dorn (Democrat from South Carolina), the parties came to a multi-faceted agreement. Under this deal, the height of the Trotter's Shoals dam would be lowered to a level that would allow for Duke Power Company's Middleton Shoals steam generating plant. Duke Power Company would then cease its opposition to the proposed Trotter's Shoals project, while the North Carolina and Georgia electric cooperatives would cease their opposition to the Keowee-Toxaway and Middleton Shoals projects. Duke Power Company also stated that a suitable location for the Mead Paper Company had been located near Abbeville that would not be subject to flooding from the Trotter's Shoals project. The compromise package was then brought before the Georgia and South Carolina Congressional delegation, all of whom agreed to support all of

the projects and issued a joint statement announcing the deal (Aiken Standard and Review 1966:7 and 17). After a hearing in August 1966, the FPC announced on September 26, 1966 that it would issue a license to Duke Power Company for the Keowee-Toxaway project (Aiken Standard and Review 1966:1).

3.3 OCONEE NUCLEAR STATION: ORIGINS

As noted earlier, from the beginning Duke Power anticipated adding a large steam generating plant to the Keowee-Toxaway project. This was considered a second, potential phase that was not included in the original FPC license application in January 1965. In April 1966, however, while taking part in the multi-part negotiations regarding its FPC license, Duke first revealed that it was contemplating using a nuclear plant for its steam generating plant at Keowee-Toxaway, and that Babcock-Wilcox, Combustion Engineering, GE, and Westinghouse had submitted bids to provide the nuclear reactors (Florence Morning News 1966:3). Three months later, in early July 1966, before the Bi-State Power Committee had removed its opposition to the hydroelectric project, Duke Power formally announced that it had approved the construction of an atomic powered steam generating plant in association with the Keowee-Toxaway project. The company's Board of Directors approved the plan, which then consisted of two nuclear reactor units to be located near the Keowee Dam and would cost an estimated $207 million. Rather than using Westinghouse's design for the modified pressurized water reactor using heavy water at the experimental Parr Station, Duke's new Oconee Nuclear Station would use the standard pressurized water system, designed and built by Babcock-Wilcox, with "slightly enriched uranium oxide encapsulated in zirconium alloy as a fuel." The project would have to be licensed by the AEC, separately from the FPC license for the hydroelectric project (Aiken Standard and Review 1966:1). Duke Power Company's announcement came just months after the Carolina Power and Light Company, another member of the CVNPA which had built the Parr Nuclear Station, announced its plans to build a nuclear generating station near Hartsville in Darlington County, South Carolina.

In early December 1966, Duke Power Company submitted a license application to the AEC for its proposed Oconee station at the future Lake Keowee. The company's plans still included two nuclear generating units; Duke Power Company would design and build the station, while Babcock-Wilcox would provide the nuclear steam supply system and the initial fuel requirements. The plan was to have Unit 1 in commercial operation by May 1971, and Unit 2 in operation by May 1972 (Aiken Standard and Review 1966:9). On July 17, 1967, the AEC's advisory committee on reactor safeguards approved Duke Power Company's plans for the Oconee plant, setting the stage for public hearings in late August 1967. By that time, however, Duke Power Company's application included three nuclear generating units (Aiken Standard and Review 1967:2,18). After a contentious process in which 11 cities in North Carolina sought to have the AEC force Duke Power Company sell them a 4 percent stake in the plant, allowing them to acquire electricity at a lower cost that they would then sell to their customers. The cities continued to push their claim through October 1967, when the AEC finally denied their petition. In early November 1967, the AEC issued a license to Duke Power Company for the Oconee Nuclear Station, and Duke Power

announced its intention to begin construction immediately (Florence Morning News 1967:19). A final attempt by the North Carolina cities to have the AEC revoke the license failed, and the AEC upheld the license in January 1968.

3.4 CONSTRUCTION OF THE OCONEE NUCLEAR STATION

While Duke Power Company was waiting for its AEC license to build the Oconee Nuclear Station, it began construction on the hydroelectric project in early April 1967 (Florence Morning News 1967:7). Even before construction began, the land that would be within the impoundments behind the Keowee and Little Rivers dams was cleared of trees; Figure 3 shows the impoundment site behind the future Keowee dam in approximately 1966. Work on the Keowee and Little Rivers dams, and the powerhouse at the Keowee dam, proceeded simultaneously. The site for the powerhouse, at the base of the Keowee dam, was excavated down to bedrock, with portions of the exposed bedrock remaining at the northeast corner of the powerhouse. Figures 4 and 5 show the powerhouse during construction, indicating the depth of the excavation for the intakes, generating units, and draft tubes leading to the tailrace at the powerhouse's downstream face. Work on the Keowee hydroelectric project, including the two dams and the powerhouse, proceeded quickly and were largely complete by late 1969, with the impoundments at both the Little River and Keowee dams nearly at full height by early January 1970 (Figures 6 and 7). The Keowee hydroelectric project then began commercial operations in 1971.

Duke Power Company likewise moved quickly on construction of the Oconee Nuclear Station, located adjacent to the western edge of the Keowee dam. Although the license was not issued until November 1967, excavation work at the site was well advanced by the end of 1967. As seen in an aerial photograph taken in late December 1967 (Figure 8), the land that would house all three generating units had already been excavated, as had the circular foundation pit for the Unit 1 generator silo. In 1968, the reinforced concrete foundation of Unit 1 had been placed, and the walls, constructed of reinforced concrete lined with steel, were being built up from the foundation (Figure 9). The silo for Unit 1 was largely completed by September 1969, leaving only the domed top to be completed (Figure 10).

With the Unit 1 silo completed, the reactor and steam units could then be installed. The first item to be installed was the steam generator. This tubular structure was extended horizontally through an opening at the base of silo, and then lifted to vertical position by an overhead crane within the silo (Figures 11 and 12). Each generating unit contains two of these steam generators, where heat from the nuclear reactor creates the pressurized water that then creates the steam that is delivered to the adjacent building, where the steam turns the turbines that are connected to electric generators. While the steam generators for Unit 1 were delivered on time, Duke Power Company expressed frustration at the delays in securing delivery of the nuclear reactors. With three nuclear power stations then in construction or nearing completion, the capacity of the manufacturers of these new technologies was being tested (Florence Morning News 1970:6).

Figure 3. Aerial view of the Oconee Nuclear Station before construction, ca. 1966.

Figure 4. Keowee Powerhouse during construction.

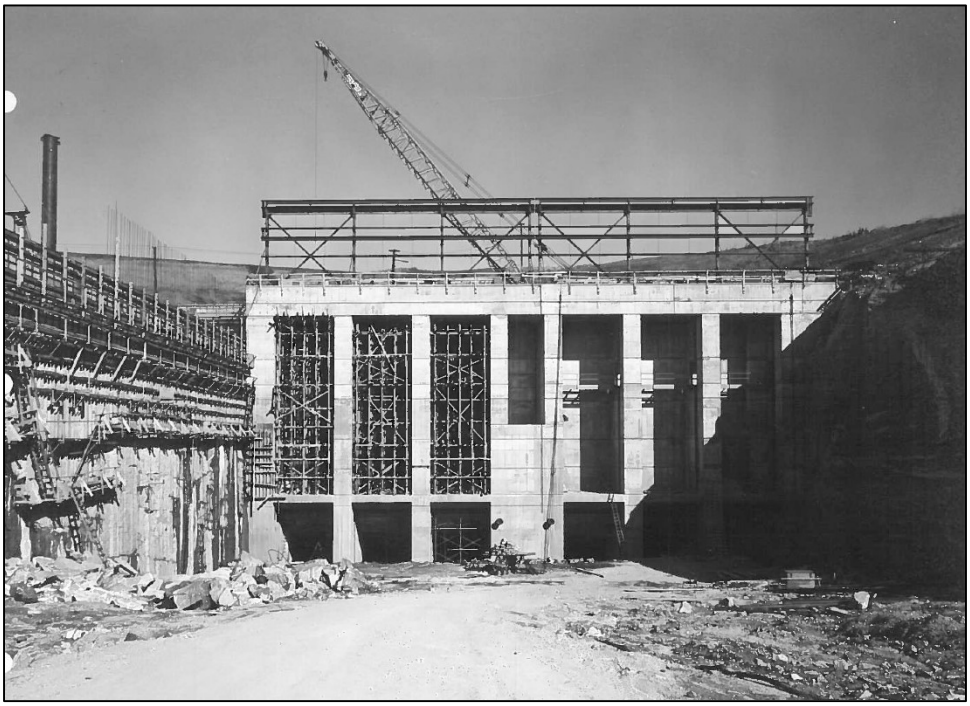


Figure 5. Keowee Dam outflow gates.

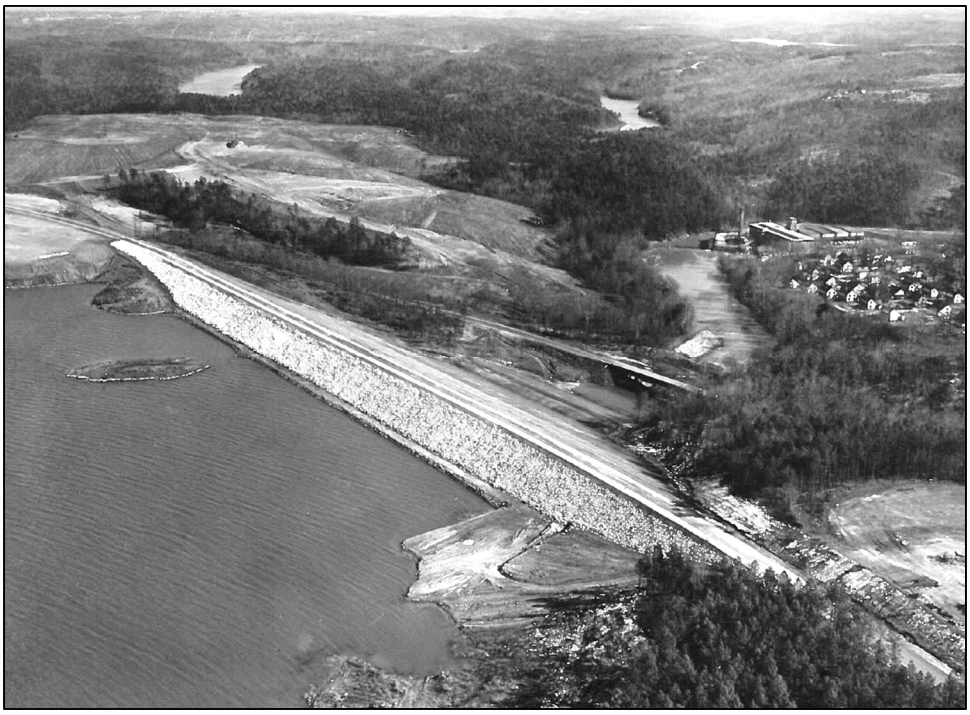


Figure 6. Keowee-Little River Dam.

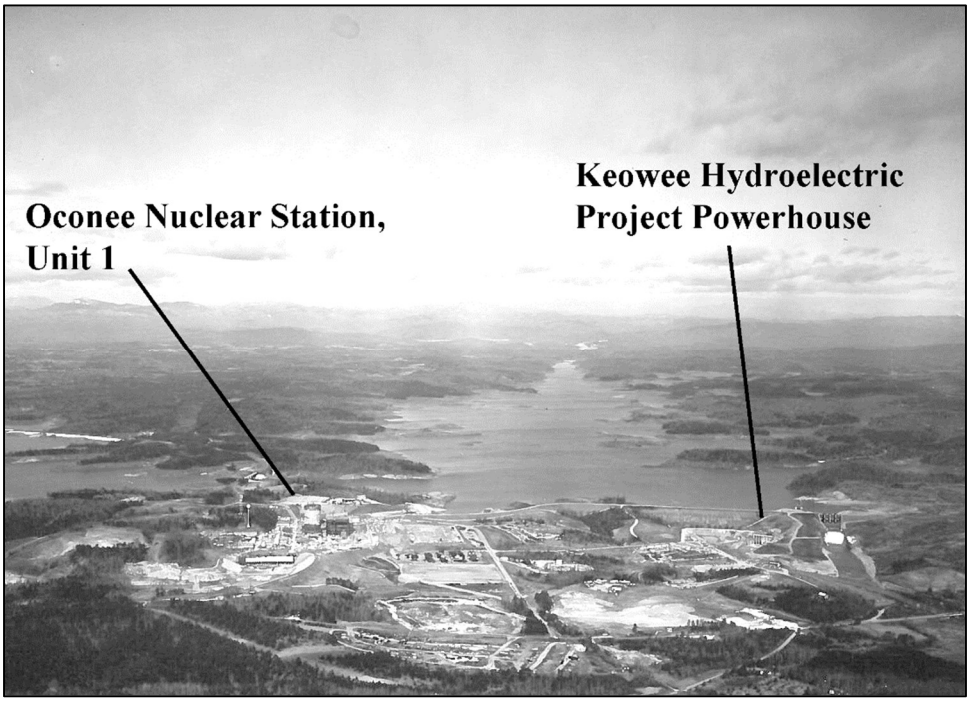


Figure 7. Keowee-Oconee aerial, labeled.

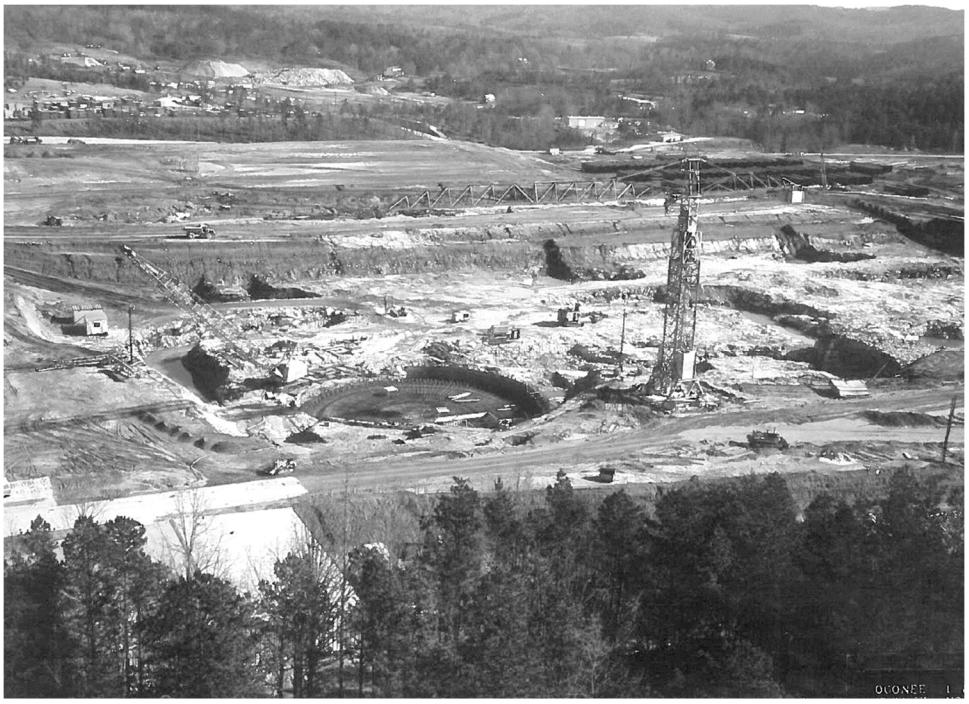


Figure 8. Oconee reinforcement mat for Unit 1.

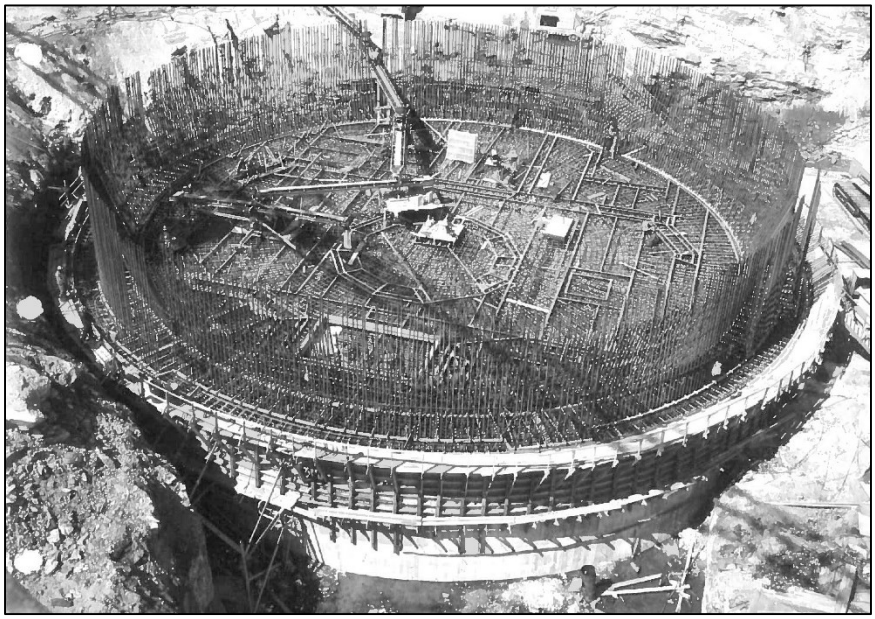


Figure 9. Construction of the foundation for Unit 1.

Figure 10. Roof construction of Unit 1, September 5, 1969.

Figure 11. Installation of a steam generator in Unit 1, September 12, 1969.

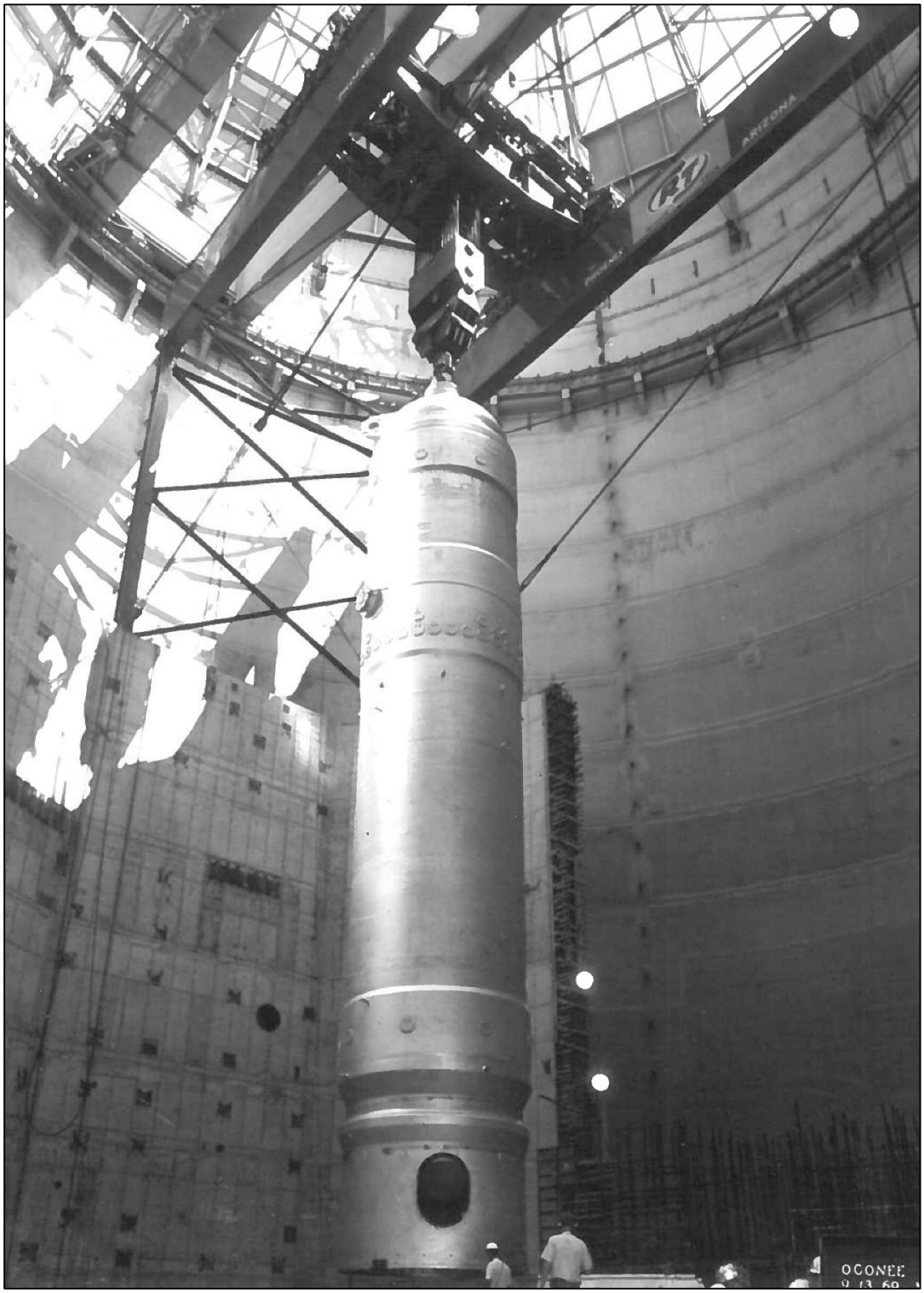


Figure 12. Installation of steam generator in reactor compartment, September 13, 1969.

Finally, in early 1970, the nuclear reactor built by Babcock-Wikcox for Unit 1 arrived. It was an arduous journey. Built at Babcock and Wilcox's manufacturing plant in Mt. Vernon, Indiana, it was shipped by barge down the Mississippi River to the Gulf of Mexico, then around the Florida Keys before traveling north through the Intracoastal Waterway. From there it was barged up the Savannah River to the port of North Augusta, where it was put on a massive truck and hauled to the Oconee site; the generators for Units 2 and 3 made a similar journey to the site in the summer of 1971 (Aiken Standard and Review 1971:1). Having traveled by a combination of barge and truck, Like the steam generators, it was brought into the silo in a horizontal position before being lifted upright (Figures 13–16).

At the same time as Unit 1 was being built, Duke Power was developing the water circulation system. The company built an intake canal from the Keowee impoundment immediately west of the dam, which led to a forebay at the south end of the Oconee generating area. Large intake tubes connected to an intake structure then brought lake water into the generating units where, converted to steam, it powered the turbines before being released through discharge pipes (Figures 17 and 18).

Once the reactor for Unit 1 was in place in February 1970, the difficult work of installing the reactor and making all the necessary connections, delivering and installing the fuel, and conducting extensive testing, required nearly three years. Duke Power first operated Unit 1 on a test basis in early May 1973. According to a Duke Power Official, "'We are entering a testing and start-up phase in which the unit will be started and stopped as we gradually increase power output toward expected commercial operation at the end of June'" (Aiken Standard and Review 1973:15). After the completion of this testing phase, Unit 1 began commercial operations on July 15, 1973. During that time Duke Power began work on the silo buildings for Units 2 and 3; an aerial photograph from 1972 shows the Unit 1 silo complete, with the silos for Units 2 and 3 in different stages of construction (Figure 19). Units 2 and 3 then began commercial operation in September and December 1973, respectively; Figure 20 shows an aerial view of the Oconee Nuclear Station as completed in 1974.

When it began generating electricity for commercial use in the summer of 1973, the Oconee Nuclear Station was the second nuclear generating facility in South Carolina. Carolina Power and Light Company (CP&L), which with Duke Power was one of the four members of the CVNPA, announced plans to study the possibility of adding a nuclear generating station to its existing steam generating station near Hartsville, South Carolina, in July 1965. CP&L officials then met with the AEC in August 1965 to present its plans and seek initial approval. Finally, in January 1966 the company announced its plans to build a nuclear station at Hartsville, having awarded a contract for its design and construction to Westinghouse using a pressurized water system. The company filed a permit with the AEC in August 1966 and received its provisional permit to begin construction in April 1967. The nuclear reactor arrived at the site in August 1968, and the station began generating commercial electricity in March 1971.

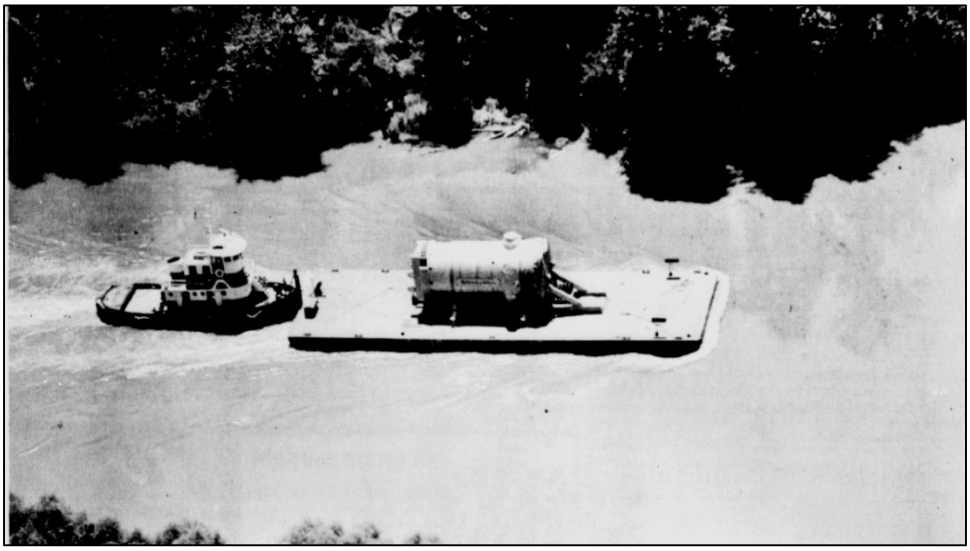


Figure 13. Reactor for Unit 3 being shipped by barge (Aiken Standard 1971:1).

Figure 14. Reactor delivery, January 13, 1970.

Figure 15. Reactor being transported across Stevens Creek, January 15, 1970.

Figure 16. Reactor being installed in the reactor building, February 7, 1970.

Figure 17. Oconee Nuclear Station grounds during construction, 1970.

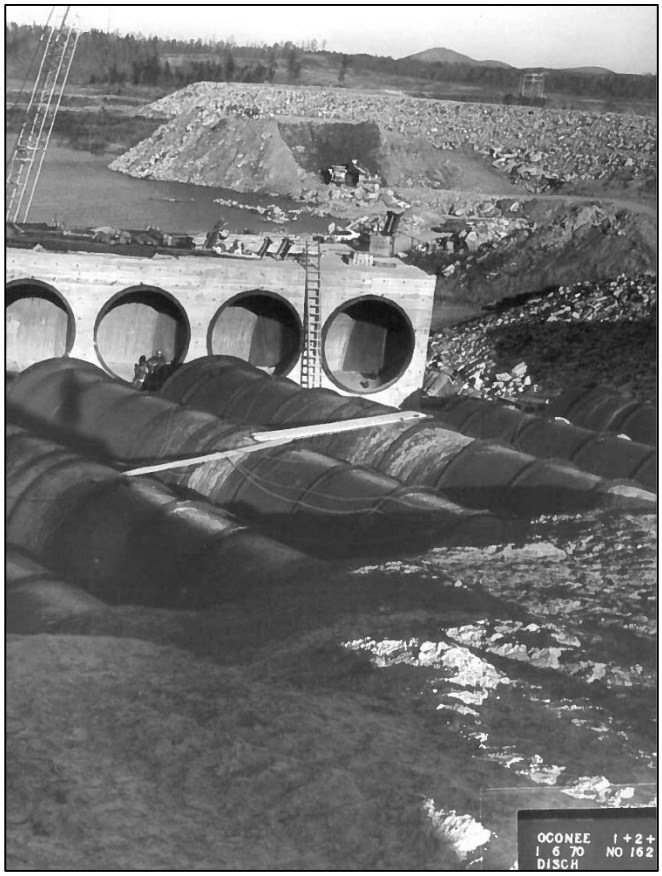


Figure 18. Discharge pipes, January 6, 1970.

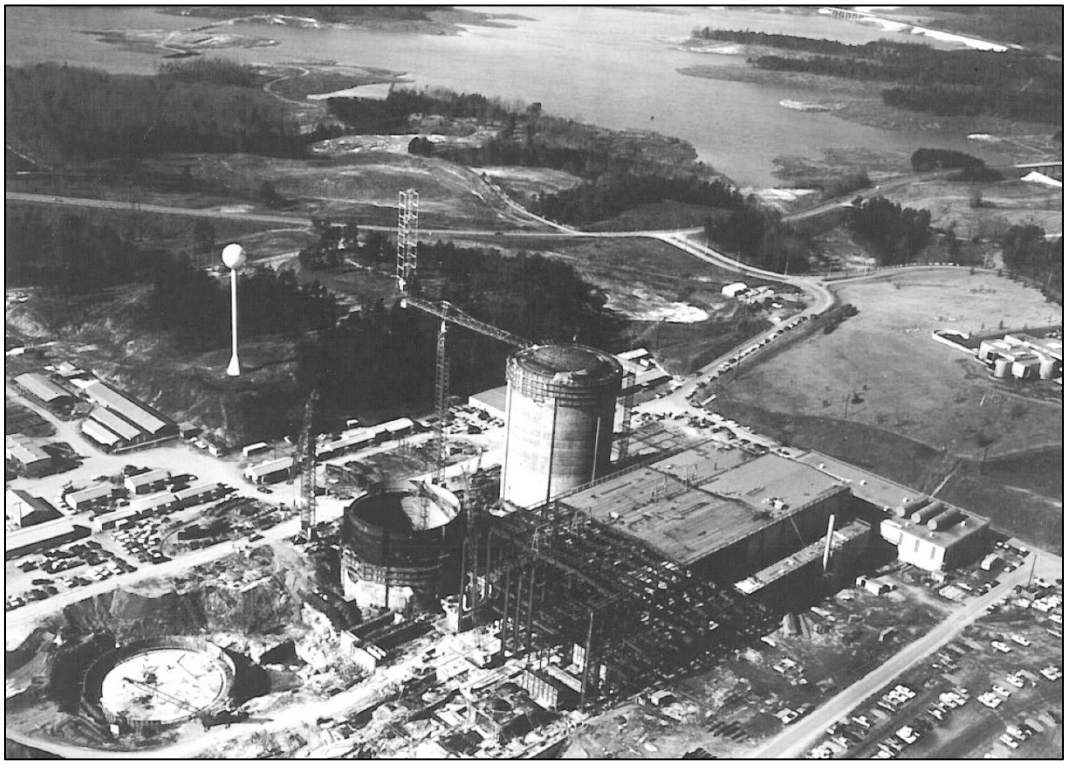


Figure 19. Aerial photo with Unit 1, looking northwest ca. 1972.

Figure 20. Aerial overview, looking southwest (1974).

The Robinson Nuclear Plant (Hartsville, South Carolina) and Oconee Nuclear Station (Seneca, South Carolina) were the earliest nuclear power plants to be built in South Carolina and they provided visitor facilities early in their construction phases. These facilities allowed visitors to see the construction in process, and to learn more about nuclear power in general and specifics about the plant. The visitor center at the Robinson Nuclear Plant was built in late 1967. The Oconee Nuclear Station visitor center, now the World of Energy Center, was built in early 1969.

4.0 RESULTS

Fieldwork for the Architectural Survey was conducted on January 25 and 26, and March 23–25, 2021 by Architectural Historian Mills Dorn, M.H.P. and Bruce Harvey Ph.D. Structures more than 40 years old within the APE were recorded and a corresponding South Carolina Statewide Survey Form was completed for each resource. These forms will be submitted to the SHPO with this report. Each identified resource was photographed using a high-resolution camera and assessed for National Register eligibility using the Criteria established by the National Park Service (36 CFR Part 60.4). Some resources could not be fully photographed due to security concerns. Approximately 5-person days (40 hours) were spent conducting the survey. As a result of the survey, five historic resources were identified. Three of these resources contribute to the proposed Oconee Nuclear Station Historic District (SHPO Site Nos. 0148, 0149, and 0150) (Figure 1). Each of these resources is described below.

4.1 OCONEE NUCLEAR STATION - SHPO SITE NO. 0148

The Oconee Nuclear Station (SHPO Site No. 0148) consists of a nuclear power station constructed between 1967 to 1970 and located at 7800 Rochester Highway, Seneca, South Carolina (Figure 1). The facility consists of a large area with nine historic resources: one building (SHPO Site No. 0148.01) and eight structures (SHPO Site Nos. 0148.02–0148.09) that contribute to a historic district. Bounding the site to the north and east is Lake Keowee, playing an important role in the operation of the nuclear plant. Located on the western boundary is the tail race of the Keowee Hydroelectric facility that empties into the Keowee River. The southern boundary of the site is East Pickens Highway. Intersecting the eastern side of the site is the Rochester Highway. Character defining features that represent the overall site consist of several roads providing transportation routes to parking areas and support structures that are located within the boundary of the nuclear site. Three access points are located along the boundary, with two entering the site from the south along the East Pickens Highway and a third to the west entering from the Rochester Highway. Another character defining feature of the site consists of a canal entering the eastern boundary of the site that is used for the cooling of the three nuclear reactors.

4.1.1 Turbine Building - SHPO Site No. 0148.01

Turbine Building (SHPO Site No. 0148.01) is a large rectangular five story building located to the west of the three concrete reactor buildings (SHPO Site Nos. 0148.02–0148.04) with several smaller projections (Figures 21 and 22). The Turbine building consists of a steel frame building with a flat roof sheathed in pressed sheet metal siding. Located along the eastern elevation of the building is a single-story addition with several single bay entry doors and louvered vents located near the roof line. Above this addition exiting from the roofline of the turbine building are two large transmission lines that feed power to two switch yards located west of the building. On the north elevation of the building is another one-story addition with

several vertical windows and single bay entry doors. Located on the west elevation are several smaller additions with mechanical space between the three reactor buildings.

Figure 21. Turbine Building - SHPO Site No. 0148.01, facing southwest.

Figure 22. Turbine Building (SHPO Site No. 0148.01), facing northwest.

Figure 23. Turbine Building (SHPO Site No. 0148.01), facing southwest.

4.1.2 Reactor Buildings - SHPO Site No. 0148.02, 0148.03, and 0148.04

Three reactor buildings (SHPO Site Nos. 0148.02, 0148.03, and 0148.04) are located on the west side of the turbine building (Figures 24–29). The buildings are constructed from reinforced concrete with domed roofs. Each building is approximately 161 feet tall and 114 feet wide. Located on the west elevations of each structure is a projecting channel providing access to cables providing tension to the structure. Along the roof of the buildings are other access points for supporting cables within the walls. The exterior of each structure is textured with vertical grooves in each concrete section.

4.1.3 Intake Structure - SHPO Site No. 0148.05

Intake Structure (SHPO Site No. 0148.05) is a concrete structure located at the end of the canal south of the Turbine Building (Figure 30). The structure is partially submerged within the canal with a small road connecting the western side. Located on the south side of the structure are vertical intake vents allowing water to enter large pumps contained within. Exiting the rear of the structure are six Y-shaped pipes carrying water to the nuclear reactors for power generation.

Figure 24. Reactor Buildings 1 and 2 (SHPO Site Nos. 0148.02 and 0148.03), facing southeast.

Figure 25. Reactor Buildings 2 and 3 (SHPO Site Nos. 0148.03 and 0148.04), facing southeast.

Figure 26. Base of Reactor Building showing access to interior support structure.

Figure 27. Close up view of Reactor Building 2 (SHPO Site No. 0148.03), facing east.

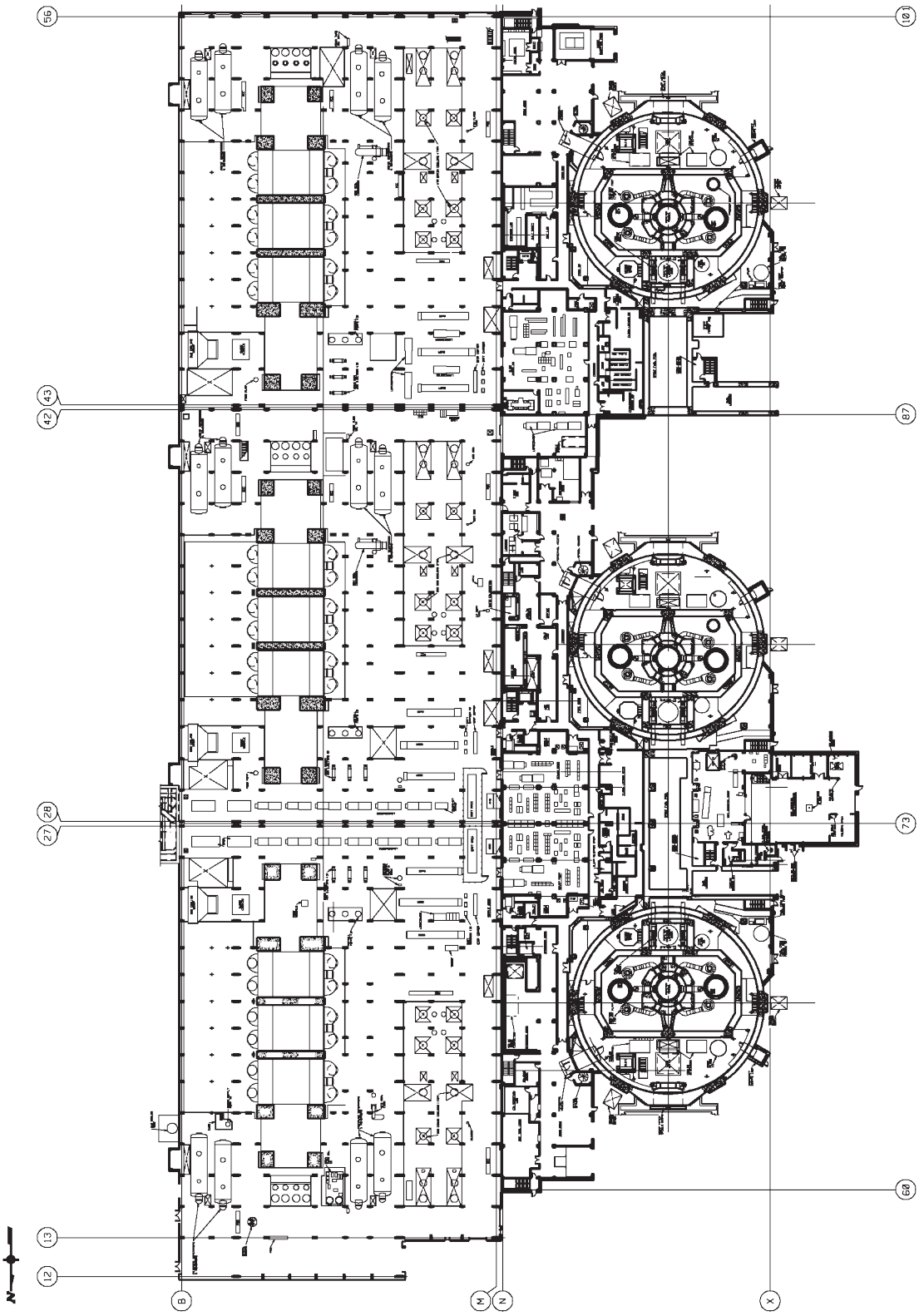


Figure 28. Architectural drawing showing the floor plans of Reactor Buildings 1-3 (SHPO Site Nos. 0148.01-0148.03) and Turbine Building (SHPO Site No. 0148.01).

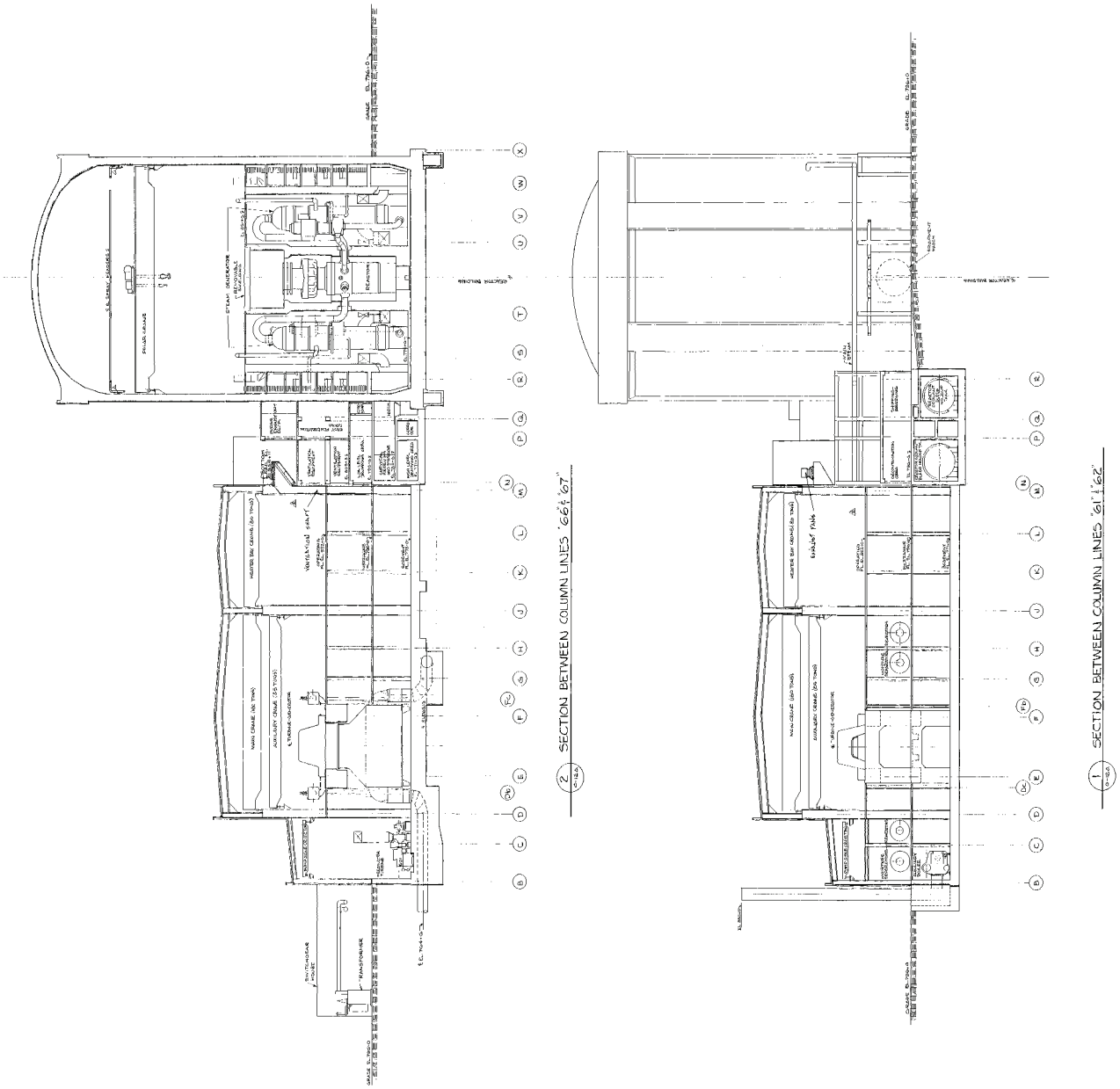


Figure 29. Architectural drawing, showing the elevation of reactor building 1 (SHPO Site No. 0148.02) and the Turbine Building (SHPO Site No.0148.01).

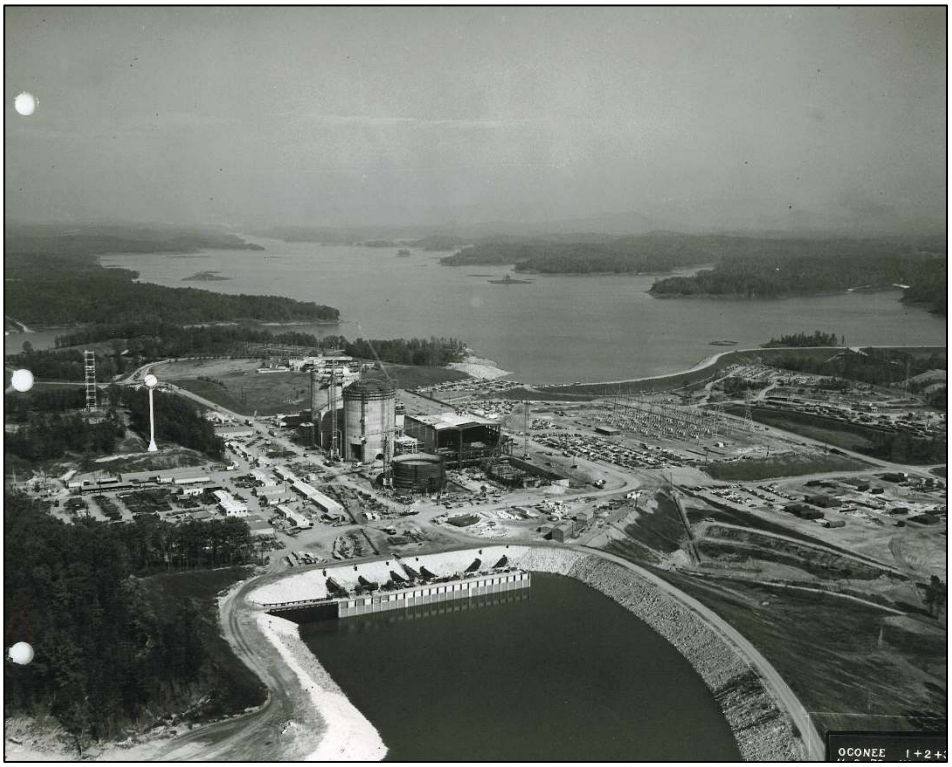


Figure 30. Intake Structure (SHPO Site No. 0148.05), facing northeast (1970)

4.1.4 Discharge Structure - SHPO Site No. 0148.06

Discharge Structure (SHPO Site No. 0148.06) is a small partially submerged concrete structure located northwest of the Turbine Building (Figure 31). The structure is located along the bank of Lake Keowee with a small road leading onto the exposed section protruding into the water. Located within the concrete structure are two discharge pipes that discharge warm water into the lake.

4.1.5 Duke Water Tower - SHPO Site No. 0148.07

Duke Water Tower (SHPO Site No. 0148.07) is a water tower located between the reactor buildings and the Rochester Highway (Figures 32 and 33). The tower consists of a single supporting tower with a tapered base. Located at the top of the tower is a spherical tank with crossing metal rings, mimicking an atom. Written on the west side of the tank is *Duke Power*.

4.1.6 Skimmer Wall - SHPO Site No. 0148.08

Skimmer Wall (SHPO Site No. 0148.07) is a submerged concrete wall located west of the Oconee Nuclear Power Station at the headwaters of the canal leading into the power station (Figures 34–36). The wall consists of concrete sections supported by metal supports between the sections. Located at the base of the wall is an opening allowing cold water from the bottom

Figure 31. Discharge Structure (SHPO Site No. 0148.06), facing northwest.

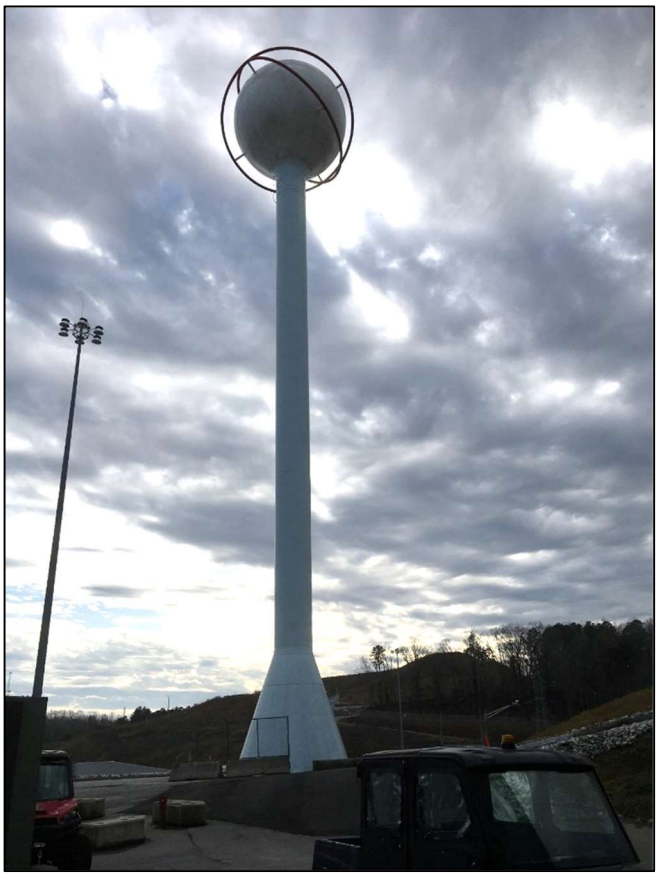
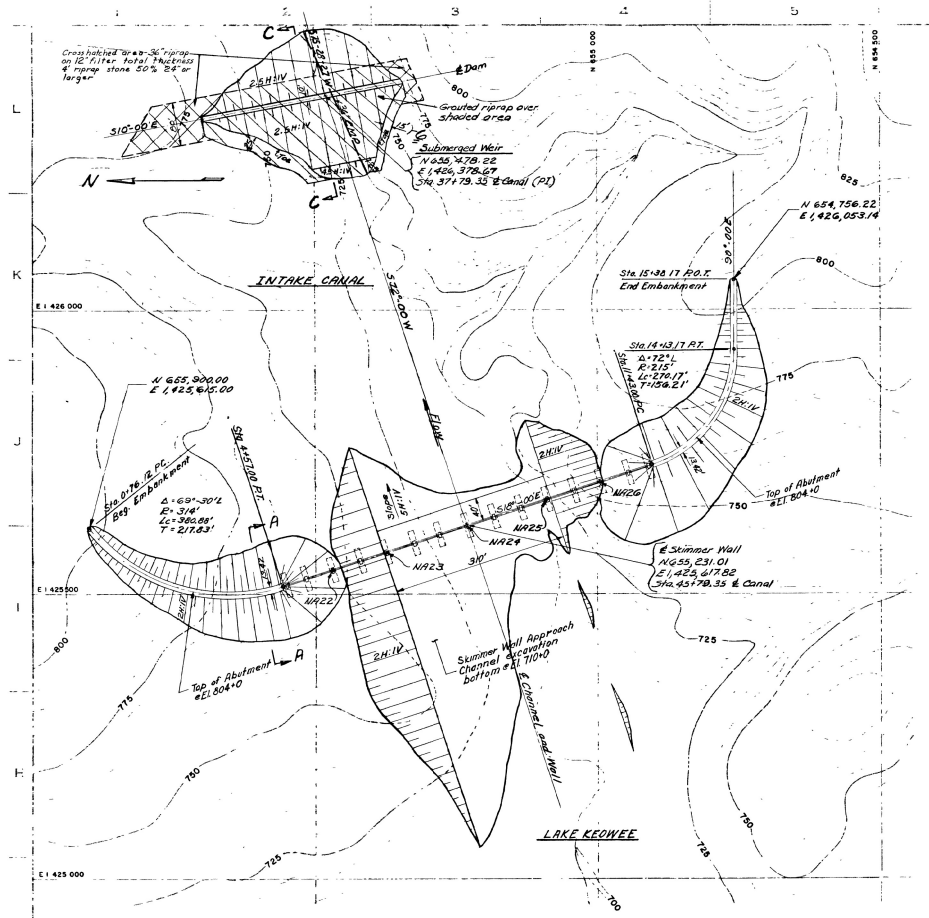


Figure 32. Duke Water Tower (SHPO Site No. 0148.07), facing southwest.

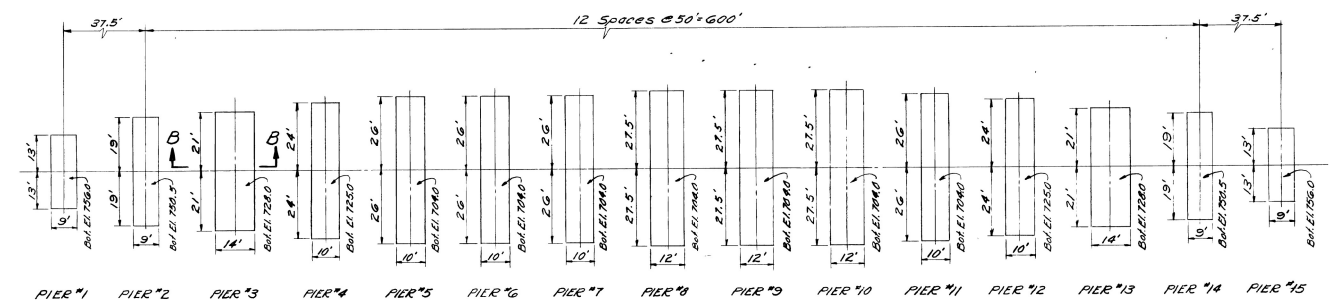
Figure 33. Duke Water Tower (SHPO Site No. 0148.07), facing northeast.

Figure 34. Skimmer Wall (SHPO Site No. 0148.08), facing northeast (1968).

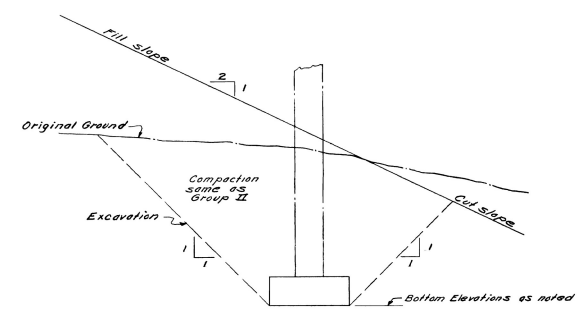
Figure 35. Skimmer Wall (SHPO Site No. 0148.08), facing northeast (1968).



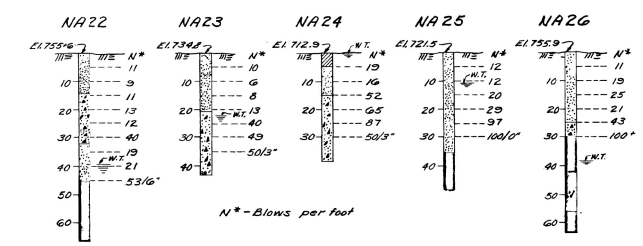
GENERAL PLAN
Scale: 1" = 100'



FOOTING EXCAVATION PLAN
Scale: 1" = 20'

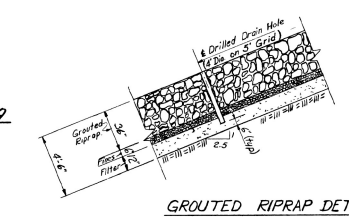


SECTION B-B
(Typical Footing Excavation)
Scale: 1" = 10'



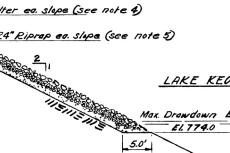
Micaceous silty sand
Micaceous silty sand with quartz fragments
Clayey silty sand
Granite Gneiss
Weathered Gneiss

TEST BORING DATA
Scale: 1" = 20'

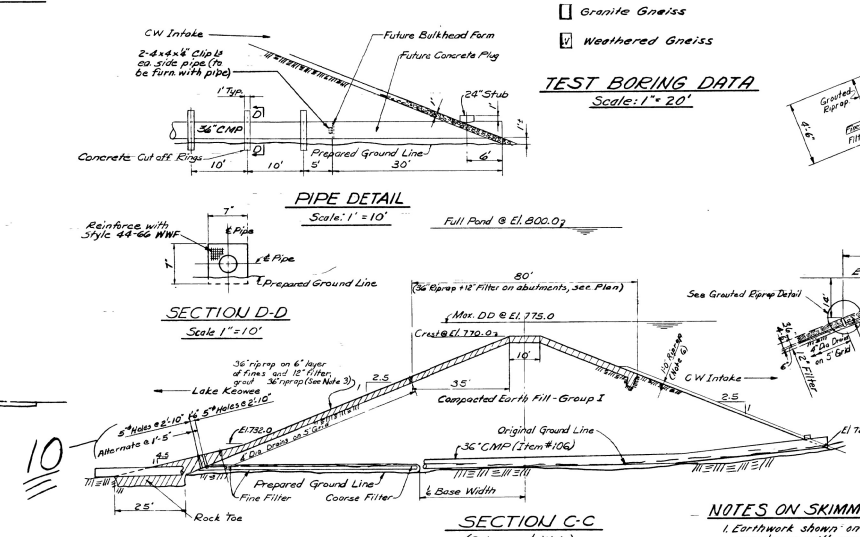


GROUTED RIPRAP DETAIL
No Scale

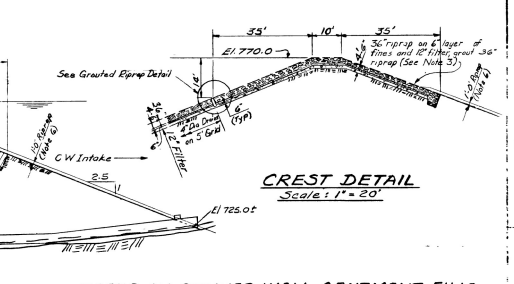
PIPE DETAIL
Scale: 1" = 10'



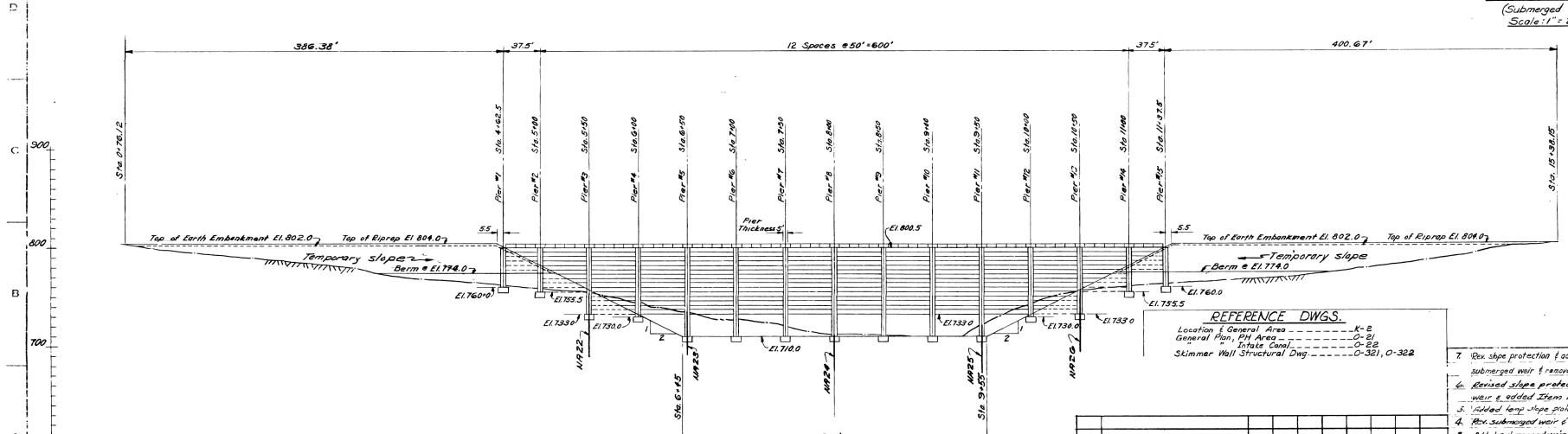
SECTION D-D
Scale 1" = 10'



SECTION C-C
(Submerged Weir)
Scale: 1" = 20'



CREST DETAIL
Scale: 1" = 20'



LAKE KEOWEE ELEVATION
Scale: 1" = 50'

EARTH FILL ABUTMENT
SECTION A-A (Typ.)
Scale: 1" = 10'

NOTES ON SKIMMER WALL ABUTMENT FILLS

1. Earthwork shown on this dwg. to be performed in accordance with applicable provisions for excavation and compacted earth fill in D.P.Co. Spec. KS-1 dtd. 12-30-66.
2. Earth fills to be placed on direction of the Engineer and coordinated with construction of concrete structures.
3. Local excavations for wall footings shall not be performed by the contractor unless so directed by the Engineer.
4. For gradation of riprap filter materials, see note 4 on dwg. K-30.
5. Riprap for skimmer wall abutment fill slopes shall be well-graded layer of stone with 50% of stone size equal to or greater than 16" in inches. Care shall be taken to insure that filter is not damaged when riprap is placed.

NOTES ON SUBMERGED WEIR

1. Applicable provisions for stripping, grubbing, Group I compacted earth fill, graded drainage system and slope protection in D.P.Co. Spec. KS-1 dated 12-30-66 shall apply.
2. In addition to foundation preparation provisions in Spec. KS-1, entire exposed foundation shall be checked by penetration testing to insure that foundation strength is at least as high as embankment materials.
3. Riprap Materials:
   3a. Grouted riprap - Well-graded layer of stone 6" to 24" with at least 50% of stone size equal to or greater than 12" dia. Grout shall be 1:2:1.2 mix by vol. with max. aggregate size of ¾".
   3c. Riprap for abutment slopes - Well-graded layer of stone with 50% stone size equal to or greater than 24" dia.
   12" Filter - For gradation of riprap filter, see Note 4, Dwg. K-30.
   6" Layer of material between riprap and filter to be crusher run stone up to ¾" size.
4. Foundation drainage blanket - For gradation see Note 4, Dwg. K-30.
5. Pipe to be plugged prior to reservoir filling to El. 780.0 or at an earlier designated time if intake canal requires filling for plant testing.
6. 12" thick layer of crusher-run stone (8" max. size) to be placed on intake side of weir for temporary slope protection during reservoir filling.

REFERENCE DWGS.

Location & General Area	K-2
General Plan, PH Area	O-21
Intake Canal	O-22
Skimmer Wall Structural Dwg.	O-321, O-322

7.	Rock slope protection added to note #3 on submerged weir & removed Item 13?	TBP	1-11-67	RDM		
6.	Revised slope protection on submerged weir & added Item 13?.	TBP	3-15-67	RDM		
5.	Added temp. slope protection on intake wall	JWP	12-20-66	WMT		
4.	Rev. submerged weir & rel for constr.	JGH	12-7-66	DJS		
3.	Added submerged weir & weir details and intake channel stations.	JWP	6-20-66	DJS	RDM	
2.	Added pier footings & boring data.	RTB	6-2-66	DJS	DJS	
1.	Released for Construction	JWP	11-30-65		RDM	
	Released for bids	JWP	10-29-65			
10.	Changed filter drain hole sizes and detailing in Section K-K	TBD	1-11-67			
9.	Changed riprap sys. for riprap spot	TBD	2-6-67			
8.	Changed stone size of grouted riprap	TBD	2-9-67			

DUKE POWER COMPANY
OCONEE NUCLEAR STATION-UNITS 1 & 2

EARTHWORK AND DRAINAGE
SKIMMER WALL
LAYOUT & DETAILS

W.T.T. 12-30-66 3-1-67
JWP 2-21-66 3-1-67

DWG. O-23

KK-1

ERN: OXΦΦΦ5PE

of Lake Keowee to enter the canal for cooling of the nuclear reactors. Beneath the water line are several underwater dams that divert water into the intake canal in the event of a dam failure. These dams are constructed from compacted soil with large rocks covering the outer layer to prevent erosion (Figure 36).

4.1.7 Steam Generator Retirement Facility - SHPO Site No. 0148.09

Steam Generator Retirement Facility (SHPO Site No. 0148.09) is a rectangular concrete structure located south of the Turbine Building (Figures 37 and 38). The building consists of a one-story plan with a second two-story portion located on the west elevation covered by a flat roof. Located on the north side of the two-story portion are seven concrete sections secured by bolts.

This Oconee Nuclear Station retains a majority of its original design and materials. It still exhibits an industrial workmanship style, has remained on its original site of construction, is still located in a rural setting, and evokes the feeling of a nuclear power facility. Therefore, it has retained integrity in design, materials, location, setting, and feeling.

In regard to the National Register Criteria for Evaluation (National Register Bulletin 15):

Criterion A – This resource is associated with the development of nuclear energy in South Carolina and is the only nuclear power facility in the United States associated with a hydroelectric facility.

Criterion B – This resource has no known association with the lives of significant persons in our past.

Criterion C – This resource retains a majority of its original design and materials and represents a significant example of a ca. 1970s nuclear power facility.

Criterion D – This resource could yield significant information about the history nuclear power plants.

This property retains a majority of its character defining features and retains significance as a ca. 1970s nuclear power station. Based on this evaluation, the Oconee Nuclear Station is recommended as being eligible for inclusion in the NRHP under Criteria A and C at the state level of significance.

Figure 37. Steam Generator Retirement Facility (SHPO Site No. 0148.09), facing southwest.

Figure 38. Steam Generator Retirement Facility (SHPO Site No. 0148.09), facing south.

4.2 WORLD OF ENERGY - SHPO SITE NO. 0149

World of Energy (SHPO Site No. 0149) is a Brutalist building located directly north of the Turbine Building outside of the main fence surrounding the Oconee Nuclear Station (Figures 1, 39–42). The World of Energy, the first building to be constructed at the nuclear station in 1969 was originally constructed to provide a place to give the public access to view the construction of Oconee Nuclear Site. The building was designed and constructed by Duke Power, however research has not been able to identify the architect involved in the design. Today the space provides public education and outreach house exhibits and displays about the history of the power industry and providing information about how nuclear energy is created. The building consists of an irregular asymmetrical plan facing the north. Located on the north façade are two large central entry doors covered by a cast concrete veranda. Flanking the entry door to the east is a one-story projection with two large fixed windows divided by a concrete support wall. Flanking the entry doors to the west is a one-story projection with no windows. The east elevation of the building is covered by large floor to ceiling fixed windows with cast concrete supports between windows. The south façade consists of a large veranda overlooking the Oconee Nuclear Station with a small garden between the building and the border fence to the nuclear site. Two large stairways provide access to the garden and patio area. A basement is located below the garden area that is accessed from two sets of concrete stairs. The west elevation of the resource consists of a concrete façade with one large square window projecting from the building footprint. Flanking the window to the south is a cylindrical projection housing an interior stairwell. Exterior materials consist of cast concrete on the exterior with quartz rocks pressed into the exterior. Covering the resource is a flat roof consisting of a pattern of squares. The roof is cantilevered and over hangs all of the elevations of the resource.

This resource retains a majority of its original design and materials. It still exhibits a Brutalist Architectural style, has remained on its original site of construction, is still located in a rural setting, and evokes the feeling of a Brutalist Building. Therefore, it has retained integrity in design, materials, location, setting, and feeling.

In regard to the National Register Criteria for Evaluation (National Register Bulletin 15):

Criterion A – This resource is associated with the development of nuclear energy in South Carolina, for being the only nuclear power facility in the United States associated with a hydroelectric facility.

Criterion B – This resource has no known association with the lives of significant persons in our past.

Criterion C – This resource retains a majority of its original design and materials and represents a significant example of a ca. 1970s Brutalist Building. It contributes to the Oconee Nuclear Station as a museum and public outreach center.

Figure 39. World of Energy (SHPO Site No. 0149), facing south.

Figure 40. World of Energy (SHPO Site No. 0149), facing west.

Figure 41. World of Energy (SHPO Site No. 0149), facing north.

Figure 42. World of Energy (Resource No. 0149), facing west.

Criterion D – This resource is unlikely to yield significant information about the history of Oconee County.

This property retains a majority of its character defining features and retains significance as a ca. 1970s Brutalist Building. Based on this evaluation, SHPO Site No. 0149 is recommended as being eligible for inclusion in the NRHP as a significant example of the Brutalist Style of architecture and as a contributing resource in the Oconee Nuclear Station Historic District.

4.3 KEOWEE HYDROELECTRIC FACILITY - SHPO SITE NO. 0150

Keowee Hydroelectric Facility (SHPO Site No. 0150) is a hydroelectric power plant constructed between 1967 and 1971 (Figure 1). The power plant consists of three historic resources (SHPO Site Nos. 0150.01–0150.03) that contribute to the Oconee Nuclear Power Station Historic District. Character defining features of the plant consist of a large earthen dam with an access road traveling along the top that provides access to several supporting structures.

4.3.1 Keowee Power House - SHPO Site No. 0150.01

Keowee Power House (SHPO Site No. 0150.01) is a large one-story rectangular structure located northeast of the Oconee Nuclear Station (Figures 43 and 44). The resource consists of a rectangular plan facing the southwest. Two large single-bay doors are located on the northwest façade of the building within a small projecting addition. Located on the southwest façade is a smaller projection with five outflow gates located below the structure. Exterior materials on the resource consist of a cast concrete foundation, pressed sheet metal siding, and small rectangular windows forming a clearstory near the roofline.

4.3.2 Intake Structure - SHPO Site No. 0150.02

Intake Structure (SHPO Site No. 0150.02) is a circular shaft located north of the Keowee Power House that extends into Lake Keowee (Figures 45 and 46). The structure consists of a concrete shaft with a steel structure located above with a small gantry crane. Connecting the structure to the shoreline is a small concrete bridge supported by cast concrete supports.

4.3.3 Spillway - SHPO Site No. 0150.03

Spillway (SHPO Site No. 0150.03) is located northeast of the Keowee Power House (Figures 47 and 48). The structure consists of a large poured concrete spillway with walls on either side to direct water into the Keowee River below. Above the spillway are four steel gates the open to release water from Lake Keowee. These gates are set into steel tracks that allow the curved gates to open using cables controlled by electric motors. Three large concrete supports are located between each gate and a small steel walkway is located above providing access to the mechanical structure and the other side of the earthen dam.

Figure 43. Keowee Power House (SHPO Site No. 0150.01), facing northeast.

Figure 44. Keowee Power House (SHPO Site No. 0150.01), facing southeast.

Figure 45. Intake Structure (SHPO Site No. 0150.02), facing northwest.

Figure 46. Intake Structure (SHPO Site No. 0150.02), facing north.

Figure 47. Spillway (SHPO Site No. 0150.03), facing northeast.

Figure 48. Spillway (SHPO Site No. 0150.03), facing southwest.

This Keowee Hydroelectric Facility retains a majority of its original design and materials. It still exhibits an industrial workmanship style, has remained on its original site of construction, is still located in a rural setting, and evokes the feeling of a hydroelectric power facility. Therefore, it has retained integrity in design, materials, location, setting, and feeling.

In regard to the National Register Criteria for Evaluation (National Register Bulletin 15):

> **Criterion A –** This resource is associated with the development of nuclear and hydroelectric energy in South Carolina and for being the only hydroelectric facility to provide emergency support to a nuclear power facility.
>
> **Criterion B –** This resource has no known association with the lives of significant persons in our past.
>
> **Criterion C –** This resource retains a majority of its original design and materials and represents a significant example of a ca. 1970s hydroelectric facility that contributes to the Oconee Nuclear Station by providing backup power in case of an emergency.
>
> **Criterion D –** This resource is unlikely to yield significant information about the history of Oconee County.

This property retains a majority of its character defining features and retains significance as a ca. 1970s hydroelectric facility. Based on this evaluation, SHPO Site No. 0150 is recommended as being eligible for inclusion in the NRHP as a contributing resource in the Oconee Nuclear Station Historic District, significant to engineering in South Carolina.

4.4 LITTLE-JENKINS CEMETERY – SHPO SITE NO. 0151

The Little Jenkins Cemetery (SHPO Site No. 0151 and SCIAA Site No. 38OC706) is a ca. 1900s cemetery located east of the East Pickens Highway entrance to the Oconee Nuclear Station (Figures 1, 49, and 50). The cemetery consists of approximately 20 burials dating from 1910 to 1932 and oriented facing the east. Headstones consist of upright cast concrete headstones and footstones. Other markers consist of simple fieldstones marking burials. Names that appear in the cemetery consist of Jenkins and Little. The cemetery is enclosed by a metal chain link fence and surrounded by heavily wooded areas to the west and north.

This resource retains a majority of its original design, vernacular workmanship style, and evokes an early nineteenth century cemetery feeling. The resource has remained on its original site of construction and is still located in a rural setting. Therefore, it has retained integrity in location, design, materials, workmanship style, feeling, and setting.

In regard to the National Register Criteria for Evaluation (National Register Bulletin 15):

Figure 49. SHPO Site No. 0151, facing northwest.

Figure 50. SHPO Site No. 0151, facing northwest.

Criterion A – This resource has no association with significant events in our history's past.

Criterion B – This resource has no known association with the lives of significant persons in our past.

Criterion C – This resource does not represent a significant example of an early nineteenth century rural cemetery.

Criterion D – Given the small number of burials, the cemetery is unlikely to yield significant information important in understanding the history of the area.

Cemeteries and graves do not qualify for NRHP listing unless they are associated with persons of exceptional significance (and is the only or best physical representation associated with that person); of outstanding age within its geographic and cultural context; feature distinctive design features; or were part of noteworthy historic events. This cemetery is not associated with a significant historic figure or event and is unlikely to yield information important to the history of the area. The cemetery does represent distinctive characteristics of a type, period, and method of construction and is not the best example of an early twentieth century cemetery. Based on this, the cemetery is recommended as being ineligible for inclusion in the NRHP.

4.5 OLD PICKENS PRESBYTERIAN CHURCH – SHPO SITE NO. 0029/ NRIS NO. 19960404

Old Pickens Presbyterian Church (SHPO Site No. 0029 /NRIS No. 19960404) is a ca. 1849 one story front gabled church and cemetery located off of South Carolina Highway 183 (Figures 1, 51, and 52). The church consists of a one-story front gable plan facing the north. Located on the north façade of the resource is a central double door entry with sidelights and a transom window. Above the door is a large twelve-over-twelve double hung sash window with sidelights covered by a stone lintel. Flanking the front entry door are two brick pilasters resting on a brick foundation. The side elevations of the church consist of three bays with sixteen-over-sixteen double hung sash windows. Located on the east elevation is a small side entry door with wooden steps covered by a stone lintel. Exterior materials consist of a load bearing common bond brick walls and asphalt shingle roofing. Located within the roof surface is a small brick chimney.

The cemetery associated with the church is located north, west, and south of the church building with a second more recent cemetery area located to the northwest (Figures 53 and 54). The cemetery consists of approximately 500 burials dating from 1835–2020. Family names that appear frequently in the cemetery consist of Todd, White, Whitmire, Reeder, Morton, Kennemur, Gantt, Clark, and Alexander. Several different grave marker types are located in the cemetery and consist of upright, raised vault, die-in-socket, ledger, cross-vault, and obelisk headstones. Coping around some family plots is constructed from concrete and stacked stone. Materials making up headstones and footstones consist of granite, marble, and concrete. The more recent

Figure 51. Old Pickens Presbyterian Church (SHPO Site No. 0029/19960404), facing south.

Figure 52. Old Pickens Presbyterian Church (SHPO Site No. 0029/19960404), facing southwest.

Figure 53. Old Pickens Presbyterian Church cemetery (SHPO Site No. 0029/19960404), facing northwest.

Figure 54. Old Pickens Presbyterian Church (SHPO Site No. 0029/19960404) recent cemetery, facing south.

cemetery located to the northwest of the church consists of marble and granite headstones with recent burials and relocated graves moved during the flooding of Lake Keowee.

This resource retains a majority of its original design and materials. It still exhibits a vernacular workmanship style, has remained on its original site of construction, is still located in a rural setting, and evokes the feeling of a nineteenth century church and cemetery. Therefore, it has retained integrity in design, materials, location, setting, and feeling.

In regard to the National Register Criteria for Evaluation (National Register Bulletin 15):

> **Criterion A –** This resource is associated with the founding of Pickens County and is the only remaining structure on the site of the Pickens District founded in 1828 (National Register Nomination Form 1996:7)
>
> **Criterion B –** This resource has no known association with the lives of significant persons in our past.
>
> **Criterion C –** This resource retains a majority of its original design and materials and represents a significant example of mid-nineteenth century church built in the meeting house style and constructed from brick rather than typical wooden framed construction (National Register Nomination Form 1996:7).
>
> **Criterion D –** It is unknown whether this resource could yield significant information about the history of the area.

This property retains a majority of its character defining features and retains significance as a mid-nineteenth century church. The resource is already listed in the NRHP (Appendix B) under Criteria A and C for its association with the founding of the original town of Pickens and as a significant architectural example of a church constructed in the meeting house style (National Register Nomination Form 1996:7).

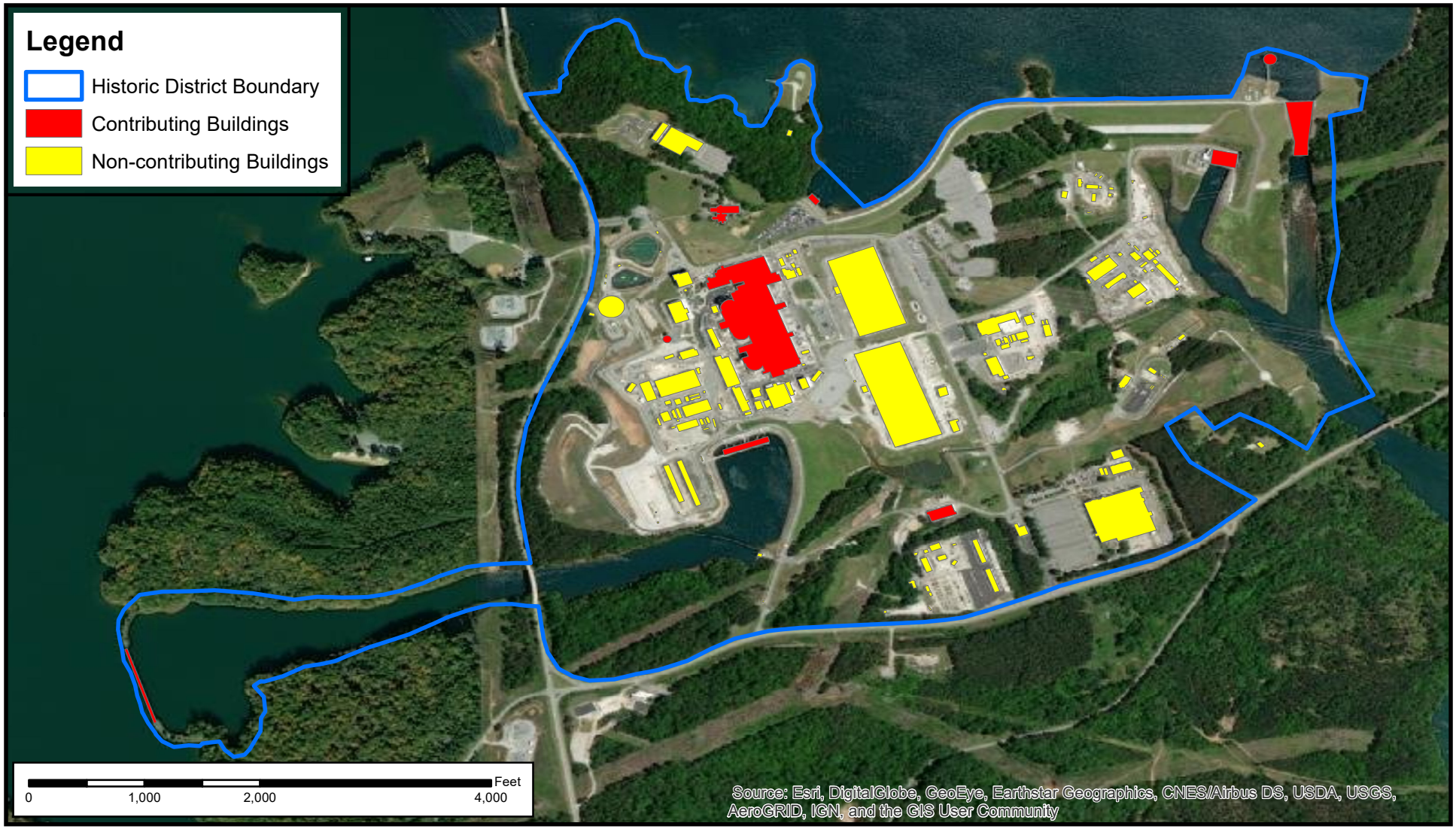
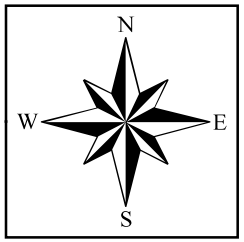


Figure 55. Oconee Nuclear Station site plan showing contributing and non-contributing resources.
Base map: ESRI World Imagery.



Project No.	73207166
Date:	June 2021
Drawn By:	JMD
Reviewed By:	BGG

Terracon

521 Clemson Rd. Columbia, SC

PH. (803) 741-9000 terracon.com

SITE PLAN

Oconee Nuclear Station
Oconee Co., South Carolina

Figure

55

5.0 CONCLUSION

Terracon has completed an Architectural Survey and National Register Evaluation of the Oconee Nuclear Station and associated facilities in Seneca, South Carolina. The project was done as part of the operating renewal licenses for Oconee Nuclear Station Units 1, 2, and 3, and is intended for compliance with Section 106 of the NHPA (54 U.S.C. § 300101 et seq.). Based on Terracon's evaluations, we recommend that the Oconee Nuclear Station (SHPO Site No. 0148), World of Energy Building (SHPO Site No. 0149), and Keowee Hydroelectric Station (SHPO Site No. 0150) are eligible as a historic district under Criteria A and C at the State level of significance. Two other resources were recorded during the survey, the Old Pickens Presbyterian Church (NRIS No.19960404) and SHPO Site No. 0151, an early twentieth century cemetery. The Old Pickens Presbyterian Church is already listed in the NRHP, while Terracon recommends the cemetery as being ineligible for inclusion. Neither of these resources contribute to the proposed Oconee Nuclear Station Historic District. Currently, the project is not impacting any of the historic resources and it is Terracon's opinion that no historic properties are being affected by the undertaking and subsequent operating license for the ONS.

Duke Energy and the Oconee Nuclear Station have several procedures in place regarding cultural resources and land disturbing activities. These procedures include: the corporate Cultural Resources Procedure (ADMP-ENV-EVS-00095), the nuclear Environmental Review process and Environmental Checklist (AD-EN-ALL-0900), the nuclear Land Disturbing Activities procedure (AD-EN-ALL-0440), and the Cultural Resources section associated with the corporate Environmental, Health and Safety Handbook. The purpose of the cultural resources and land disturbing procedures is to minimize impacts to sites, landmarks, and/or artifacts of potential cultural or archaeological importance. They are designed to protect historical sites, historical landmarks and artifacts, or archaeological sites during land-disturbing activities.

The objective of these procedures is to increase awareness of cultural resources and describe Duke Energy's and Oconee Nuclear Station's process for complying with local, state, and federal regulations. The cultural resources procedure applies to all facilities owned and operated by Duke Energy. Duke Energy employees and contractors who are involved in land-disturbing activities performed, assisted, permitted, or licensed by a federal or state governmental agency are subject to this procedure. Duke Energy employees and contractors have the responsibility to determine whether land disturbing activities will affect cultural resources. These activities are to be avoided and minimized at all times. Employees and contractors must contact Duke Energy's EHS department during the project-planning phase of any activities that have the potential to impact cultural resources. Permits and project specifications identify potential cultural resources within the project's scope and detail policies and procedures that must be followed by employees and contractors.

Cultural resource associated activities covered under these procedures include the following:

Constructing or expanding:

- buildings,
- facilities,
- substations,
- power plants,
- parking lots and roads,
- overhead or underground utility lines (electric, gas, etc.),
- mining and material removal,
- activities within a Federal Energy Regulatory Commission (FERC) regulated project boundary at FERC-licensed hydroelectric projects.
- Clearing rights-of-way for transmission and distribution overhead and underground utility lines.

Cultural resources include, but are not limited to, the following:

- Cemeteries, burial sites, graveyards (marked and unmarked), funeral monuments, or other sites with human remains
- Historic buildings, structures or building remains such as chimneys and foundations (typically at least 50 years old)
- Ancient sites containing cultural artifacts, such as the following:
    - Pottery, basketry, and bottles
    - Tools, iron objects, weapons, and weapon projectiles (e.g., arrowheads)
    - Ritual artifacts
    - Discarded materials (e.g., middens with shells and animal bones)
- Clusters or scatter of brick, stone, or shell (typically at least 50 years old)
- Large soil stains, or patterns of soil stains, that are associated with historic or prehistoric human occupation, including, but not limited to, such items as open campfires, charcoal, waste pits, garbage disposal, wells, trenches, and building remains
- Rock paintings, petroglyphs, or rock carvings
- Sites of historical significance to the community, state, or nation, such as battle grounds, encampments, villages, etc.
- Facilities determined to be eligible, or potentially eligible, for the National Register of Historic Places.

There is also an HPMP for the Keowee-Toxaway Hydroelectric Project (FERC No. 2503) (August 2014) that includes the Keowee Hydroelectric Station and the Oconee Nuclear Station intake dike. This HPMP includes measures to protect and manage the associated historic properties. With the hydro HPMP and the nuclear procedures (mentioned above), Duke Energy has a robust process in place for protection and management of historic properties within the APE and are committed to compliance with the NHPA.

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APPENDIX A – LIST OF CONTRIBUTING AND NON-CONTRIBUTING STRUCTURES

Appendix A - List of Contributing and Non-contributing Structures

Building Name	Contributing/Non-contributing
OCONEE POTABLE WATER WELL HOUSE	Non-contributing
OCONEE MACHINIST TENT	Non-contributing
OCONEE MACHINE SHOP	Non-contributing
OCONEE MAJOR PROJECT (OMP) WELD FAB SHOP	Non-contributing
OCONEE MAJOR PROJECTS OFFICE 80T502	Non-contributing
OCONEE MAJOR PROJECTS OFFICE 80T503	Non-contributing
OCONEE MAJOR PROJECTS OFFICE 80T504	Non-contributing
OCONEE MAJOR PROJECTS OFFICE 80T505	Non-contributing
OCONEE MAJOR PROJECTS OFFICE	Non-contributing
OCONEE MAJOR PROJECTS OFFICE 80T507	Non-contributing
OCONEE MAJOR PROJECTS OFFICE 80T508	Non-contributing
OCONEE STORAGE 80T509	Non-contributing
BREAKROOM 80T510	Non-contributing
OFFICE 80T511	Non-contributing
KEOWEE OPER.CONTROL CENTER 80T513	Non-contributing
OCONEE MAJOR PROJECTS OFFICE 80T514	Non-contributing
OCONEE MICROWAVE	Non-contributing
OCONEE MICROWAVE 8008	Non-contributing
OCONEE MTU COMMUNICATIONS BUILDING	Non-contributing
OCONEE GARAGE	Non-contributing
OCONEE GARAGE STORAGE 8052	Non-contributing
KWTX AREA OP UTLY BUILDING	Non-contributing
KEOWEE HYDRO STATION - POWER HOUSE	Contributing
KEOWEE EMERGENCY STORAGE 8593	Non-contributing
OCONEE INPROCESSING #1	Non-contributing
OCONEE INPROCESSING #2	Non-contributing
OCONEE INPROCESSING #3	Non-contributing
OCONEE INPROCESSING #4	Non-contributing
OCONEE SECURITY BUILDING 8005	Non-contributing
OCONEE LOCKER TRAINING BUILDING	Non-contributing
OCONEE SECURITY STATION BRE 4 (80100)	Non-contributing
OCONEE SECURITY STATION BRE 5 (80101)	Non-contributing
OCONEE POLE BUILDING 80102	Non-contributing
OCONEE POLE BUILDING 80103	Non-contributing
OCONEE POLE BUILDING 80104	Non-contributing
OCONEE MAJOR PROJECTS SHOP 80107	Non-contributing
OCONEE BAHNSON BUILDING	Non-contributing
OCONEE SECURITY STATION BRE 6 (80110)	Non-contributing
OCONEE SECURITY STATION BRE 7 (80111)	Non-contributing
OCONEE DOCUMENT DESTRUCTION BUILDING 80112	Non-contributing
OCONEE ALLOY 600 #3	Non-contributing
OCONEE MAINTENCE / SHOP FACILITY 80113	Non-contributing
OCONEE REFURB OFFICE #2 80114	Non-contributing
OCONEE RESTROOM TRAILER 80115	Non-contributing
OCONEE CRAFT STAGING BLDG 80116	Non-contributing
OCONEE DOUBLE WIDE	Non-contributing

Appendix A - List of Contributing and Non-contrubuting Structures

OCONEE ALLOY 600 #1	Non-contributing
OCONEE ALLOY 600 #2	Non-contributing
OCONEE SECURITY STATION BRE 8	Non-contributing
OCONEE SECURITY STATION BRE 9 (80122)	Non-contributing
OCONEE SECURITY STATION BRE 10 (80123)	Non-contributing
JOCASSEE STRATEGY BUILDING 80125	Non-contributing
OCONEE SECURITY STATION CKP 3 (80126)	Non-contributing
OCONEE SECURITY STATION VAP 2 (80127)	Non-contributing
OCONEE MODULAR COMPLEX	Non-contributing
OCONEE TREAT STORAGE DISP FACILITY 8018	Non-contributing
OCONEE INSTRUMENTATION FACILITY	Non-contributing
OCONEE REFURB WAREHOUSE 8022	Non-contributing
OCONEE METEOROLOGICAL SHED	Non-contributing
OCONEE FACILITY SHOP 8025	Non-contributing
OCONEE MAJOR PROJECTS WAREHOUSE 8026	Non-contributing
OCONEE ISFSI FACILITY	Non-contributing
OCONEE MAJOR PROJECTS COMPLEX (HELB) (11) 8028	Non-contributing
OCONEE NUCLEAR DOUBLE WIDE	Non-contributing
OCONEE NUCLEAR LEASED TRAILER	Non-contributing
OCONEE MAJOR PROJ ENGINEER COMPLEX (6) 8028E	Non-contributing
OCONEE CHEMICAL STOR/TREATMENT BLDG CTP 1+2 8030	Non-contributing
OCONEE STEAM GENERATOR RETIREMENT FACILITY	Contributing
OCONEE OUTFALL #2 MONITORING STATION 8037	Non-contributing
OCONEE PIPE BENDER SHED	Non-contributing
OCONEE PORTABLE FIRE/MAKE-UP PUMP BLDG 8039	Non-contributing
OCONEE L-1 YARD OFFICE	Non-contributing
OCONEE 525 KV RELAY HOUSE	Non-contributing
OCONEE TENDON EQUIPMENT BUILDING	Non-contributing
OCONEE SECURITY SHOOT HOUSE 8050	Non-contributing
OCONEE CO2 BUILDING CHEMICAL TREATMENT POND #3	Non-contributing
OCONEE HYDRO MAINTAINANCE BUILDING	Non-contributing
OCONEE 230 KV RELAY HOUSE	Non-contributing
OCONEE SECURITY/MAINTENANCE BUILDING	Non-contributing
OCONEE MAINTENANCE SUPPORT BUILDING (MSB)	Non-contributing
OCONEE SWITCHGEAR FACILITY	Non-contributing
OCONEE SWITCHGEAR HOUSE	Non-contributing
OCONEE RADIOGRAPHICS VAULT	Non-contributing
OCONEE SERVICE BUILDING	Non-contributing
OCONEE SECURITY STATION BRE 26 (8073)	Non-contributing
OCONEE #1 REACTOR BUILDING	Contributing
OCONEE #1 AUXILIARY BUILDING	Contributing
OCONEE #1 TURBINE BUILDING	Contributing
OCONEE #2 REACTOR BUILDING	Contributing
OCONEE #2 AUXILIARY BUILDING	Contributing
OCONEE #2 TURBINE BUILDING	Contributing
OCONEE RP ASSEMBLY BUILDING	Non-contributing
OCONEE #3 REACTOR BUILDING	Contributing

Appendix A - List of Contributing and Non-contrubuting Structures

OCONEE #3 AUXILIARY BUILDING	Contributing
OCONEE #3 TURBINE BUILDING	Non-contributing
OCONEE ESV BUILDING	Non-contributing
OCONEE RCP REFURB BUILDING	Non-contributing
OCONEE RADWASTE FACILITY	Non-contributing
OCONEE WEST YARD CONTAMINATED STORAGE WH#10	Non-contributing
OCONEE CRAFT STAGING AREA	Non-contributing
OCONEE INTERIM RADWASTE FACILITY	Non-contributing
OCONEE STANDBY SHUTDOWN FACILITY	Non-contributing
OCONEE SECURITY STATION BRE 2 (8098)	Non-contributing
OCONEE SECURITY STATION BRE 3 (8099)	Non-contributing
OCONEE WASTE WATER RET POND #1	Non-contributing
OCONEE WASTE WATER RET POND #2	Non-contributing
OCONEE CHEMICAL TREAT POND #3	Non-contributing
OCONEE SITE	Contributing
KEOWEE	Contributing
OCONEE RADIATION PROTECTION BUILDING	Non-contributing
OCONEE 183 ANNEX	Non-contributing
(8061) OCONEE REMEDIATION WELL HOUSE	Non-contributing
KWTX AREA OPERATIONS OFFICE/WAREHOUSE	Non-contributing
OCONEE OTC, SIMULATOR #2 8001	Non-contributing
OCONEE ADMINISTRATION BUILDING	Non-contributing
OCONEE OFFICE (OOB)	Non-contributing
OCONEE MTF MOBILE OFFICE COMPLEX (6) B80106	Non-contributing
OCONEE REFURB OFFICE 80109	Non-contributing
OCONEE TECHNICAL TRAINING FACILITY 80120	Non-contributing
OCONEE OFFICE OUTAGE SUPPORT BUILDING	Non-contributing
OCONEE OFFICE COMPLEX	Non-contributing
OCONEE TORNADO/HELB COMPLEX II (THC II) 8058	Non-contributing
OCONEE TECHNICAL SUPPORT BUILDING	Non-contributing
FUKUSHIMA FLEX BUILDING	Non-contributing
WEST YARD SUPPLEMENTAL STRUCTURE-A	Non-contributing
WEST YARD SUPPLEMENTAL STRUCTURE-B	Non-contributing
WEST YARD SUPPLEMENTAL STRUCTURE-C	Non-contributing
MODULAR OFFICE BUILDING	Non-contributing
12-PACK AT THE 183 ANNEX	Non-contributing
OCONEE STEAM GENERATOR OFFICE FACILITY	Non-contributing
SOUTH-LAKE SERVICES	Non-contributing
SOUTH-LAKE SERVICES OPERATIONS STORAGE	Non-contributing
SOUTH-LAKE SERVICES BOAT DOCK	Non-contributing
SOUTH-LAKE SERVICES BOAT SHED	Non-contributing
LAKE KEOWEE MOSQUITO CONTROL	Non-contributing
OCONEE SECURITY CHECKPOINT 1	Non-contributing
OCONEE SECURITY RANGE TRAINING CLASSROOM FACILITY	Non-contributing
OCONEE BOAT SHED	Non-contributing
OCONEE SECURITY STATION BRE 1 (8097)	Non-contributing
OCONEE BALLFIELD RESTROOM BUILDING	Non-contributing

Appendix A - List of Contributing and Non-contrubuting Structures

OCONEE SWITCH YARD MAINTENANCE SHOP 80105	Non-contributing
OCONEE CARPENTRY SHOP	Non-contributing
OCONEE SECURITY FIRING RANGE SHOP	Non-contributing
OCONEE WELDING FABRICATION SHOP	Non-contributing
OCONEE HOT MACHINE SHOP	Non-contributing
OCONEE ENVIRONMENTAL STORAGE	Non-contributing
OCONEE DRY CASK EQUIPMENT STORAGE 8015	Non-contributing
OCONEE BATTERY STORAGE	Non-contributing
OCONEE HAZMAT STORAGE	Non-contributing
OCONEE STORAGE 8035	Non-contributing
OCONEE PAINT STORAGE	Non-contributing
OCONEE BOTTLED GAS STORAGE	Non-contributing
OCONEE GARAGE OIL STORAGE BUILDING 8048	Non-contributing
OCONEE LANDSCAPE EQUIPMENT STORAGE 8053	Non-contributing
OCONEE SURPLUS STORAGE	Non-contributing
OCONEE MOCK-UP TENT (RUBB BUILDING) 8057	Non-contributing
OCONEE NEW CRANE STORAGE SHED 8062	Non-contributing
OCONEE HYDROGEN STORAGE	Non-contributing
OCONEE NITROGEN STORAGE	Non-contributing
OCONEE OIL DRUM STORAGE	Non-contributing
OCONEE OIL PEN ROOF STRUCTURE 8088	Non-contributing
OCONEE SCAFFOLD STORAGE	Non-contributing
OCONEE OPERATOR TRAINING CENTER	Non-contributing
OCONEE SECURITY TRAINING RANGE FACILITY	Non-contributing
OCONEE MAINTENANCE TRAINING FACILITY	Non-contributing
OCONEE WORLD OF ENERGY FACILITY	Non-contributing
OCONEE WAREHOUSE 80108	Non-contributing
OCONEE WAREHOUSE # 2G 8019	Non-contributing
OCONEE WAREHOUSE NO. 5	Non-contributing
OCONEE WAREHOUSE #3	Non-contributing
OCONEE WAREHOUSE #5	Non-contributing

APPENDIX B –SHPO SITE NO. 0029/19960404 NRHP NOMINATION FORM

PS Form 10-900
(Rev. 10-90)

380

OMB No. 1024-0018

RECEIVED 2280
MAR - 5 1996
NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES REGISTRATION FORM

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in How to Complete the National Register of Historic Places Registration Form (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Old Pickens Presbyterian Church

other names/site number

2. Location

street & number off S.C. Hwy. 183, 1/4 mi. W of Oconee/Pickens Co. Line not for publication ___
city or town Seneca vicinity X
state South Carolina code SC county Oconee code 073
zip code 29678

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this X nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally ___ statewide X locally.
(___ See continuation sheet for additional comments.)

Mary W. Edmonds 2/16/96
Signature of certifying official Date

Mary W. Edmonds, Deputy SHPO, S.C. Department of Archives & History, Columbia, S.C.
State or Federal agency and bureau

In my opinion, the property ___ meets ___ does not meet the National Register criteria.
(___ See continuation sheet for additional comments.)

Signature of commenting or other official Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is:

✓ entered in the National Register
___ See continuation sheet.
___ determined eligible for the National Register
___ See continuation sheet.
___ determined not eligible for the National Register
___ removed from the National Register
___ other (explain): _____

Edson H. Beall 4/4/96
Entered in the National Register

Signature of Keeper Date of Action

5. Classification

Ownership of Property
(Check as many boxes as apply)

- X private
- ___ public-local
- ___ public-State
- ___ public-Federal

Category of Property
(Check only one box)

- X building(s)
- ___ district
- ___ site
- ___ structure
- ___ object

Number of Resources within Property

Contributing	Noncontributing	
1	___	buildings
1	___	sites
___	___	structures
___	___	objects
2	0	Total

Name of related multiple property listing
Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register 0

6. Function or Use

Historic Functions (Enter categories from instructions)

Cat:	Sub:
RELIGION	Religious Facility
FUNERARY	Cemetery

Current Functions (Enter categories from instructions)

Cat:	Sub:
VACANT/NOT IN USE	
FUNERARY	Cemetery

7. Description

Architectural Classification
(Enter categories from instructions)
Mid-19th Century

Materials
(Enter categories from instructions)

foundation	Brick
roof	Asphalt
walls	Brick
other	Wood

Narrative Description
(Describe the historic and current condition of the property on one or more continuation sheets.)

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- X **A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- ___ **B** Property is associated with the lives of persons significant in our past.
- X **C** Property embodies the distinctive characteristics of a type period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- ___ **D** Property has yielded, or is likely to yield information important prehistory or history.

Criteria Considerations
(Mark "X" in all the boxes that apply.)

X A owned by a religious institution or used for religious purposes.
___ B removed from its original location.
___ C a birthplace or a grave.
___ D a cemetery.
___ E a reconstructed building, object,or structure.
___ F a commemorative property.
___ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)
Architecture
Religion

Significant Dates
ca. 1850
1919

Significant Person
(Complete if Criterion B is marked above)

Cultural Affiliation
N/A

Period of Significance
ca. 1849-1851

Architect/Builder

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography
(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS)
___ preliminary determination of individual listing (36 CFR 67) has been requested.
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey #
___ recorded by Historic American Engineering Record #

Primary Location of Additional Data
___ State Historic Preservation Office
___ Other State agency
___ Federal agency
___ Local government
___ University
X Other
Name of repository: The Presbyterian Study Center, Montreat, N.C.

10. Geographical Data

Acreage of Property Approximately 6.7 acres

UTM References
(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing		Zone	Easting	Northing
1	17	327400	3851340	3			
2				4			

___ See continuation sheet.

Verbal Boundary Description
(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification
(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Mrs. S.F. Sherard, Jr., with assistance from J. Tracy Power, Staff Historian, SHPO

organization Old Pickens Presbyterian Church date 2 December 1994

street & number P.O. Box 605 telephone (803) 447-8778

city or town Calhoun Falls state SC zip code 29628

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.
A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional items (Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of the SHPO or FPO.)

name Foothills Presbytery, South Carolina Synod, Presbyterian Church (USA)

street & number Koger Executive Center telephone (803) 288-5774

city or town Greenville state SC zip code 29615

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

Old Pickens Presbyterian Church, constructed in 1849-51, is a one-story, rectangular, brick building with a gable roof, and is located off S.C. Highway 183 approximately one-quarter-mile west of the boundary line separating Oconee and Pickens Counties. It was built in the style of a typical mid-nineteenth century meeting house. The building has had only minor alterations since its construction and retains a high level of architectural integrity.

The brick walls of the church rest on a solid brick foundation pierced by regularly spaced openings for ventilation. The roof has a boxed cornice with returns; a small brick flue is located near the north end of the northwest roof slope. The church was wired for electricity in the 1940s, but there is no running water or modern plumbing in the building and the electricity has since been disconnected. The wood shingle roof was replaced in the early 1960s with wood sheathing, sawed from timber cut from the property, and covered with asphalt shingles. A new shingle roof was installed in 1989. Through the years necessary painting has been done, for the most part, by local citizens interested in the preservation of the building.

The facade (southeast elevation) has a central double-door entrance with sidelights and transom. A paired window above the door provides light to the interior gallery. Simple brick pilasters frame the entrance and extend from the foundation to a brick belt course above the gallery window. Similar pilasters are located at each end of the facade.

Each side elevation contains three sixteen-over-sixteen windows. The northwest elevation also has a single door entrance at its western end, providing access to the gallery. The rear (northeast) elevation has two sixteen-over-sixteen windows. All windows and the side door are intact but have been boarded up to protect the building from vandalism. Each door and window is surmounted by a simple wood lintel.

The interior of the church is well-preserved. The walls are finished in plaster applied over the brick. The original pine floor is intact, as are the original unpainted pews constructed of poplar and pine. A small platform at the southeast end of the building leads to a built-in pulpit. A gallery extends across the southwest end of the building and is supported by large columns. A Celotex ceiling was installed in the 1940s over the original wood ceiling. Though the wood stove has been stolen, the flue is still intact. The church's original collection plates--actually cloth pockets attached to long wooden handles--are stored off-site for protection; though the cloth has long since been replaced, the handles are original.

The church was probably constructed by volunteer labor and with donated materials. Oral history holds that the bricks were fired of riverbank clay in the bottoms of the Keowee River across the road from the church.

A cemetery containing over 200 marked graves is also located to the rear and sides of the church. In the original section, the earliest marked gravestone, that of American Revolution veteran Lieutenant Joseph Reed, dates from ca. 1825. The newer section of the cemetery dates from 1967, when graves were relocated here from cemeteries in locations flooded by the construction of a dam on the Keowee River. Records indicate 217 internments, some marked with elaborate gravestones and others with simple fieldstones.

The setting around the church has become increasingly rural and isolated since the old town of Pickens was abandoned, and nothing but the church remains to mark the site of Old Pickens.

Old Pickens Presbyterian Church, built 1849-51, is significant as an excellent intact example of a mid-nineteenth century church built in the meeting house style and constructed of brick rather than the more common frame construction. It is also significant for its association with the mid-nineteenth century town of Pickens Court House (now often called Old Pickens) and as the only extant building surviving from the old town site.

Pickens Court House was established in 1828 to serve as the seat for Pickens District, a new judicial district created from Pendleton District. Pickens Court House was never a large town, and only had a little over one hundred inhabitants by 1860, when it boasted the courthouse, several shops and stores, an academy, a newspaper (the Keowee Courier), a hotel, a stable, a school, a jail, a Masonic lodge, and a church--Old Pickens Presbyterian Church, which was the only church ever active in the town and where worship was open to Christians of all denominations.

Pickens Presbyterian Church, with fourteen members and two ruling elders, was accepted into the Presbytery of South Carolina in 1847, and construction began on this sanctuary soon afterwards. An 1858 deed states that the building belonged "to the denomination of Christians known as Presbyterians and when not in use by said denomination to be used by such other orthodox denominations of Christians as may choose to worship therein."

In 1868 the town of Pickens Court House was abandoned when Pickens District was divided into Oconee and Pickens Counties and a new town--present-day Pickens--was established approximately fifteen miles northeast to serve as the seat of the new Pickens County. Most of the buildings in the old town of Pickens were torn down or dismantled and moved to the new town of Pickens or to Walhalla. By 1875 one newspaper account stated that the only buildings still standing in Old Pickens were a few houses, the academy, and Pickens Presbyterian Church.

After the abandonment of Pickens Court House, activity at Old Pickens Presbyterian Church--renamed in 1883 to avoid confusion with the Presbyterian congregation in the new town of Pickens--declined, though the church continued to serve not only its own congregation but also area Methodist and Baptist congregations as well at various times. The Presbyterians ceased holding regular services here after 1919, but periodic homecomings, reunions, and special services were held here from the 1920s to the 1960s. The congregation of Pickens Presbyterian Church, consisting of only two members--Furber Lawrence Whitmire and Hettie Guntharp Whitmire, who had settled nearby along the Keowee River after World War I and farmed there--was officially dissolved by the Presbytery of the Piedmont (now

Foothills Presbytery) in 1968. The Old Pickens Presbyterian Church Perpetual Care Committee, a group of area Presbyterians interested in the preservation of the church, organized in 1984 and maintains the sanctuary and cemetery with help from the Foothills Presbytery.[1]

[1]"Some Facts of History of Old Pickens," The Keowee Courier (Walhalla, S.C.), n.d. but ca. 1930; Frederick C. Holder, Historic Sites of Oconee County, S.C.: Part of the History of Oconee County Told Through Historic Preservation, 2nd ed. (Walhalla: Oconee County Historical Society, 1991), pp. 17-18; George Howe, History of the Presbyterian Church in South Carolina, 2 vols. (Charleston: W.J. Duffie, 1883), 2:743; Records of the South Carolina Presbytery, Manuscript Volume, 1830-1855, p. 306, The Presbyterian Study Center, Montreat, N.C.; Deed Book H-1, Pickens County Register of Mesne Conveyances, Pickens, S.C.; D.H. Brown, "History of Old Pickens Presbyterian Church," unpublished typescript, 1989; Presbytery of the Piedmont, Synod of South Carolina, "Old Pickens Presbyterian Church Inventory of Interments," unpublished typescript, 1983; Jerry Alexander, "A Town That Lived for 40 Years ... And Died That We Might Prosper," Pickens Sentinel (Pickens, S.C.), 26 May 1982; and Dot Robertson, "Memories of Another Time," The Greenville News and Piedmont (Greenville, S.C.), 14 March 1985.

BIBLIOGRAPHY

Alexander, Jerry. "A Town That Lived For 40 Years ... And Died That We Might Prosper." Pickens Sentinel (Pickens, S.C.), 26 May 1982.

Brown, D.H. "History of Old Pickens Presbyterian Church." Unpublished Typescript, 1989.

Deed Book H-1, Pickens County Register of Mesne Conveyances, Pickens, S.C.

Holder, Frederick C. Historic Sites of Oconee County, S.C.: Part of the History of Oconee County Told Through Historic Preservation. Walhalla, S.C.: Oconee County Historical Society, 1991.

Howe, George. History of the Presbyterian Church in South Carolina. 2 Vols. Charleston: W.J. Duffie, 1883.

Robertson, Dot. "Memories of Another Time." Greenville News and Piedmont (Greenville, S.C.), 17 March 1985.

"Some Facts of History of Old Pickens," The Keowee Courier (Walhalla, S.C.), ca. 1930.

Records of the South Carolina Presbytery, Manuscript Volume, 1830-1855, The Presbyterian Study Center, Montreat, N.C.

Verbal Boundary Description

The boundary of the nominated property is shown as the line marked "Exempt-Pickens Presbyterian Church," on Oconee County Tax Map 138-00, Parcel 1, Lot 4, drawn at a scale of 1"=.

Verbal Boundary Justification

The nominated property is restricted to the parcel historically associated with Old Pickens Presbyterian Church and includes the historic church and cemetery.

The following information is the same for each of the photographs:

Name of Property: Old Pickens Presbyterian Church

Location of Property: Off S.C. Hwy. 183, west of Oconee-Pickens County lines, Oconee County, South Carolina

Name of Photographer: Dorothy Whitmire Sherard

Location of Negatives: S.C. Department of Archives and History Columbia, S.C.

Date of Photographs: 30 October 1994

1. Southwest (principal) facade
2. Southwest (principal) facade
3. West end facade and gallery door
4. Southeast facade
5. Northeast elevation
6. Northeast elevation
7. Northeast elevation
8. Northeast elevation (rear)
9. Sanctuary (Northeast)
10. Sixteen-over-sixteen window
11. Gallery (Southwest)
12. Pulpit (Northeast)
13. Plaster over brick walls (Northeast)
14. Sanctuary and pews-left side
15. Sanctuary and pews-right side
16. Celotex over wood ceiling

ENCLOSURE 3 ATTACHMENT 34

HCR-3

DOCUMENT 2

DUKE ENERGY. 2021. LETTER FROM MR. STEVEN M. SNIDER, DUKE ENERGY, TO MS. ELIZABETH JOHNSON, SOUTH CAROLINA DEPARTMENT OF ARCHIVES AND HISTORY. RE: FINAL ARCHITECTURAL SURVEY AND NATIONAL REGISTER EVALUATION OF THE OCONEE NUCLEAR STATION AND KEOWEE HYDROELECTRIC STATION, OCONEE COUNTY, SOUTH CAROLINA. DECEMBER 14, 2021. (3 pages)

Steven M. Snider
Vice President
Oconee Nuclear Station

Duke Energy
ON01VP | 7800 Rochester Hwy
Seneca, SC 29672
o: 864.873.3478
f: 864.873.5791

Steve.Snider@duke-energy.com

December 14, 2021

Ms. Elizabeth Johnson
Deputy State Historic Preservation Officer
South Carolina Department of Archives and History
8301 Parklane Rd.
Columbia, South Carolina 29223

Re: Final Architectural Survey and National Register Evaluation of the Oconee Nuclear Station and Keowee Hydroelectric Station Report Oconee County, South Carolina

Dear Ms. Johnson:

In a letter dated August 30, 2021, Duke Energy's Oconee Nuclear Station submitted the above referenced draft report in which you provided comments on in a letter dated October 7, 2021. Attached you will find the final Architectural Survey and National Register Evaluation of the Oconee Nuclear Station and Keowee Hydroelectric Station Report as well as survey forms. The technical comments provided by the South Carolina Department of Archives and History in the letter dated October 7, 2021 on the draft report and survey forms have been addressed. The project was performed in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. The lead federal agency for the project is the Nuclear Regulatory Commission.

We appreciate your assistance with this project. If you have any questions or need additional information, please contact Scott Fletcher, Environmental Services Manager, at 980-875-6014 (o) / 704-956-1315 (m) or via email at scott.fletcher@duke-energy.com.

Sincerely,

Steven M. Snider
Site Vice President
Oconee Nuclear Station

Attachments:

Architectural Survey and National Register Evaluation of the Oconee Nuclear Station and Keowee Hydroelectric Station

CD: Statewide Architectural Survey Forms

cc: Arun Kapur, Duke Energy
Scott Fletcher, Duke Energy
Christy Churchill, Duke Energy
Tony Garland, Duke Energy
Bill Green, Terracon Consultants, Inc.

Certified Mail: 9510 8119 9651 1349 4500 29

ENCLOSURE 3 ATTACHMENT 34

HCR-3

DOCUMENT 3

SCDAH. 2021. LETTER FROM MS. ELIZABETH JOHNSON, SOUTH CAROLINA DEPARTMENT OF ARCHIVES AND HISTORY, TO MR. ARUN KAPUR, DUKE ENERGY. RE: OCONEE NUCLEAR STATION UNITS 1, 2, AND 3 SUBSEQUENT LICENSE RENEWAL; PICKENS AND OCONEE COUNTIES, SOUTH CAROLINA; DRAFT ARCHITECTURAL SURVEY AND NATIONAL REGISTER EVALUATION. OCTOBER 7, 2021. (5 pages)

SOUTH CAROLINA DEPARTMENT OF
ARCHIVES & HISTORY

October 7, 2021

Arun Kapur
Duke Energy
Arun.Kapur@duke-energy.com

Re: Oconee Nuclear Station Units 1, 2, and 3 Subsequent License Renewal
Pickens and Oconee Counties, South Carolina
Draft Architectural Survey and National Register Evaluation
SHPO Project No. 19-EJ0085 Docket Number: 50-269, 50-270, 50-287

Dear Arun Kapur:

On September 20, 2021 we received the draft report *Architectural Survey and National Register Evaluation of the Oconee Nuclear Station and Keowee Hydroelectric Station, Oconee County, South Carolina* dated September 2021 by Terracon. The survey was conducted as part of the relicensing process for the above referenced undertaking and following recommendations from our office to Duke Energy to evaluate the Oconee Nuclear Station structures for eligibility for listing in the National Register of Historic Places (NRHP) once they reached 50 years of age. The State Historic Preservation Office (SHPO) is providing comments on the survey report for the Nuclear Regulatory Commission pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes including those with state recognition, local governments, or the public.

The survey recorded resources within the boundary of the Oconee Nuclear Station, and revisited the Old Pickens Presbyterian Church located outside the boundary. The Church is listed in the NRHP. The survey recorded three resources that are recommended eligible for listing in the NRHP. Our office concurs that these resources meet the criteria for listing in the NRHP:

<u>SHPO Site No. 0148, Oconee Nuclear Station</u>
Contributing resources: 0148.01 (Turbine Building), 0148.02 (Reactor Building 1), 0148.03 (Reactor Building 2), 0148.04 (Reactor Building 3), 0148.05 (Intake Structure), 0148.06 (Discharge Structure), 0148.07 (Water Tower), 0148.08 (Skimmer Wall), and 0148.09 (Steam Generator Retirement Facility)

SHPO Site No. 0149 World of Energy
Individually eligible and also contributes to Oconee Nuclear Station Historic District as shown in Figure 55

SHPO Site No. 0150 Keowee Hydroelectric Facility
Contributing resources: 0150.01 (Keowee Power House), 0150.02 (Intake Structure), and 0150.03 (Spillway)

The survey also recorded SHPO Site No. 0151, a cemetery, and recommends that it does not meet the criteria for listing in the NRHP. Our office concurs with this recommendation. Please note that cemeteries and burials are protected by state laws.

Our office has technical comments on the report that we ask to see addressed (please see attached). We will accept the report as final once these comments are addressed; there is no need to send a revised draft.

Our office also has technical comments on the survey forms (please see attached). We will accept the survey forms as final once these comments are addressed. We accept the digital photographs, there is no need to resubmit the photographs.

To complete the reporting process, please provide at least three (3) hard copies of a final report: one (1) bound hard copy and a digital copy in ADOBE Acrobat PDF format for the SHPO; one (1) bound and one (1) unbound hard copies and a digital copy in ADOBE Acrobat PDF format for SCIAA. Investigators should send all copies directly to the SHPO. The SHPO will distribute the appropriate copies to SCIAA.

Please ensure that a copy of our comments letter is included in the Appendices and Attachments of the final report.

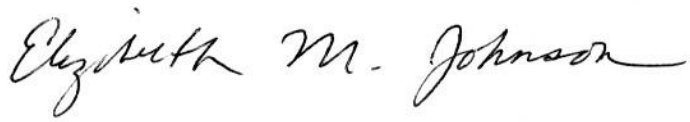
Please provide GIS shapefiles for the surveyed areas (and architectural sites). Shapefiles for identified archaeological sites should be coordinated with SCIAA. Shapefiles should be compatible with ArcGIS (.shp file format) and should be sent as a bundle in .zip format. For additional information, please see our GIS Data Submission Requirements.

Please provide final electronic copies of the survey forms for the above-ground resources following the Electronic Submission Requirements for Planning Surveys and Review & Compliance Surveys. You do not need to resubmit the photographs.

Please ensure that all Final survey deliverables (report, survey forms and GIS shapefiles) are sent to the SHPO at the same time using the same medium (e.g., DVD-RW, thumb drive, or FTP/file sharing site) to assist in project tracking. Files should be sent to rc@scdah.sc.gov. This new email address is only to be used for submitting survey deliverables. Contact your assigned reviewer directly for any questions or concerns.

We look forward to continued consultation on this undertaking. Please refer to SHPO Project Number 19-EJ0085 in any future correspondence. If you have any questions, please contact me at (803) 896-6168 or ejohnson@scdah.sc.gov.

Sincerely,



Elizabeth M. Johnson
Director, Historical Services, D-SHPO
State Historic Preservation Office

Cc: Scott T. Fletcher Scott.Fletcher@duke-energy.com
Christy Churchill Christy.Churchill@duke-energy.com
Tony Garland Tony.Garland@duke-energy.com
Ed Asbury Ed.Asbury@duke-energy.com
Bill Green Bill.Green@Terracon.com
Robert Hoffman Robert.Hoffman@nrc.gov

Technical Comments: Report

We would concur with the proposed District boundary shown in Figure 55. Figure 1 and 2's District boundary therefore needs editing to correspond to Figure 55.

p. ii, Table 1, Table of Contents, and Figures 1 and 2: add "0029/" to precede the NRIS number for Old Pickens Presbyterian Church. Use "SHPO Site Number" here and throughout the report where a site number is referenced or called "Resource No.".

p. 9, 3rd paragraph, starting here and throughout the report remove the partial BOLD font.

p. 53, 4.3.3., 1st sentence: change 0150.02 to .03.

Rename Appendix B.

Technical Comments: Survey Forms

R/Restricted is entered in the Status field on all forms. Are all these sites restricted?

Alterations field on all forms: leave this field blank if no known alterations is applicable.

Sources of Information field: enter the name of the Cultural Resource Survey report title, author, and date that is associated with the property recorded on the survey form (as was done for SHPO Site Number 0149).

The Site No. for the Old Pickens Presbyterian Church is 0029. Change Status to U. Delete the NRIS number from the Common Name field. Change the Historical and Current Use fields to Religion. Enter Listed in the SHPO Determination of Eligibility field.

SHPO Site Number 0148: enter District in the Category field; in the Description/Significant Features field add that it is a nuclear power station, and add "as well as contributing resources SHPO Site Numbers 0149 and 0150" after the end of 0148.09; for all sub-numbers enter in the Historic Name field "Oconee Nuclear Station;" followed by Turbine Building, Reactor Building 1, etc.; the 3 reactor buildings should be Structure in the Category field; 0148.04, SHPO Determination of Eligibility field: change Eligible to Contributes to Eligible District.

SHPO Site Number 0149: enter Eligible in the SHPO Determination of Eligibility field. Enter a Date Recorded.

SHPO Site Number 0150: for all sub-numbers enter in the Historic Name field "Keowee Hydro Electric Facility;" followed by Spillway, etc. 0150.02, enter a Date Recorded.

SHPO Site Number 0151 should be recorded as well with a SCIAA site number, as per our Survey Manual's guidance in Appendix F, and cross reference this site number in the Description/Significant Features field. Find a Grave references this cemetery as Little-Jenkins Cemetery https://www.findagrave.com/cemetery/2710600/little-jenkins-cemetery. This site http://genealogytrails.com/scar/oconee/cemeteries.htm calls it Jenkins-Little Family (cemetery). We think either name combination with Family Cemetery would be safe and fine to add as a name to the identification and discussion of this resource in the report and on the survey form, instead of just Cemetery.

Socioeconomics (SOC)

NRC RAI Number: SOC-1

REQUIREMENT: 10 CFR 51.53(c)(2) requires, in part, that applicants describe in detail in their environmental report the affected environment around the plant. Section 3.7 of NUREG-1555, Supplement 1, Revision 1, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Operating License Renewal," directs the staff to describe the socioeconomic characteristics of the counties within the region of influence, including tax payment information to local tax authorities (i.e., county, public school district) directly affected by plant operations.

ISSUE: Section 3.9.5 of the ER states that Duke Energy has contested the State of South Carolina's decision that a power company does not qualify as a manufacturer under the property tax exemption (SC Revenue Ruling #18-13).

REQUEST: Provide a status update and any new information pertaining to this contention?

Duke Response:

Duke Energy won this case at the Administrative Law Court. The following is a summary of where Duke Energy stands with the contention.

Entities: Duke Energy Carolinas, LLC; Duke Energy Progress, LLC

Matter Name: Duke Energy Carolinas, LLC v. SC Department of Revenue; Duke Energy Progress, LLC v. SC Department of Revenue (Property Tax Cases)

Case Numbers: 19-ALJ-17-0417-CC (DEC), 19-ALJ-17-0148-CC (DEP)

Venue/Court: South Carolina Administrative Law Court

Status Description: In 2018, when Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC (hereinafter, collectively "Duke Energy"), filed its property tax returns for that tax year, the South Carolina Department of Revenue (the "Department") responded with a tax assessment of more than $398 million that did not include the manufacturing equipment exemption set forth in S.C. Code Ann. § 12-37-220(B)(52). Duke Energy protested. On November 12, 2019, the Department issued a determination denying Duke Energy's partial property tax exemption in the total amount of $12,291,810 ($9,480,830 for Duke Energy Carolinas, LLC, and $2,810,980 for Duke Energy Progress, LLC) for the 2018 property tax year, providing that Duke Energy does not qualify for the exemption because it is not a manufacturer. On December 12, 2019, Duke Energy filed a Request for Contested Case Hearing with the South Carolina Administrative Law Court (the "Court"), contesting the Department's November 12, 2019, determination, stating that the Department's determination conflicts with longstanding judicial precedent treating Duke Energy as a manufacturer using manufacturing property for South Carolina tax purposes, and with the Department's own guidance stating that an electric utility is a manufacturer for property tax purposes. Both parties filed cross motions for summary judgement and on November 12, 2020, the

Court heard the parties' arguments. On December 21, 2020, the Court issued decisions granting summary judgment to Duke Energy in the property tax cases. The Court held that Duke Energy is a manufacturer for South Carolina property tax purposes and its equipment used in the manufacturing of property qualifies for a partial manufacturing property tax exemption in South Carolina. The Court ruled that Duke Energy is entitled to the exemption for all of its property used in manufacturing, but property not used in manufacturing is not eligible for the exemption. The Department had 30 days from December 21, 2020, to appeal the Court's decision granting Duke Energy's motion for summary judgment but did not do so. However, because the judge granted in part and denied in part each party's motion for summary judgment, a question remains as to what portion of Duke Energy's property is eligible for the property tax exemption. Duke Energy's position is that the exemption should be applied to all of Duke Energy's generation, transmission, and distribution property, and the Department has taken the position that the exemption only applies to property located in counties where Duke Energy owns generation facilities. On July 6, 2021, the Department filed a motion for summary judgment on this issue. Duke Energy filed a cross-motion for summary judgment on August 5, 2021. A hearing on the parties' cross-motions was held on September 29, 2021. On October 7, 2021, the Court issued its decision concluding that more evidence is needed to determine which of Duke Energy's property qualifies for the exemption. As a result, the Court opened the discovery period for 60 days. The parties are currently conducting discovery. Similar cases are also pending before the ALC with respect to Duke Energy's 2019 and 2020 property tax returns. The tax amount at issue for the 2019 property tax year is $23,889,780 ($17,464,790 for Duke Energy Carolinas, LLC, and $6,424,990 for Duke Energy Progress, LLC). The tax amount at issue for the 2020 property tax year is $41,270,190 ($30,883,110 for Duke Energy Carolinas, LLC, and $10,387,080 for Duke Energy Progress, LLC). The cases regarding the 2019 and 2020 property tax years are being held in abeyance pending the resolution of the 2018 cases. Final resolution of this matter is not available at this time.

References:

None

Associated Documents:

None

Surface Water (SW)

NRC RAI Number: SW-5

REQUIREMENT: 10 CFR 51.53(c)(2) requires that applicants describe in detail in their environmental report the affected environment around the plant, the modifications directly affecting the environment or any plant effluents, and any planned refurbishment activities. In addition, the applicant shall discuss any other matters described in 10 CFR 51.45. In accordance with 10 CFR 51.53(c)(3)(iv), the environmental report must also contain any new and significant information regarding the environmental impacts of license renewal of which the applicant is aware. Section 4.4.1 of NUREG-1555, Supplement 1, Revision 1, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Operating License Renewal," directs the staff to describe the analysis of continued plant operations and refurbishment regarding water use conflicts, including its consideration of any new information.

REQUEST: Please provide an update to ER Table 3.6-4a ("ONS Yearly Surface Water Withdrawal Summary for Years 2014–2018") that includes surface water withdrawal data for calendar years 2019 and 2020 (based on Duke's Water Use Reports that are submitted to SCDHEC).

Duke Response:

Duke Energy has updated ER Table 3.6-4a to include the surface water withdrawal data for years 2019 and 2020 (Document 1).

References:

None

Associated Documents:

Document 1: ONS SLR ER Updated ER Table 3.6-4a

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DOCUMENT 1

ONS SLR ER UPDATED ER TABLE 3.6-4a (1 page)

Table 3.6-4a ONS Yearly Surface Water Withdrawal Summary for Years 2014-2020

Year		2014	2015	2016	2017	2018	2019	2020	2014–2020
Monthly Maximum	**MGM**	94,817.00	94,817.00	94,817.00	94,817.02	94,817.00	94,817.03	94,817.03	94,817.03
	gpm_a	2,124,036.74	2,124,036.74	2,124,036.74	2,124,037.19	2,124,036.74	2,124,037.41	2,124,037.41	2,124,037.41
Monthly Average	**MGM**	76,382.58	78,818.67	80,745.67	82,571.68	78,694.18	79,692.80	81,519.10	79,774.95
	gpm_a	1,740,920.99	1,827,836.36	1,836,731.32	1,883,172.18	1,794,015.80	1,815,933.40	1,855,398.95	1,822,001.28
Monthly Minimum	**MGM**	53,919.00	57,210.00	62,902.00	65,377.00	56,910.00	56,246.02	60,975.01	53,919.00
	gpm_a	1,418,898.81	1,399,440.41	1,506,273.95	1,544,861.57	1,399,440.41	1,394,990.58	1,411,458.56	1,394,990.58
Yearly Total	**MG**	916,591.00	961,874.00	968,948.00	990,860.19	944,330.18	956,313.54	978,229.16	959,592.30
	MGD	2,511.21	2,635.27	2,647.40	2,714.69	2,587.21	2,620.04	2,672.76	2,619.15

MG = millions of gallons
MGD = millions of gallons per day
MGM = millions of gallons per month
gpm_a = average gallons per minute for the month