Ronald B. Clary
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SCE&G®
A SCANA COMPANY

July 2, 2009
NND-09-0176

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

ATTN: Document Control Desk

Subject: V. C. Summer Nuclear Station Units 2 and 3
Docket Numbers 52-027 and 52-028
Combined License Application – Environmental Report Audit
Information Needs: ACC-13, SW-1, and ALT-2 Part 2
Supplement

Reference:
1. Letter from S.A. Byrne to Document Control Desk, Submittal of a Combined License Application for V. C. Summer Nuclear Station Units 2 and 3, dated March 27, 2008.
2. Letter from Ronald B. Clary to Document Control Desk, Submittal of Revision 1 to Part 3 (Environmental Report) of the Combined License Application for the V. C. Summer Nuclear Station Units 2 and 3, dated February 13, 2009.
3. Letter from Patricia J. Vokoun to Ronald B. Clary, Requests for Additional Information Related to the Environmental Review for the Combined License Application for the V. C. Summer Nuclear Station, Units 2 and 3, dated June 22, 2009.

By letter dated March 27, 2008, South Carolina Electric & Gas Company (SCE&G) submitted a combined license application (COLA) for two Westinghouse AP1000 units, designated V.C. Summer Nuclear Station (VCSNS) Units 2 and 3, to be located at the existing VCSNS site in Fairfield County, South Carolina. Subsequently the Environmental Report (ER), Part 3 of the application, was revised and submitted to the NRC (reference 2).

During the week of March 9, 2009, the NRC conducted an Environmental Audit to gather information to assist in the review of the ER. The purpose of this letter is to submit a portion of the ER Information Needs identified by the NRC including: ACC-13, SW-1 and ALT-2 Part 2 Supplement. These ER Info Needs also provide information related to the RAIs issued by the NRC (reference 3) as follows: RAI ACC-1 (ER Info Need ACC-13), RAI SW-1 (ER Info Need SW-1), and RAI ALT-2 (ER Info Need ALT-2 Part 2).

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NRO

Please address any questions to Mr. Alfred M. Paglia, Manager, Nuclear Licensing, New Nuclear Deployment, P. O. Box 88, Jenkinsville, S.C. 29065; by telephone at 803-345-4191; or by email at apaglia@scana.com.

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

Executed on this 2nd day of July 2009

Ronald B Clary

Ronald B. Clary
General Manager
New Nuclear Deployment

ARR/RBC/ar

Enclosures

c (with Enclosures):
Patricia Vokoun
Carl Berkowitz
FileNet

c (without Enclosures):
Luis A. Reyes
John Zeiler
Chandu Patel
Stephen A. Byrne
Ronald B. Clary
Bill McCall
Kenneth J. Browne
Randolph R. Mahan
Kathryn M. Sutton
Rich Louie
John J. DeBlasio
April Rice

VCSNS UNITS 2 and 3

Response to NRC Information Needs Item

Information Item Number: ALT-2, Part 2 Supplement **Revision:** 0

Statement of the Information Item:

Information Item ALT-2:

Provide an expert on the alternative sites assessment for SCE&G. This expert should be able to describe such issues as:

- How the ROI was clearly identified and screened to provide legitimate candidate sites (e.g., The ER identifies the state as being the ROI; the updated Jan. 2009 siting study focuses only on the SCEG service territory). Has this ever included the service territory of Santee Cooper?
- Derivation of weighting criteria used for potential site screening
- How the exclusionary and avoidance criteria were selected.
- If any further analysis was, or should be, included regarding the reconnaissance level information as provided via the ER for either the proposed site or any of the three alternatives

SCE&G Follow Up Action

1. Provide revised Section 9.3.2 redescribing the ROI and how potential sites were identified

2. Provide analysis of additional alternative site Fa-1 as a citable reference.

3. Provide information on the configuration of the proposed action on all of the alternate sites, to include power block, cooling tower(s), transmission line corridors, intake and discharge points, etc.

Response:

Part 2 Supplement

Future revisions to ER Section 9.3 associated with the analysis of the Fa-1 site were presented in Part 2 of this response (reference SCE&G letter NND-09-0160 dated June 15, 2009). The corresponding changes to ER Tables 10.4-3 and 10.4-4 and Section 10.4, which summarize information presented in Section 9.3, will also be included in a future ER revision. These changes are provided below.

COLA Revisions:

ER Section 10.4.1.7 will be revised in a future revision of the COLA as shown below.

10.4.1.7 Benefit Summary

Table 10.4-2 includes a benefit-cost summary of the proposed project.

Response to NRC Information Needs Item

In Subsection 9.3.3, Alternative Site Review, SCE&G evaluated environmental impacts of construction and operation of the proposed project at ~~three~~four alternative sites (Savannah River Site, Cope Generating Station, ~~and~~ the Saluda greenfield site, and the Fa-1 greenfield site). Table 10.4-3 provides a comparison of the benefits of construction and operation of the project as proposed to those at the ~~three~~four alternative sites.

ER Section 10.4.2.3 will be revised in a future revision of the COLA as shown below.

10.4.2.3 Environmental and Material

Section 10.1 identifies unavoidable adverse impacts of the proposed action (*i.e.*, impacts after consideration of proposed mitigation actions), and Section 10.2 identifies irretrievable commitments of resources. Table 10.4-2 includes these costs.

In Subsection 9.3.3, Alternative Site Review, SCE&G evaluated environmental impacts of construction and operation of the proposed project at ~~three~~four alternative sites (Savannah River Site, Cope Generating Station, ~~and~~ the Saluda greenfield site, and the Fa-1 greenfield site). Table 10.4-4 describes the impacts of construction and operation of the proposed project at the ~~three~~four alternative sites, and provides details regarding potential mitigation and the unavoidable adverse impacts after mitigation has been considered.

Consistent with Regulatory Guide 4.2, each site was evaluated using preliminary reconnaissance level information. Consequently, the costs of mitigation are not easy to determine at this time. Many would be built into the project design (*e.g.*, scheduling to ensure that construction is completed in the shortest possible time; using construction best management practices to limit erosion, fugitive dust, runoff, spills and air emissions; providing first aid stations at the construction site). Others would rely on a communication plan of early/frequent communication between SCE&G and the affected communities, and thus the costs would be minimal.

Tables 10.4-3 and 10.4-4 will be revised in a future revision of the COLA as shown below.

Response to NRC Information Needs Item
Table 10.4-3 (Sheet 1 of 2)
Benefits of the Proposed Project

Benefit Category	Project as Proposed	With Option 1	With Option 2	With Option 3	With Option 4
Description of Project	As Proposed	Proposed Project at Savannah River Site	Proposed Project at Cope Generating Station	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Monetary Benefits					
Net Electrical Generating Benefits					
Electricity Generated	16,000,000 to 18,000,000 MW-hours per year	16,000,000 to 18,000,000 MW-hours per year	16,000,000 to 18,000,000 MW-hours per year	16,000,000 to 18,000,000 MW-hours per year	16,000,000 to 18,000,000 MW-hours per year
Generating Capacity	2,214 MW	2,214 MW	2,214 MW	2,214 MW	2,214 MW
State and Local Tax Payments					
During Construction	Property taxes would not be due during construction.	SRS, a federally owned property, pays an annual fee in lieu of taxes to the jurisdictional counties. While the exact amount of the fees paid to Aiken and Barnwell Counties cannot be known, they would represent a small increase in annual revenues for the two counties during the construction period.	Property taxes would not be due during construction	Property taxes would not be due during construction	Property taxes would not be due during construction
During Operations	SCE&G has negotiated a fee-in-lieu-of-taxes agreement with Fairfield County that includes an assessment ratio of 4.0%. Payments in 2005 dollars could range from approximately $6,400,000 to $24,600,000 annually over the life of the units.	SRS, a federally owned property, pays an annual fee in lieu of taxes. While the exact amount of the fees paid to Aiken and Barnwell Counties cannot be known, they would represent a small increase in annual revenues for the two counties	SCE&G would negotiate a fee-in-lieu-of-taxes agreement with Orangeburg County. While the exact amount of the fees paid to Orangeburg County cannot be known, they could represent 15% to 24% of the county's total tax revenue over the life of the units.	SCE&G would negotiate a fee-in-lieu-of-taxes agreement with Saluda County. While the exact amount of the fees paid to Saluda County cannot be known, they could represent 58% to 71% of the county's total tax revenue over the life of the units.	SCE&G would negotiate a fee-in-lieu-of-taxes agreement with Fairfield County. Assuming the same assessment ratio as SCE&G negotiated for the VCSNS site, they could represent 30% to 43% of the county's total tax revenue over the life of the units.
Effects on Regional Productivity					
During Construction	3,600 direct jobs and 2,446 indirect jobs added to local economy	3,600 direct jobs and 1,760 indirect jobs added to local economy	3,600 direct jobs and 785 indirect jobs added to local economy	3,600 direct jobs and 2,380 indirect jobs added to local economy	3,600 direct jobs and 2,445 indirect jobs added to local economy
During Operations	800 direct jobs and 1,700 indirect jobs added to local economy	800 direct jobs and 1,310 indirect jobs added to local economy	930 direct jobs and 655 indirect jobs added to local economy	930 direct jobs and 2,180 indirect jobs added to local economy	930 direct jobs and 1,981 indirect jobs added to local economy

VCSNS UNITS 2 and 3

Response to NRC Information Needs Item
Table 10.4-3 (Sheet 2 of 2)
Benefits of the Proposed Project

Benefit Category	Project as Proposed	With Option 1	With Option 2	With Option 3	With Option 4
Description of Project	As Proposed	Proposed Project at Savannah River Site	Proposed Project at Cope Generating Station	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Technical and Other Nonmonetary Benefits					
Advanced Light Water Reactor Development	Maintaining domestic nuclear technology capability as hedge against possible need to control global warming	Maintaining domestic nuclear technology capability as hedge against possible need to control global warming	Maintaining domestic nuclear technology capability as hedge against possible need to control global warming	Maintaining domestic nuclear technology capability as hedge against possible need to control global warming	Maintaining domestic nuclear technology capability as hedge against possible need to control global warming
Improvements to Local Facilities	Minor road repairs and improvements in the vicinity of VCSNS	Minor road repairs and improvements in the vicinity of SRS	Minor road repairs and improvements in the vicinity of Cope Generating Station	Minor road repairs and improvements in the vicinity of the Saluda Site	Minor road repairs and improvements in the vicinity of the Fa-1 Site
Fuel Diversity	Nuclear option to coal- and gas-fired baseload generation	Nuclear option to coal- and gas-fired baseload generation	Nuclear option to coal- and gas-fired baseload generation	Nuclear option to coal- and gas-fired baseload generation	Nuclear option to coal- and gas-fired baseload generation
Emissions Reduction	Avoidance of 34 to 7,044 tons per year sulfur dioxide; 558 to 1,495 tons per year nitrogen oxides; 116 to 1,495 tons per year carbon monoxide; 5,630,000 to 16,500,000 tons per year carbon dioxide; up to 0.25 tons per year mercury; and 67 to 97 tons per year particulates.	Avoidance of 34 to 7,044 tons per year sulfur dioxide; 558 to 1,495 tons per year nitrogen oxides; 116 to 1,495 tons per year carbon monoxide; 5,630,000 to 16,500,000 tons per year carbon dioxide; up to 0.25 tons per year mercury; and 67 to 97 tons per year particulates.	Avoidance of 34 to 7,044 tons per year sulfur dioxide; 558 to 1,495 tons per year nitrogen oxides; 116 to 1,495 tons per year carbon monoxide; 5,630,000 to 16,500,000 tons per year carbon dioxide; up to 0.25 tons per year mercury; and 67 to 97 tons per year particulates.	Avoidance of 34 to 7,044 tons per year sulfur dioxide; 558 to 1,495 tons per year nitrogen oxides; 116 to 1,495 tons per year carbon monoxide; 5,630,000 to 16,500,000 tons per year carbon dioxide; up to 0.25 tons per year mercury; and 67 to 97 tons per year particulates.	Avoidance of 34 to 7,044 tons per year sulfur dioxide; 558 to 1,495 tons per year nitrogen oxides; 116 to 1,495 tons per year carbon monoxide; 5,630,000 to 16,500,000 tons per year carbon dioxide; up to 0.25 tons per year mercury; and 67 to 97 tons per year particulates.
Cultural Resources	Mitigative work adding to local historic and pre-historic knowledge base	Mitigative work adding to local historic and pre-historic knowledge base	Mitigative work adding to local historic and pre-historic knowledge base	Mitigative work adding to local historic and pre-historic knowledge base	Mitigative work adding to local historic and pre-historic knowledge base

Table 10.4-4 (Sheet 1 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
		Construction-Related		
Land Use	Adverse Impact – Approximately 490 acres of land would be disturbed during construction, with the potential for erosion. Land would not be available for other uses. Mitigation Measure - Implement storm water management systems, groundwater monitoring wells, and spill containment controls. Permanently disturbed locations would be stabilized and contoured in accordance with design specifications. Follow South Carolina Storm Water Management Best Management Practices handbook and industry guidance. Locate all structures but intake and discharge structures outside of 500-year floodplains. Restrict construction activities to the Construction and Operating License site. Incorporate recommendations of federal and state agencies. Unavoidable Adverse Environmental Impacts - 240 acres of land occupied on a long-term basis by nuclear plant and associated infrastructure.	Adverse Impact - Approximately 490 acres of land would be disturbed during construction, with the potential for erosion. Land would not be available for other uses. Mitigation Measure - Implement storm water management systems, groundwater monitoring wells, and spill containment controls. Permanently disturbed locations would be stabilized and contoured in accordance with design specifications. Follow South Carolina Storm Water Management Best Management Practices handbook and industry guidance. Locate all structures but intake and discharge structures outside of 500-year floodplains. Restrict construction activities to the Construction and Operating License site. Incorporate recommendations of federal and state agencies. Unavoidable Adverse Environmental Impacts - 240 acres of land occupied on a long-term basis by nuclear plant and associated infrastructure.	Adverse Impact - Potential for erosion from clearing approximately 490 acres of land for construction of the new plant and temporary facilities and from clearing additional acreage for construction of roads, parking lots, and switchyard. Land would not be available for other uses. Mitigation Measure - Implement storm water management systems, groundwater monitoring wells, and spill containment controls. Permanently disturbed locations would be stabilized and contoured in accordance with design specifications. Follow South Carolina Storm Water Management Best Management Practices handbook and industry guidance. Locate all structures but intake and discharge structures outside of 500-year floodplains. Restrict construction activities to the Construction and Operating License site. Incorporate recommendations of federal and state agencies. Unavoidable Adverse Environmental Impacts - 240 acres of land occupied on a long-term basis by nuclear plant and associated infrastructure. 850 acres would be excluded from future agricultural and recreational use.	Adverse Impact - Potential for erosion from clearing approximately 490 acres of land for construction of the new plant and temporary facilities and from clearing additional acreage for construction of roads, parking lots, and switchyard. Land would not be available for other uses. Mitigation Measure - Implement storm water management systems, groundwater monitoring wells, and spill containment controls. Permanently disturbed locations would be stabilized and contoured in accordance with design specifications. Follow South Carolina Storm Water Management Best Management Practices handbook and industry guidance. Locate all structures but intake and discharge structures outside of 500-year floodplains. Restrict construction activities to the Construction and Operating License site. Incorporate recommendations of federal and state agencies. Unavoidable Adverse Environmental Impacts - 240 acres of land occupied on a long-term basis by nuclear plant and associated infrastructure. 1,990 acres would be excluded from future agricultural and recreational use.

Table 10.4-4 (Sheet 2 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Land Use (continued)	Adverse Impact - Construction of transmission corridor across approximately 80 linear miles of central South Carolina. Mitigation Measure - Conduct siting study that takes into account environmental impacts. Incorporate recommendations of federal and state agencies into route selections. Site new corridors to avoid critical or sensitive habitats or species as much as possible. Restrict construction activities to transmission corridors and access roads. Restrict sites of access to corridors. Before site disturbance, conduct archaeological and ecological surveys and determine site-specific erosion control measures. Comply with all applicable laws, regulations, permits, good engineering, environmental management, and construction practices. Unavoidable Adverse Environmental Impacts - Land use on some land would change from woodland or agriculture to open scrub or grassland.	Adverse Impact - Construction of 55 linear miles of new transmission lines in existing corridors in central South Carolina. Mitigation Measure - Conduct siting study that takes into account environmental impacts. Incorporate recommendations of federal and state agencies into route selections. Site new corridors to avoid critical or sensitive habitats or species as much as possible. Restrict construction activities to transmission corridors and access roads. Restrict sites of access to corridors. Before site disturbance, conduct archaeological and ecological surveys and determine site-specific erosion control measures. Comply with all applicable laws, regulations, permits, good engineering, environmental management, and construction practices. Unavoidable Adverse Environmental Impacts - Land use on some land would change from woodland or agriculture to open scrub or grassland.	Adverse Impact - Construction of transmission corridor across approximately 18 linear miles of central South Carolina. Mitigation Measure - Conduct siting study that takes into account environmental impacts. Incorporate recommendations of federal and state agencies into route selections. Site new corridors to avoid critical or sensitive habitats or species as much as possible. Restrict construction activities to transmission corridors and access roads. Restrict sites of access to corridors. Before site disturbance, conduct archaeological and ecological surveys and determine site-specific erosion control measures. Comply with all applicable laws, regulations, permits, good engineering, environmental management, and construction practices. Unavoidable Adverse Environmental Impacts - Land use on some land would change from woodland or agriculture to open scrub or grassland.	Adverse Impact - Construction of transmission corridor across approximately 4.5 linear miles of central South Carolina. Mitigation Measure - Conduct siting study that takes into account environmental impacts. Incorporate recommendations of federal and state agencies into route selections. Site new corridors to avoid critical or sensitive habitats or species as much as possible. Restrict construction activities to transmission corridors and access roads. Restrict sites of access to corridors. Before site disturbance, conduct archaeological and ecological surveys and determine site-specific erosion control measures. Comply with all applicable laws, regulations, permits, good engineering, environmental management, and construction practices. Unavoidable Adverse Environmental Impacts - Land use on some land would change from woodland or agriculture to open scrub or grassland.

Table 10.4-4 (Sheet 3 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Land Use (continued)	Adverse Impact - Potential to disturb buried historic, archaeological, or paleontological resources. Mitigation Measure - Select transmission routes to avoid historical properties. Consult State Historic Preservation Officer and SC Department of Archives & History. Before site disturbance, conduct archaeological surveys. Develop and implement procedure for construction activities that includes actions to protect cultural, historic, or paleontological resources. Unavoidable Adverse Environmental Impacts - Potential for destruction of unanticipated historic, cultural, or paleontological resources.	Adverse Impact - Potential to disturb buried historic, archaeological, or paleontological resources. Mitigation Measure - Select transmission routes to avoid historical properties. Consult State Historic Preservation Officer and SC Department of Archives & History. Before site disturbance, conduct archaeological surveys. Develop and implement procedure for construction activities that includes actions to protect cultural, historic, or paleontological resources. Unavoidable Adverse Environmental Impacts - Potential for destruction of unanticipated historic, cultural, or paleontological resources.	Adverse Impact - Potential to disturb buried historic, archaeological, or paleontological resources. Mitigation Measure - Select transmission routes to avoid historical properties. Consult State Historic Preservation Officer and SC Department of Archives & History. Before site disturbance, conduct archaeological surveys. Develop and implement procedure for construction activities that includes actions to protect cultural, historic, or paleontological resources. Unavoidable Adverse Environmental Impacts - Potential for destruction of unanticipated historic, cultural, or paleontological resources.	Adverse Impact - Potential to disturb buried historic, archaeological, or paleontological resources. Mitigation Measure - Select transmission routes to avoid historical properties. Consult State Historic Preservation Officer and SC Department of Archives & History. Before site disturbance, conduct archaeological surveys. Develop and implement procedure for construction activities that includes actions to protect cultural, historic, or paleontological resources. Unavoidable Adverse Environmental Impacts - Potential for destruction of unanticipated historic, cultural, or paleontological resources.
	Adverse Impact - Construction debris would be disposed in offsite landfills. Mitigation Measure - Use waste minimization to reduce volume of debris. Unavoidable Adverse Environmental Impacts - Landfill space would be consumed for disposal of construction debris and would not be available for disposal of other wastes.	Adverse Impact - Construction debris would be disposed in offsite landfills. Mitigation Measure - Use waste minimization to reduce volume of debris. Unavoidable Adverse Environmental Impacts - Landfill space would be consumed for disposal of construction debris and would not be available for disposal of other wastes.	Adverse Impact - Construction debris would be disposed in offsite landfills. Mitigation Measure - Use waste minimization to reduce volume of debris. Unavoidable Adverse Environmental Impacts - Landfill space would be consumed for disposal of construction debris and would not be available for disposal of other wastes.	Adverse Impact - Construction debris would be disposed in offsite landfills. Mitigation Measure - Use waste minimization to reduce volume of debris. Unavoidable Adverse Environmental Impacts - Landfill space would be consumed for disposal of construction debris and would not be available for disposal of other wastes.

Table 10.4-4 (Sheet 4 of26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Hydrology and Water Use	Adverse Impact - Construction would require up to 420 gpm of groundwater. Mitigation Measure - Practice water conservation as practical. No other measures or controls would be necessary. Unavoidable Adverse Environmental Impacts - Use of groundwater as source for all water used for construction.	Adverse Impact - Construction would require up to 420 gpm of groundwater. Mitigation Measure - Practice water conservation as practical. No other measures or controls would be necessary. Unavoidable Adverse Environmental Impacts - Use of groundwater as source for all water used for construction.	Adverse Impact - Construction would require up to 420 gpm of surface water. Mitigation Measure - Practice water conservation as practical. No other measures or controls would be necessary. Unavoidable Adverse Environmental Impacts - Use of water from Saluda Arm of Lake Murray as source for all water used for construction.	Adverse Impact - Construction would require up to 420 gpm of surface water. Mitigation Measure - Practice water conservation as practical. No other measures or controls would be necessary. Unavoidable Adverse Environmental Impacts - Use of water from Monticello Reservoir as source for all water used for construction.
	Adverse Impact - Potential need to dewater excavation areas. Mitigation Measure - Install drainage system to divert dewatering runoff to settling basin before discharge through a permitted NPDES outfall. Follow best management practices for erosion control. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Potential need to dewater excavation areas. Mitigation Measure - Install drainage system to divert dewatering runoff to settling basin before discharge through a permitted NPDES outfall. Follow best management practices for erosion control. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Potential need to dewater excavation areas. Mitigation Measure - Install drainage system to divert dewatering runoff to settling basin before discharge through a permitted NPDES outfall. Follow best management practices for erosion control. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Potential need to dewater excavation areas. Mitigation Measure - Install drainage system to divert dewatering runoff to settling basin before discharge through a permitted NPDES outfall. Follow best management practices for erosion control. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 5 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Hydrology and Water Use (continued)	Adverse Impact - Construction along river banks or stream banks (in the case of the transmission line) could introduce sediments into the river or stream. Mitigation Measure - Develop and implement a construction Storm Water Pollution Prevention (SWPP) Plan; conduct monitoring as required by the stormwater general permit. Stabilize upslope areas and adjacent to shoreline construction sites with erosion control devices and after construction, re-seed the areas. Follow SC Forestry Commission Best Management Practices manual and SC Department of Health and Environmental Control Handbook and Field Manual best management practices to prevent sediment loading and minimize soil disturbance. Avoid wetlands and water bodies and sensitive areas when possible, plan transmission routes to minimize impacts to wetlands and waterbodies that must be crossed; use equipment specifically designed for work around wetlands and streams, and install erosion controls. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Construction along river banks or stream banks (in the case of the transmission line) could introduce sediments into the river or stream. Mitigation Measure - Develop and implement a construction SWPP Plan; conduct monitoring as required by the stormwater general permit. Stabilize upslope areas and adjacent to shoreline construction sites with erosion control devices and after construction, re-seed the areas. Follow SC Forestry Commission Best Management Practices manual and SC Department of Health and Environmental Control Handbook and Field Manual best management practices to prevent sediment loading and minimize soil disturbance. Avoid wetlands and water bodies and sensitive areas when possible, plan transmission routes to minimize impacts to wetlands and waterbodies that must be crossed; use equipment specifically designed for work around wetlands and streams, and install erosion controls. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Construction along Lake Murray shoreline or stream banks (in the case of the transmission line) could introduce sediments into the reservoir or stream. Mitigation Measure - Develop and implement a construction SWPP Plan; conduct monitoring as required by the stormwater general permit. Stabilize upslope areas and adjacent to shoreline construction sites with erosion control devices and after construction, re-seed the areas. Follow SC Forestry Commission Best Management Practices manual and SC Department of Health and Environmental Control Handbook and Field Manual best management practices to prevent sediment loading and minimize soil disturbance. Avoid wetlands and water bodies and sensitive areas when possible, plan transmission routes to minimize impacts to wetlands and waterbodies that must be crossed; use equipment specifically designed for work around wetlands and streams, and install erosion controls. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Construction along Monticello Reservoir shoreline, river banks or stream banks (in the case of the transmission line) could introduce sediments into the river or stream. Mitigation Measure - Develop and implement a construction Storm Water Pollution Prevention (SWPP) Plan; conduct monitoring as required by the stormwater general permit. Stabilize upslope areas and adjacent to shoreline construction sites with erosion control devices and after construction, re-seed the areas. Follow SC Forestry Commission Best Management Practices manual and SC Department of Health and Environmental Control Handbook and Field Manual best management practices to prevent sediment loading and minimize soil disturbance. Avoid wetlands and water bodies and sensitive areas when possible, plan transmission routes to minimize impacts to wetlands and waterbodies that must be crossed; use equipment specifically designed for work around wetlands and streams, and install erosion controls. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 6 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Hydrology and Water Use (continued)	Adverse Impact - Use of heavy equipment introduces the possibility of petroleum spills that could enter surface water. Mitigation Measure - Use good maintenance practices to maintain equipment, and prevent spills and leaks. Prepare and implement Spill Prevention Control and Countermeasures (SPCC) Plan for construction activities. Restrict activities using petroleum products and solvents to designated areas that are equipped with spill containment. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Use of heavy equipment introduces the possibility of petroleum spills that could enter surface water. Mitigation Measure - Use good maintenance practices to maintain equipment, and prevent spills and leaks. Prepare and implement SPCC Plan for construction activities. Restrict activities using petroleum products and solvents to designated areas that are equipped with spill containment. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Use of heavy equipment introduces the possibility of petroleum spills that could enter surface water. Mitigation Measure - Use good maintenance practices to maintain equipment, and prevent spills and leaks. Prepare and implement SPCC Plan for construction activities. Restrict activities using petroleum products and solvents to designated areas that are equipped with spill containment. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Use of heavy equipment introduces the possibility of petroleum spills that could enter surface water. Mitigation Measure - Use good maintenance practices to maintain equipment, and prevent spills and leaks. Prepare and implement SPCC Plan for construction activities. Restrict activities using petroleum products and solvents to designated areas that are equipped with spill containment. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 7 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Aquatic Ecology	Adverse Impact - Construction at river's edge would cause the loss of some organisms, and temporary degradation of habitat. Transmission line construction across streams would cause the loss of some organisms and temporary degradation of habitat. Mitigation Measure - Install cofferdam and store excavated sediment and soils in spoils area designed to prevent loading in wetlands and watercourses, utilize stormwater retention basins as needed; re-seeding of spoils area after construction. Develop and implement a construction SWPP Plan; conduct monitoring as required by the stormwater general permit. Stabilize upslope areas and adjacent to shoreline construction sites with erosion control devices and after construction, re-seed the areas.	Adverse Impact - Construction at river's edge would cause the loss of some organisms, and temporary degradation of habitat. Transmission line construction across streams would cause the loss of some organisms and temporary degradation of habitat. Mitigation Measure - Install cofferdam and store excavated sediment and soils in spoils area designed to prevent loading in wetlands and watercourses, utilize stormwater retention basins as needed; re-seeding of spoils area after construction. Develop and implement a construction SWPP Plan; conduct monitoring as required by the stormwater general permit. Stabilize upslope areas and adjacent to shoreline construction sites with erosion control devices and after construction, re-seed the areas.	Adverse Impact - Construction on Lake Murray shoreline would cause the loss of some organisms, and temporary degradation of habitat. Transmission line construction across streams would cause the loss of some organisms and temporary degradation of habitat. Mitigation Measure - Install cofferdam and store excavated sediment and soils in spoils area designed to prevent loading in wetlands and watercourses, utilize stormwater retention basins as needed; re-seeding of spoils area after construction. Develop and implement a construction SWPP Plan; conduct monitoring as required by the stormwater general permit. Stabilize upslope areas and adjacent to shoreline construction sites with erosion control devices and after construction, re-seed the areas.	Adverse Impact - Construction on Monticello Reservoir shoreline and river's edge would cause the loss of some organisms, and temporary degradation of habitat. Transmission line construction across streams would cause the loss of some organisms and temporary degradation of habitat. Mitigation Measure - Install cofferdam and store excavated sediment and soils in spoils area designed to prevent loading in wetlands and watercourses, utilize stormwater retention basins as needed; re-seeding of spoils area after construction. Develop and implement a construction SWPP Plan; conduct monitoring as required by the stormwater general permit. Stabilize upslope areas and adjacent to shoreline construction sites with erosion control devices and after construction, re-seed the areas.

Table 10.4-4 (Sheet 8 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Aquatic Ecology (continued)	Follow SC Forestry Commission Best Management Practices manual and SC Department of Health and Environmental Control Handbook and Field Manual best management practices to prevent sediment loading and minimize soil disturbance. Avoid wetlands and waterbodies and sensitive areas when possible, plan transmission routes to minimize impacts to wetlands and waterbodies that must be crossed; use equipment specifically designed for work around wetlands and streams, install erosion controls, and implement best management practices to minimize impacts to aquatic ecosystems. Before transmission line construction, conduct ecological surveys and determine site-specific erosion control measures. If there is potential for construction of a new transmission line to degrade habitat of a listed aquatic species, work closely with the state agency to develop a construction schedule and construction techniques that are protective of the habitat and species in question. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Follow SC Forestry Commission Best Management Practices manual and SC Department of Health and Environmental Control Handbook and Field Manual best management practices to prevent sediment loading and minimize soil disturbance. Avoid wetlands and waterbodies and sensitive areas when possible, plan transmission routes to minimize impacts to wetlands and waterbodies that must be crossed; use equipment specifically designed for work around wetlands and streams, install erosion controls, and implement best management practices to minimize impacts to aquatic ecosystems. Before transmission line construction, conduct ecological surveys and determine site-specific erosion control measures. If there is potential for construction of a new transmission line to degrade habitat of a listed aquatic species, work closely with the state agency to develop a construction schedule and construction techniques that are protective of the habitat and species in question. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Follow SC Forestry Commission Best Management Practices manual and SC Department of Health and Environmental Control Handbook and Field Manual best management practices to prevent sediment loading and minimize soil disturbance. Avoid wetlands and waterbodies and sensitive areas when possible, plan transmission routes to minimize impacts to wetlands and waterbodies that must be crossed; use equipment specifically designed for work around wetlands and streams, install erosion controls, and implement best management practices to minimize impacts to aquatic ecosystems. Before transmission line construction, conduct ecological surveys and determine site-specific erosion control measures. If there is potential for construction of a new transmission line to degrade habitat of a listed aquatic species, work closely with the state agency to develop a construction schedule and construction techniques that are protective of the habitat and species in question. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Follow SC Forestry Commission Best Management Practices manual and SC Department of Health and Environmental Control Handbook and Field Manual best management practices to prevent sediment loading and minimize soil disturbance. Avoid wetlands and waterbodies and sensitive areas when possible, plan transmission routes to minimize impacts to wetlands and waterbodies that must be crossed; use equipment specifically designed for work around wetlands and streams, install erosion controls, and implement best management practices to minimize impacts to aquatic ecosystems. Before transmission line construction, conduct ecological surveys and determine site-specific erosion control measures. If there is potential for construction of a new transmission line to degrade habitat of a listed aquatic species, work closely with the state agency to develop a construction schedule and construction techniques that are protective of the habitat and species in question. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 9 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Terrestrial Ecology	Adverse Impact - Habitat loss, but no threatened or endangered plants or animals are at the site or in the vicinity. Displacement of animals from the construction site. Loss of less mobile individual animals. Potential degradation of wetlands. Mitigation Measure - Land clearing would be conducted according to federal and state regulations and permits, SCE&G procedures, good construction practices, and established best management practices. Schedule equipment maintenance procedures to minimize emission and spills. Minimize fugitive dust by watering. Delineate wetlands and determine impacts and mitigation prior to beginning construction activities Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Habitat loss, but no threatened or endangered plants or animals are at the site or in the vicinity. Displacement of animals from the construction site. Loss of less mobile individual animals. Potential degradation of wetlands. Mitigation Measure - Land clearing would be conducted according to federal and state regulations and permits, SCE&G procedures, good construction practices, and established best management practices. Schedule equipment maintenance procedures to minimize emission and spills. Minimize fugitive dust by watering. Delineate wetlands and determine impacts and mitigation prior to beginning construction activities Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Habitat loss, but no threatened or endangered plants or animals are at the site or in the vicinity. Displacement of animals from the construction site. Loss of less mobile individual animals. Potential degradation of wetlands. Mitigation Measure - Land clearing would be conducted according to federal and state regulations and permits, SCE&G procedures, good construction practices, and established best management practices. Schedule equipment maintenance procedures to minimize emission and spills. Minimize fugitive dust by watering. Delineate wetlands and determine impacts and mitigation prior to beginning construction activities Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Habitat loss, but no threatened or endangered plants or animals are at the site or in the vicinity. Displacement of animals from the construction site. Loss of less mobile individual animals. Potential degradation of wetlands. Mitigation Measure - Land clearing would be conducted according to federal and state regulations and permits, SCE&G procedures, good construction practices, and established best management practices. Schedule equipment maintenance procedures to minimize emission and spills. Minimize fugitive dust by watering. Delineate wetlands and determine impacts and mitigation prior to beginning construction activities Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 10 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic	Adverse Impact - Temporary and localized noise, fugitive dust, and exhaust emissions during construction. Mitigation Measure - Train and appropriately protect construction workers to reduce the risk of potential exposure to noise, dust and exhaust emissions. Make public announcements or prior notification of atypically loud construction activities. Regularly inspect and maintain equipment to include exhaust and noise aspects. Phase construction to minimize daily emissions. Restrict noise-related activities to daylight hours. Restrict delivery times to daylight hours. Develop and implement a dust control plan that includes mitigation measures such as watering unpaved roads, stabilizing construction roads, phasing grading activities and ceasing them during high winds, etc. Unavoidable Adverse Environmental Impacts - Temporary and localized noise, fugitive dust, and exhaust emissions during construction.	Adverse Impact - Temporary and localized noise, fugitive dust, and exhaust emissions during construction. Mitigation Measure - Train and appropriately protect construction workers to reduce the risk of potential exposure to noise, dust and exhaust emissions. Make public announcements or prior notification of atypically loud construction activities. Regularly inspect and maintain equipment to include exhaust and noise aspects. Phase construction to minimize daily emissions. Restrict noise-related activities to daylight hours. Restrict delivery times to daylight hours. Develop and implement a dust control plan that includes mitigation measures such as watering unpaved roads, stabilizing construction roads, phasing grading activities and ceasing them during high winds, etc. Unavoidable Adverse Environmental Impacts - Temporary and localized noise, fugitive dust, and exhaust emissions during construction.	Adverse Impact - Temporary and localized noise, fugitive dust, and exhaust emissions during construction. Mitigation Measure - Train and appropriately protect construction workers to reduce the risk of potential exposure to noise, dust and exhaust emissions. Make public announcements or prior notification of atypically loud construction activities. Regularly inspect and maintain equipment to include exhaust and noise aspects. Phase construction to minimize daily emissions. Restrict noise-related activities to daylight hours. Restrict delivery times to daylight hours. Develop and implement a dust control plan that includes mitigation measures such as watering unpaved roads, stabilizing construction roads, phasing grading activities and ceasing them during high winds, etc. Unavoidable Adverse Environmental Impacts - Temporary and localized noise, fugitive dust, and exhaust emissions during construction.	Adverse Impact - Temporary and localized noise, fugitive dust, and exhaust emissions during construction. Mitigation Measure - Train and appropriately protect construction workers to reduce the risk of potential exposure to noise, dust and exhaust emissions. Make public announcements or prior notification of atypically loud construction activities. Regularly inspect and maintain equipment to include exhaust and noise aspects. Phase construction to minimize daily emissions. Restrict noise-related activities to daylight hours. Restrict delivery times to daylight hours. Develop and implement a dust control plan that includes mitigation measures such as watering unpaved roads, stabilizing construction roads, phasing grading activities and ceasing them during high winds, etc. Unavoidable Adverse Environmental Impacts - Temporary and localized noise, fugitive dust, and exhaust emissions during construction.

Table 10.4-4 (Sheet 11 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic (continued)	Adverse Impact - Construction workers could experience occupational illnesses, injuries, or death. Mitigation Measure - Train contractors on safety requirements. Require construction contractors and subcontractors to develop and implement safety procedures. Provide onsite services for emergency first aid; conduct regular health and safety monitoring. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impact.	Adverse Impact - Construction workers could experience occupational illnesses, injuries, or death. Mitigation Measure - Train contractors on safety requirements. Require construction contractors and subcontractors to develop and implement safety procedures. Provide onsite services for emergency first aid; conduct regular health and safety monitoring. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impact.	Adverse Impact - Construction workers could experience occupational illnesses, injuries, or death. Mitigation Measure - Train contractors on safety requirements. Require construction contractors and subcontractors to develop and implement safety procedures. Provide onsite services for emergency first aid; conduct regular health and safety monitoring. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impact.	Adverse Impact - Construction workers could experience occupational illnesses, injuries, or death. Mitigation Measure - Train contractors on safety requirements. Require construction contractors and subcontractors to develop and implement safety procedures. Provide onsite services for emergency first aid; conduct regular health and safety monitoring. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impact.
	Adverse Impact - Increased traffic on local roads in Aiken, Barnwell and Richmond Counties. Mitigation Measure - Develop construction management traffic plan prior to the start of construction. Add turn lanes at construction entrance. Post signs near construction entrances and exits to make the public aware of potentially high construction traffic areas. Unavoidable Adverse Environmental Impacts - Increased traffic on local roads.	Adverse Impact - Increased traffic on local roads in Orangeburg and Bamberg Counties, approaching and exceeding capacity. Mitigation Measure - Develop construction management traffic plan prior to the start of construction. Add turn lanes at construction entrance. Post signs near construction entrances and exits to make the public aware of potentially high construction traffic areas. Unavoidable Adverse Environmental Impacts - Increased traffic on local roads.	Adverse Impact - Increased traffic on local roads in Saluda and Newberry Counties, approaching and exceeding capacity. Mitigation Measure - Develop construction management traffic plan prior to the start of construction. Add turn lanes at construction entrance. Post signs near construction entrances and exits to make the public aware of potentially high construction traffic areas. Unavoidable Adverse Environmental Impacts - Increased traffic on local roads.	Adverse Impact - Increased traffic on local roads in Fairfield and Newberry Counties, approaching and exceeding capacity. Mitigation Measure - Develop construction management traffic plan prior to the start of construction. Add turn lanes at construction entrance. Post signs near construction entrances and exits to make the public aware of potentially high construction traffic areas. Unavoidable Adverse Environmental Impacts - Increased traffic on local roads.

Table 10.4-4 (Sheet 12 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic (continued)	Adverse Impact – Increase in demand for housing in Aiken, Barnwell, Richmond, and Columbia Counties. Mitigation Measure - Discuss construction plans and anticipated influx of workers with community leaders. Builders and developers would meet the demand for additional housing, and because the project has a long lead time, and the construction workforce would build gradually, it is likely that if the community anticipates the increase in population, adequate affordable housing would always be available. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts	Adverse Impact – Initially sufficient housing to support the influx of construction workforce may be unavailable in Orangeburg and Bamberg Counties. Increased demand for housing could make housing unaffordable for some low income populations. Mitigation Measure - Discuss construction plans and anticipated influx of workers with community leaders. Builders and developers would meet the demand for additional housing, and because the project has a long lead time, and the construction workforce would build gradually, it is likely that if the community anticipates the increase in population, adequate affordable housing would always be available. Unavoidable Adverse Environmental Impacts - Potential short-term shortage of affordable housing in Orangeburg and Bamberg Counties.	Adverse Impact –Increase in demand for housing in Saluda, Newberry, Lexington, and Richland Counties. Mitigation Measure - Discuss construction plans and anticipated influx of workers with community leaders. Builders and developers would meet the demand for additional housing, and because the project has a long lead time, and the construction workforce would build gradually, it is likely that if the community anticipates the increase in population, adequate housing would always be available. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact –Increase in demand for housing in Fairfield, Newberry, Lexington, and Richland Counties. Mitigation Measure - Discuss construction plans and anticipated influx of workers with community leaders. Builders and developers would meet the demand for additional housing, and because the project has a long lead time, and the construction workforce would build gradually, it is likely that if the community anticipates the increase in population, adequate housing would always be available. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 13 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic (continued)	Adverse Impact - Increase in demand for classroom space from in-migration of construction workers families. Mitigation Measure - Discuss construction plans and anticipated influx of workers with community leaders. Increased tax revenues as a result of the large construction project would fund additional school resources. Because the project has a long lead time, and the construction workforce would build gradually, it is likely that if the community anticipates the increase in population, adequate classroom space would always be available. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Initially there may be insufficient classroom space for the influx of construction workers families. Mitigation Measure - Discuss construction plans and anticipated influx of workers with community leaders. Increased tax revenues as a result of the large construction project would fund additional school resources. Because the project has a long lead time, and the construction workforce would build gradually, it is likely that if the community anticipates the increase in population, adequate classroom space would always be available. Unavoidable Adverse Environmental Impacts - In the short-term there could be school crowding in Orangeburg and Bamberg Counties.	Adverse Impact – Initially there may be insufficient classroom space for the influx of construction workers families. Mitigation Measure - Discuss construction plans and anticipated influx of workers with community leaders. Increased tax revenues as a result of the large construction project would fund additional school resources. Because the project has a long lead time, and the construction workforce would build gradually, it is likely that if the community anticipates the increase in population, adequate classroom space would always be available. Unavoidable Adverse Environmental Impacts - In the short-term there could be school crowding in Saluda County.	Adverse Impact – Initially there may be insufficient classroom space for the influx of construction workers families. Mitigation Measure - Discuss construction plans and anticipated influx of workers with community leaders. Increased tax revenues as a result of the large construction project would fund additional school resources. Because the project has a long lead time, and the construction workforce would build gradually, it is likely that if the community anticipates the increase in population, adequate classroom space would always be available. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 14 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic (continued)	Adverse Impact - Increase in demand for public services in Aiken, Barnwell, Columbia and Richmond Counties. Mitigation Measure Discuss construction plans and anticipated influx of workers with community leaders. Increased tax revenues after construction begins could be used to purchase additional facilities/equipment and hire/train additional staff, if necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Increase in demand for public services in Orangeburg and Bamberg Counties. Mitigation Measure Discuss construction plans and anticipated influx of workers with community leaders. Increased tax revenues after construction begins could be used to purchase additional facilities/equipment and hire/train additional staff, if necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Increase in demand for public services in Saluda and Newberry Counties. Mitigation Measure Discuss construction plans and anticipated influx of workers with community leaders. Increased tax revenues after construction begins could be used to purchase additional facilities/equipment and hire/train additional staff, if necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Increase in demand for public services in Fairfield and Newberry Counties. Mitigation Measure Discuss construction plans and anticipated influx of workers with community leaders. Increased tax revenues after construction begins could be used to purchase additional facilities/equipment and hire/train additional staff, if necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
Radiological	Adverse Impact - Construction workers would be exposed to small doses of radiation from the existing SRS facilities. Mitigation Measure - None required. All doses would be well within regulatory limits. Unavoidable Adverse Environmental Impacts - Small radiation exposure to construction workers.	Adverse Impact - None. Because CGS is a non-nuclear facility construction workers would not be exposed to radiation. Mitigation Measure - No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - None. Because the site is undeveloped construction workers would not be exposed to radiation. Mitigation Measure - No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - None. Because the site is undeveloped construction workers would not be exposed to radiation. Mitigation Measure - No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 15 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Atmospheric and Meteorological	Adverse Impact - Temporary and localized noise, fugitive dust, and exhaust emissions during construction Mitigation Measure - Regularly inspect and maintain equipment. Phase construction to minimize daily emissions. Develop and implement a dust control plan that includes mitigation measures such as watering unpaved roads, stabilizing construction roads, phasing grading activities and ceasing them during high winds, etc. Unavoidable Adverse Environmental Impacts - Temporary and localized noise, fugitive dust, and exhaust emissions during construction.	Adverse Impact - Temporary and localized noise, fugitive dust, and exhaust emissions during construction Mitigation Measure - Regularly inspect and maintain equipment. Phase construction to minimize daily emissions. Develop and implement a dust control plan that includes mitigation measures such as watering unpaved roads, stabilizing construction roads, phasing grading activities and ceasing them during high winds, etc. Unavoidable Adverse Environmental Impacts - Temporary and localized noise, fugitive dust, and exhaust emissions during construction.	Adverse Impact - Temporary and localized noise, fugitive dust, and exhaust emissions during construction Mitigation Measure - Regularly inspect and maintain equipment. Phase construction to minimize daily emissions. Develop and implement a dust control plan that includes mitigation measures such as watering unpaved roads, stabilizing construction roads, phasing grading activities and ceasing them during high winds, etc. Unavoidable Adverse Environmental Impacts - Temporary and localized noise, fugitive dust, and exhaust emissions during construction.	Adverse Impact - Temporary and localized noise, fugitive dust, and exhaust emissions during construction Mitigation Measure - Regularly inspect and maintain equipment. Phase construction to minimize daily emissions. Develop and implement a dust control plan that includes mitigation measures such as watering unpaved roads, stabilizing construction roads, phasing grading activities and ceasing them during high winds, etc. Unavoidable Adverse Environmental Impacts - Temporary and localized noise, fugitive dust, and exhaust emissions during construction.
Environmental Justice	Adverse Impact - No disproportionately high or adverse impacts on minority or low-income populations from construction of the proposed new units have been identified. Mitigation Measure - None required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - No disproportionately high or adverse impacts on minority or low-income populations resulting from construction of the proposed new units have been identified. Mitigation Measure - None required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - No disproportionately high or adverse impacts on minority or low-income populations resulting from construction of the proposed new units have been identified. Mitigation Measure - None required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - No disproportionately high or adverse impacts on minority or low-income populations resulting from construction of the proposed new units have been identified. Mitigation Measure - None required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 16 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
		Operations-Related		
Land Use	Adverse Impact - Operating the new units would generate radioactive and non-radioactive wastes that are required to be disposed in permitted disposal facilities or permitted landfills. Generation of spent fuel requiring disposal in a geologic repository. Mitigation Measure - Practice waste minimization to minimize the volume of wastes. Unavoidable Adverse Environmental Impacts - Some land would be dedicated to permitted landfills or licensed disposal facilities and would not be available for other uses.	Adverse Impact - Operating the new units would generate radioactive and non-radioactive wastes that are required to be disposed in permitted disposal facilities or permitted landfills. Generation of spent fuel requiring disposal in a geologic repository. Mitigation Measure - Practice waste minimization to minimize the volume of wastes. Unavoidable Adverse Environmental Impacts - Some land would be dedicated to permitted landfills or licensed disposal facilities and would not be available for other uses.	Adverse Impact - Operating the new units would generate radioactive and non-radioactive wastes that are required to be disposed in permitted disposal facilities or permitted landfills. Generation of spent fuel requiring disposal in a geologic repository. Mitigation Measure - Practice waste minimization to minimize the volume of wastes. Unavoidable Adverse Environmental Impacts - Some land would be dedicated to permitted landfills or licensed disposal facilities and would not be available for other uses.	Adverse Impact - Operating the new units would generate radioactive and non-radioactive wastes that are required to be disposed in permitted disposal facilities or permitted landfills. Generation of spent fuel requiring disposal in a geologic repository. Mitigation Measure - Practice waste minimization to minimize the volume of wastes. Unavoidable Adverse Environmental Impacts - Some land would be dedicated to permitted landfills or licensed disposal facilities and would not be available for other uses.
	Adverse Impact - Permanent commitment of 17 acres of land per year for each AP1000 due to the fuel cycle. Mitigation Measure - No mitigation would be required Unavoidable Adverse Environmental Impacts - Permanent commitment of 17 acres of land per year for each AP1000 due to the fuel cycle.	Adverse Impact - Permanent commitment of 17 acres of land per year for each AP1000 due to the fuel cycle. Mitigation Measure - No mitigation would be required Unavoidable Adverse Environmental Impacts - Permanent commitment of 17 acres of land per year for each AP1000 due to the fuel cycle.	Adverse Impact - Permanent commitment of 17 acres of land per year for each AP1000 due to the fuel cycle. Mitigation Measure - No mitigation would be required Unavoidable Adverse Environmental Impacts - Permanent commitment of 17 acres of land per year for each AP1000 due to the fuel cycle.	Adverse Impact - Permanent commitment of 17 acres of land per year for each AP1000 due to the fuel cycle. Mitigation Measure - No mitigation would be required Unavoidable Adverse Environmental Impacts - Permanent commitment of 17 acres of land per year for each AP1000 due to the fuel cycle.

Table 10.4-4 (Sheet 17 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Hydrology and Water Use	Adverse Impact - Operations would result in discharge of small amounts of chemicals to the Savannah River. Mitigation Measure - All discharges would comply with NPDES permit and applicable water quality standards. Prepare and implement a SWPP plan to avoid/ minimize releases of contaminated storm water. Prepare and implement a SPCC plan to avoid/minimize contamination from spills. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in discharge of small amounts of chemicals to the South Fork Edisto River. Mitigation Measure - All discharges would comply with NPDES permit and applicable water quality standards. Prepare and implement a SWPP plan to avoid/ minimize releases of contaminated storm water. Prepare and implement a SPCC plan to avoid/minimize contamination from spills. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in discharge of small amounts of chemicals to Lake Murray. Mitigation Measure - All discharges would comply with NPDES permit and applicable water quality standards. Prepare and implement a SWPP plan to avoid/ minimize releases of contaminated storm water. Prepare and implement a SPCC plan to avoid/minimize contamination from spills. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in discharge of small amounts of chemicals to the Broad River. Mitigation Measure - All discharges would comply with NPDES permit and applicable water quality standards. Prepare and implement a SWPP plan to avoid/ minimize releases of contaminated storm water. Prepare and implement a SPCC plan to avoid/minimize contamination from spills. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - Maintenance activities at the site and along the transmission line could result in small petroleum spills. Mitigation Measure - Prepare and implement a SPCC plan to avoid/minimize contamination from spills. Adhere to the SCE&G SPCC plan when working on transmission lines. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Maintenance activities at the site and along the transmission line could result in small petroleum spills. Mitigation Measure - Prepare and implement a SPCC plan to avoid/minimize contamination from spills. Adhere to the SCE&G SPCC plan when working on transmission lines. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Maintenance activities at the site and along the transmission line could result in small petroleum spills. Mitigation Measure - Prepare and implement a SPCC plan to avoid/minimize contamination from spills. Adhere to the SCE&G SPCC plan when working on transmission lines. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Maintenance activities at the site and along the transmission line could result in small petroleum spills. Mitigation Measure - Prepare and implement a SPCC plan to avoid/minimize contamination from spills. Adhere to the SCE&G SPCC plan when working on transmission lines. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 18 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Hydrology and Water Use (continued)	Adverse Impact - Maximum surface water consumptive use would be less that 8.3 percent of the lowest annual mean flow. Mitigation Measure - Design and operate intake structures based on best available technology. Monitor hydrological impacts as required by NDPES permit. No other mitigation required. Unavoidable Adverse Environmental Impacts - Water lost through evaporation would not be available for other uses.	Adverse Impact - Maximum groundwater consumptive use of 93.6 mgd could drawdown the aquifer. Mitigation Measure - Design and operate plant systems to minimize water use. Consider use of dry cooling towers. Monitor hydrological impacts. Unavoidable Adverse Environmental Impacts - Water lost through evaporation would not be available for other uses.	Adverse Impact - Maximum surface water consumptive use would represent 2.7 percent of the annual mean inflow to Lake Murray. Mitigation Measure - Design and operate intake structures based on best available technology. Monitor hydrological impacts as required by NDPES permit. No other mitigation required. Unavoidable Adverse Environmental Impacts - Water lost through evaporation would not be available for other uses.	Adverse Impact - Maximum surface water consumptive use would represent 3.2 percent of the lowest annual mean flow in the Broad River. Mitigation Measure - Design and operate intake structures based on best available technology. Monitor hydrological impacts as required by NDPES permit. No other mitigation required. Unavoidable Adverse Environmental Impacts - Water lost through evaporation would not be available for other uses.
	Adverse Impact - Operations would result in a small thermal plume discharged to the Savannah River. Mitigation Measure - The differences between plume temperature and ambient water temperature would be maintained within limits set in the NPDES permit. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in a small thermal plume discharged to the South Fork Edisto River. Mitigation Measure - The differences between plume temperature and ambient water temperature would be maintained within limits set in the NPDES permit. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in a small thermal plume discharged to Lake Murray. Mitigation Measure - The differences between plume temperature and ambient water temperature would be maintained within limits set in the NPDES permit. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in a small thermal plume discharged to the Broad River. Mitigation Measure - The differences between plume temperature and ambient water temperature would be maintained within limits set in the NPDES permit. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 19 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Hydrology and Water Use (continued)	Adverse Impact - Water consumption and discharges during fuel cycle activities. Mitigation Measure - No mitigation would be required. Unavoidable Adverse Environmental Impacts - Water loss from process cooling would be 210 million gallons per year for each AP1000. Mine drainage discharges would be 170 million gallons per year for each AP1000 due to the fuel cycle.	Adverse Impact - Water consumption and discharges during fuel cycle activities. Mitigation Measure - No mitigation would be required. Unavoidable Adverse Environmental Impacts - Water loss from process cooling would be 210 million gallons per year for each AP1000. Mine drainage discharges would be 170 million gallons per year for each AP1000 due to the fuel cycle.	Adverse Impact - Water consumption and discharges during fuel cycle activities. Mitigation Measure - No mitigation would be required. Unavoidable Adverse Environmental Impacts - Water loss from process cooling would be 210 million gallons per year for each AP1000. Mine drainage discharges would be 170 million gallons per year for each AP1000 due to the fuel cycle.	Adverse Impact - Water consumption and discharges during fuel cycle activities. Mitigation Measure - No mitigation would be required. Unavoidable Adverse Environmental Impacts - Water loss from process cooling would be 210 million gallons per year for each AP1000. Mine drainage discharges would be 170 million gallons per year for each AP1000 due to the fuel cycle.
Aquatic Ecology	Adverse Impact - Operations would result in discharge of small amounts of chemicals to the Savannah River. Mitigation Measure - The NPDES permit limits are set to ensure that discharges do not significantly affect aquatic populations or water quality. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in discharge of small amounts of chemicals to the South Fork Edisto River. Mitigation Measure - The NPDES permit limits are set to ensure that discharges do not significantly affect aquatic populations or water quality. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in discharge of small amounts of chemicals to Lake Murray. Mitigation Measure - The NPDES permit limits are set to ensure that discharges do not significantly affect aquatic populations or water quality. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Operations would result in discharge of small amounts of chemicals to the Broad River. Mitigation Measure - The NPDES permit limits are set to ensure that discharges do not significantly affect aquatic populations or water quality. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 20 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Aquatic Ecology (continued)	Adverse Impact - Routine maintenance activities could result in petroleum spills near water. Mitigation Measure - Prepare and implement a SPCC Plan to avoid/minimize contamination from spills.	Adverse Impact - Routine maintenance activities could result in petroleum spills near water. Mitigation Measure - Prepare and implement a SPCC Plan to avoid/minimize contamination from spills.	Adverse Impact - Routine maintenance activities could result in petroleum spills near water. Mitigation Measure - Prepare and implement a SPCC Plan to avoid/minimize contamination from spills.	Adverse Impact - Routine maintenance activities could result in petroleum spills near water. Mitigation Measure - Prepare and implement a SPCC Plan to avoid/minimize contamination from spills.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - Impingement, entrainment and thermal discharges. Mitigation Measure - Cooling towers.	Adverse Impact - Thermal discharges. Mitigation Measure - Cooling towers.	Adverse Impact - Impingement, entrainment and thermal discharges. Mitigation Measure - Cooling towers.	Adverse Impact - Impingement, entrainment and thermal discharges. Mitigation Measure - Cooling towers.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
Terrestrial Ecology	Adverse Impact - Deposition of low concentrations of solids on plant property from operation of the cooling towers. Mitigation Measure – Design cooling towers to ensure the rate of deposition would be less than that expected to cause leaf damage. No other mitigation is necessary.	Adverse Impact - Deposition of low concentrations of solids on plant property from operation of the cooling towers. Mitigation Measure - Design cooling towers to ensure the rate of deposition would be less than that expected to cause leaf damage. No other mitigation is necessary.	Adverse Impact - Deposition of low concentrations of solids on plant property from operation of the cooling towers. Mitigation Measure - Design cooling towers to ensure the rate of deposition would be less than that expected to cause leaf damage. No other mitigation is necessary.	Adverse Impact - Deposition of low concentrations of solids on plant property from operation of the cooling towers. Mitigation Measure - Design cooling towers to ensure the rate of deposition would be less than that expected to cause leaf damage. No other mitigation is necessary.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 21 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Terrestrial Ecology (continued)	Adverse Impact - Episodic loud noises at the site or along transmission lines could frighten animals. Mitigation Measure - None necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Episodic loud noises at the site or along transmission lines could frighten animals. Mitigation Measure - None necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Episodic loud noises at the site or along transmission lines could frighten animals. Mitigation Measure - None necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Episodic loud noises at the site or along transmission lines could frighten animals. Mitigation Measure - None necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - Vegetation growth in corridors would be kept in check, including eliminating woody growth, by periodic maintenance including mowing and applying herbicides. Mitigation Measure – Implement existing procedures for transmission line maintenance designed to protect flora and fauna. Train personnel in the handling of fuel and lubricants and the clean-up and reporting of any incidental spills. Have adequate spill response equipment on hand during maintenance activities in the corridors. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Vegetation growth in corridors would be kept in check, including eliminating woody growth, by periodic maintenance including mowing and applying herbicides. Mitigation Measure – Implement existing procedures for transmission line maintenance designed to protect flora and fauna. Train personnel in the handling of fuel and lubricants and the clean-up and reporting of any incidental spills. Have adequate spill response equipment on hand during maintenance activities in the corridors. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Vegetation growth in corridors would be kept in check, including eliminating woody growth, by periodic maintenance including mowing and applying herbicides. Mitigation Measure – Implement existing procedures for transmission line maintenance designed to protect flora and fauna. Train personnel in the handling of fuel and lubricants and the clean-up and reporting of any incidental spills. Have adequate spill response equipment on hand during maintenance activities in the corridors. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Vegetation growth in corridors would be kept in check, including eliminating woody growth, by periodic maintenance including mowing and applying herbicides. Mitigation Measure – Implement existing procedures for transmission line maintenance designed to protect flora and fauna. Train personnel in the handling of fuel and lubricants and the clean-up and reporting of any incidental spills. Have adequate spill response equipment on hand during maintenance activities in the corridors. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 22 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic	Adverse Impact - The plants emit low noise. Mitigation Measure - Noise levels would normally not be above background at the site boundary. No mitigation is necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - The plants emit low noise. Mitigation Measure - Noise levels would normally not be above background at the site boundary. No mitigation is necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - The plants emit low noise. Mitigation Measure - Noise levels would normally not be above background at the site boundary. No mitigation is necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - The plants emit low noise. Mitigation Measure - Noise levels would normally not be above background at the site boundary. No mitigation is necessary. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - Episodic loud noises could annoy nearby residents. Mitigation Measure - Handle incidents on a case-by-case basis. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Episodic loud noises could annoy nearby residents. Mitigation Measure - Handle incidents on a case-by-case basis. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Episodic loud noises could annoy nearby residents. Mitigation Measure - Handle incidents on a case-by-case basis. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Episodic loud noises could annoy nearby residents. Mitigation Measure - Handle incidents on a case-by-case basis. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - New transmission line has potential to induce electric shock in people standing near the line. Mitigation Measure - Build transmission line to NESC code to minimize noise and electric shock. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - New transmission line has potential to induce electric shock in people standing near the line. Mitigation Measure - Build transmission line to NESC code to minimize noise and electric shock. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - New transmission line has potential to induce electric shock in people standing near the line. Mitigation Measure - Build transmission line to NESC code to minimize noise and electric shock. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - New transmission line has potential to induce electric shock in people standing near the line. Mitigation Measure - Build transmission line to NESC code to minimize noise and electric shock. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 23 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic (continued)	Adverse Impact - Additional cooling towers and plumes would impact existing viewscape. Mitigation Measure - No mitigation needed. Cooling towers would not be visible from offsite areas. Plumes would resemble clouds when seen from a distance. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Additional cooling towers and plumes would impact existing viewscape. Mitigation Measure - No mitigation needed. Cooling towers are consistent with the industrial nature of the site. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Cooling towers and plumes would impact existing viewscape. Mitigation Measure - Consider landscaping to hide towers. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Cooling towers and plumes would impact existing viewscape. Mitigation Measure - Consider landscaping to hide towers. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - Operation of two units would increase the traffic on local roads during shift change. Outages at the SRS site would increase traffic even further. Mitigation Measure – None required. Local roads are designed to handle the increased volume of traffic. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Two additional units would increase the traffic on local roads during shift change. More frequent outages at CGS would increase traffic even further. Mitigation Measure - Consider staggering outage shifts to reduce plant-associated traffic on local roads during shift changes. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact – Operation of two units would increase the traffic on local roads during shift change. Outages at the Saluda site would increase traffic even further. Mitigation Measure - Consider staggering outage shifts to reduce plant-associated traffic on local roads during shift changes. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact – Operation of two units would increase the traffic on local roads during shift change. Outages at the Fa-1 site would increase traffic even further. Mitigation Measure - Consider staggering outage shifts to reduce plant-associated traffic on local roads during shift changes. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 24 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic (continued)	Adverse Impact - Emissions from diesel generators.	Adverse Impact - Emissions from diesel generators.	Adverse Impact - Emissions from diesel generators.	Adverse Impact - Emissions from diesel generators.
	Mitigation Measure - No mitigation needed. Emission would be within limits established in certificates of operation.	Mitigation Measure - No mitigation needed. Emission would be within limits established in certificates of operation.	Mitigation Measure - No mitigation needed. Emission would be within limits established in certificates of operation.	Mitigation Measure - No mitigation needed. Emission would be within limits established in certificates of operation.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - Potential for occupational injuries and illnesses.	Adverse Impact - Potential for occupational injuries and illnesses.	Adverse Impact - Potential for occupational injuries and illnesses.	Adverse Impact - Potential for occupational injuries and illnesses.
	Mitigation Measure - Implement existing SCE&G industrial safety program.	Mitigation Measure - Implement existing SCE&G industrial safety program.	Mitigation Measure - Implement existing SCE&G industrial safety program.	Mitigation Measure - Implement existing SCE&G industrial safety program.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - Consumption of fossil fuels during the fuel cycle process would be small relative to the power production.	Adverse Impact - Consumption of fossil fuels during the fuel cycle process would be small relative to the power production.	Adverse Impact - Consumption of fossil fuels during the fuel cycle process would be small relative to the power production.	Adverse Impact - Consumption of fossil fuels during the fuel cycle process would be small relative to the power production.
	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 25 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Socioeconomic (continued)	Adverse Impact - Fuel cycle activities would have liquid discharges. Mitigation Measure - No mitigation needed. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Fuel cycle activities would have liquid discharges. Mitigation Measure - No mitigation needed. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Fuel cycle activities would have liquid discharges. Mitigation Measure - No mitigation needed. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Fuel cycle activities would have liquid discharges. Mitigation Measure - No mitigation needed. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
Radiological	Adverse Impact - Potential doses to members of the public from releases to air and surface water. Mitigation Measure - All releases would be well below regulatory limits. No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Potential doses to members of the public from releases to air and surface water. Mitigation Measure - All releases would be well below regulatory limits. No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Potential doses to members of the public from releases to air and surface water. Mitigation Measure - All releases would be well below regulatory limits. No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Potential doses to members of the public from releases to air and surface water. Mitigation Measure - All releases would be well below regulatory limits. No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
Atmospheric and Meteorological	Adverse Impact – Entrained particles in plume from cooling towers would contribute to particulate emissions. Mitigation Measure – Cooling towers would be designed to minimize plume. No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Entrained particles in plume from cooling towers would contribute to particulate emissions. Mitigation Measure - Cooling towers would be designed to minimize plume. No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Entrained particles in plume from cooling towers would contribute to particulate emissions. Mitigation Measure - Cooling towers would be designed to minimize plume. No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Adverse Impact - Entrained particles in plume from cooling towers would contribute to particulate emissions. Mitigation Measure - Cooling towers would be designed to minimize plume. No mitigation required. Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

Table 10.4-4 (Sheet 26 of 26)
Unavoidable Adverse Environmental Impacts of Proposed Project at Alternative Sites

Category	Proposed Project at Savannah River Site (SRS)	Proposed Project at Cope Generating Station (CGS)	Proposed Project at Saluda Site (greenfield)	Proposed Project at Fa-1 Site (greenfield)
Atmospheric and Meteorological (continued)	Adverse Impact - Diesels would contribute to air emissions.	Adverse Impact - Diesels would contribute to air emissions.	Adverse Impact - Diesels would contribute to air emissions.	Adverse Impact - Diesels would contribute to air emissions.
	Mitigation Measure - Comply with permit limits and regulations for installing and operating air emission sources.	Mitigation Measure - Comply with permit limits and regulations for installing and operating air emission sources.	Mitigation Measure - Comply with permit limits and regulations for installing and operating air emission sources.	Mitigation Measure - Comply with permit limits and regulations for installing and operating air emission sources.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
	Adverse Impact - Relatively small quantities of air pollutants would be result from the fuel cycle.	Adverse Impact - Relatively small quantities of air pollutants would be result from the fuel cycle.	Adverse Impact - Relatively small quantities of air pollutants would be result from the fuel cycle.	Adverse Impact - Relatively small quantities of air pollutants would be result from the fuel cycle.
	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.
Environmental Justice	Adverse Impact - No disproportionately high or adverse impacts on minority or low-income populations resulting from operation of the proposed new units have been identified.	Adverse Impact - No disproportionately high or adverse impacts on minority or low-income populations resulting from operation of the proposed new units have been identified.	Adverse Impact - No disproportionately high or adverse impacts on minority or low-income populations resulting from operation of the proposed new units have been identified.	Adverse Impact - No disproportionately high or adverse impacts on minority or low-income populations resulting from operation of the proposed new units have been identified.
	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.	Mitigation Measure - No mitigation needed.
	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.	Unavoidable Adverse Environmental Impacts - No unavoidable adverse impacts.

VCSNS UNITS 2 and 3

Response to NRC Information Needs

Information Item Number: ACC-13 **Revision:** 0

Statement of the Information Needs Item:

Information Needs Item ACC-13:

Referenced to ER Section 7.1.2.

Have the highest 0-2 hour activities (Ci) been determined and used in calculating the DBAs for the EAB (per Reg Guide 1.183 Section 4.1.5)? Tables 7.1-2 through 7.1-10 do not have the highest 2-hour activities identified.

SCE&G Follow Up Action:

Provide updated calculations and tables, and check for errors in ER Table 7.1-5

Response:

As indicated in ER Section 7.1.4, for the exclusion area boundary (EAB), the maximum two-hour dose is shown for each accident in Tables 7.1-13 to 7.1-22. As these tables indicate, the maximum EAB dose occurs between 0 and 2 hours for all accidents except the following:

- Reactor Coolant Pump Shaft Seizure with Feedwater Available – Maximum EAB dose occurs between 6 and 8 hours
- Loss-of-Coolant Accident – Maximum EAB dose occurs between 1.4 and 3.4 hours

Tables 7.1-6 (Failure of Small Lines Carrying Primary Coolant Outside Containment) and 7.1-10 (Fuel Handling Accident) already show activity releases for 0 to 2 hours, the two-hour period yielding the maximum EAB dose for these accidents. The other activity release tables will be revised to show the period yielding the maximum EAB dose.

The activity releases provided in ER Table 7.1-5 (Spectrum of Rod Cluster Control Assembly Ejection Accidents) are correct. While the doses in the ER are calculated by multiplying the DCD doses by the ratio of site-to-DCD atmospheric dispersion factors, the doses in the DCD are calculated by using the activity releases with the following parameters:

- Breathing rates in Regulatory Guide 1.183
- Atmospheric dispersion factors in DCD Table 15A-5
- Committed effective dose equivalent (CEDE) and effective dose equivalent (EDE) dose conversion factors from Federal Guidance Reports 11 and 12, respectively, as shown in DCD Table 15A-4

The resulting EAB dose is 3.6 rem total effective dose equivalent (TEDE), as shown in DCD Section 15.4.8.3.6 and ER Table 7.1-17. While DCD Section 15.4.8.3.6 conservatively states that the low population zone (LPZ) dose is less than 6.9 rem, the

actual DCD dose based on the activity releases in ER Table 7.1-5 is 5.45 rem TEDE, as indicated in ER Table 7.1-17.

COLA Revisions:

In a future ER revision, Tables 7.1-2, 7.1-3, 7.1-4, 7.1-5, 7.1-7, 7.1-8, and 7.1-9 will be revised as shown below to include the activity release period yielding the maximum two-hour EAB dose.

Table 7.1-2

Activity Releases for Steam System Piping Failure with Preexisting Iodine Spike

	Activity Release (Ci)				
Isotope	**0-2 hour**	**0-8 hour**	**8-24 hour**	**24-72 hour**	**Total**
Kr-85m	6.86E-02	1.83E-01	6.80E-02	6.18E-03	2.57E-01
Kr-85	2.82E-01	1.13E+00	2.25E+00	6.69E+00	1.01E+01
Kr-87	2.76E-02	4.10E-02	5.29E-04	8.60E-08	4.15E-02
Kr-88	1.12E-01	2.50E-01	4.04E-02	8.27E-04	2.91E-01
Xe-131m	1.28E-01	5.07E-01	9.81E-01	2.70E+00	4.19E+00
Xe-133m	1.59E-01	6.09E-01	1.04E+00	2.05E+00	3.70E+00
Xe-133	1.18E+01	4.63E+01	8.64E+01	2.16E+02	3.49E+02
Xe-135m	3.04E-03	3.06E-03	0.00E+00	0.00E+00	3.06E-03
Xe-135	3.10E-01	9.99E-01	8.35E-01	3.38E-01	2.17E+00
Xe-138	3.99E-03	4.00E-03	0.00E+00	0.00E+00	4.00E-03
I-130	3.59E-01	5.01E-01	2.09E-01	1.33E-01	8.44E-01
I-131	2.40E+01	3.61E+01	3.10E+01	8.22E+01	1.49E+02
I-132	3.05E+01	3.47E+01	8.06E-01	6.55E-03	3.55E+01
I-133	4.34E+01	6.23E+01	3.53E+01	3.98E+01	1.37E+02
I-134	6.74E+00	6.91E+00	1.43E-03	4.54E-09	6.91E+00
I-135	2.60E+01	3.42E+01	7.54E+00	1.71E+00	4.34E+01
Cs-134	1.90E+01	1.92E+01	5.19E-01	1.54E+00	2.12E+01
Cs-136	2.82E+01	2.85E+01	7.43E-01	2.06E+00	3.13E+01
Cs-137	1.37E+01	1.38E+01	3.74E-01	1.11E+00	1.53E+01
Cs-138	1.01E+01	1.01E+01	4.42E-07	0.00E+00	1.01E+01
Total	2.15E+02	2.96E+02	1.68E+02	3.56E+02	8.21E+02

Table 7.1-3

Activity Releases for Steam System Piping Failure with Accident-Initiated Iodine Spike

	Activity Release (Ci)				
Isotope	**0-2 hour**	**0-8 hour**	**8-24 hour**	**24-72 hour**	**Total**
Kr-85m	6.86E-02	1.83E-01	6.80E-02	6.18E-03	2.57E-01
Kr-85	2.82E-01	1.13E+00	2.25E+00	6.69E+00	1.01E+01
Kr-87	2.76E-02	4.10E-02	5.29E-04	8.60E-08	4.15E-02
Kr-88	1.12E-01	2.50E-01	4.04E-02	8.27E-04	2.91E-01
Xe-131m	1.28E-01	5.07E-01	9.81E-01	2.70E+00	4.19E+00
Xe-133m	1.59E-01	6.09E-01	1.04E+00	2.05E+00	3.70E+00
Xe-133	1.18E+01	4.63E+01	8.64E+01	2.16E+02	3.49E+02
Xe-135m	3.04E-03	3.06E-03	0.00E+00	0.00E+00	3.06E-03
Xe-135	3.10E-01	9.99E-01	8.35E-01	3.38E-01	2.17E+00
Xe-138	3.99E-03	4.00E-03	0.00E+00	0.00E+00	4.00E-03
I-130	4.15E-01	1.42E+00	1.58E+00	1.01E+00	4.01E+00
I-131	2.57E+01	8.33E+01	1.56E+02	4.13E+02	6.53E+02
I-132	4.57E+01	1.44E+02	2.24E+01	1.82E-01	1.66E+02
I-133	4.85E+01	1.63E+02	2.27E+02	2.55E+02	6.45E+02
I-134	1.33E+01	3.20E+01	2.65E-01	8.42E-07	3.23E+01
I-135	3.20E+01	1.10E+02	7.83E+01	1.77E+01	2.06E+02
Cs-134	1.90E+01	1.92E+01	5.19E-01	1.54E+00	2.12E+01
Cs-136	2.82E+01	2.85E+01	7.43E-01	2.06E+00	3.13E+01
Cs-137	1.37E+01	1.38E+01	3.74E-01	1.11E+00	1.53E+01
Cs-138	1.01E+01	1.01E+01	4.42E-07	0.00E+00	1.01E+01
Total	2.49E+02	6.54E+02	5.78E+02	9.20E+02	2.15E+03

Table 7.1-4

Activity Releases for Reactor Coolant Pump Shaft Seizure

	Activity Release (Ci)		
	Without Feedwater	With Feedwater	
Isotope	0-1.5 hour	6-8 hour	0-8 hour
Kr-85m	8.16E+01	4.13E+01	2.79E+02
Kr-85	7.58E+00	1.01E+01	4.04E+01
Kr-87	1.20E+02	5.43E+00	2.13E+02
Kr-88	2.08E+02	6.05E+01	5.82E+02
Xe-131m	3.77E+00	4.95E+00	2.00E+01
Xe-133m	2.02E+01	2.48E+01	1.03E+02
Xe-133	6.66E+02	8.57E+02	3.49E+03
Xe-135m	3.24E+01	2.68E-06	3.30E+01
Xe-135	1.59E+02	1.32E+02	6.72E+02
Xe-138	1.29E+02	3.01E-06	1.31E+02
I-130	8.45E-01	5.65E-01	1.45E+00
I-131	3.77E+01	3.46E+01	8.05E+01
I-132	2.79E+01	3.95E+00	1.83E+01
I-133	4.86E+01	3.64E+01	8.98E+01
I-134	2.88E+01	2.09E-01	5.74E+00
I-135	4.19E+01	2.05E+01	5.79E+01
Cs-134	1.29E+00	1.11E+00	2.59E+00
Cs-136	5.63E-01	3.47E-01	8.63E-01
Cs-137	7.74E-01	6.51E-01	1.52E+00
Cs-138	6.08E+00	1.13E+00	4.08E+00
Rb-86	1.33E-02	1.27E-02	2.91E-02
Total	1.62E+03	1.23E+03	5.82E+03

Table 7.1-5

Activity Releases for Spectrum of Rod Cluster Control Assembly Ejection Accidents

	Activity Release (Ci)					
Isotope	**0-2 hour**	**0-8 hour**	**8-24 hour**	**24-96 hour**	**96-720 hour**	**Total**
Kr-85m	1.12E+02	1.77E+02	3.87E+01	1.77E+00	2.51E-05	2.18E+02
Kr-85	5.01E+00	1.06E+01	1.49E+01	3.35E+01	2.88E+02	3.47E+02
Kr-87	1.82E+02	2.08E+02	1.03E+00	8.37E-05	0.00E+00	2.09E+02
Kr-88	2.91E+02	4.10E+02	3.49E+01	3.59E-01	8.41E-09	4.45E+02
Xe-131m	4.94E+00	1.04E+01	1.42E+01	2.86E+01	1.16E+02	1.69E+02
Xe-133m	2.67E+01	5.48E+01	6.49E+01	8.45E+01	5.31E+01	2.57E+02
Xe-133	8.79E+02	1.84E+03	2.40E+03	4.27E+03	8.45E+03	1.70E+04
Xe-135m	7.34E+01	7.35E+01	4.33E-09	0.00E+00	0.00E+00	7.35E+01
Xe-135	2.15E+02	3.87E+02	2.09E+02	4.35E+01	1.79E-01	6.39E+02
Xe-138	2.99E+02	2.99E+02	3.19E-09	0.00E+00	0.00E+00	2.99E+02
I-130	4.90E+00	1.22E+01	4.32E+00	2.03E-01	2.95E-04	1.67E+01
I-131	1.36E+02	3.81E+02	2.31E+02	3.10E+01	1.68E+01	6.60E+02
I-132	1.53E+02	2.52E+02	9.85E+00	8.24E-03	0.00E+00	2.62E+02
I-133	2.72E+02	7.12E+02	3.18E+02	2.28E+01	2.41E-01	1.05E+03
I-134	1.66E+02	1.95E+02	1.37E-01	4.48E-08	0.00E+00	1.95E+02
I-135	2.39E+02	5.36E+02	1.19E+02	2.39E+00	7.32E-05	6.57E+02
Cs-134	3.08E+01	9.30E+01	6.03E+01	7.76E+00	5.16E+00	1.66E+02
Cs-136	8.79E+00	2.63E+01	1.67E+01	2.05E+00	6.58E-01	4.57E+01
Cs-137	1.79E+01	5.41E+01	3.51E+01	4.52E+00	3.05E+00	9.68E+01
Cs-138	1.09E+02	1.16E+02	1.68E-03	0.00E+00	0.00E+00	1.16E+02
Rb-86	3.62E-01	1.09E+00	6.96E-01	8.67E-02	3.42E-02	1.91E+00
Total	3.23E+03	5.84E+03	3.58E+03	4.53E+03	8.93E+03	2.29E+04

Table 7.1-7

Activity Releases for Steam Generator Tube Rupture with Preexisting Iodine Spike

	Activity Release (Ci)			
Isotope	0-2 hour	0-8 hour	8-24 hour	Total
Kr-85m	5.53E+01	7.46E+01	7.53E-03	7.46E+01
Kr-85	2.20E+02	3.29E+02	1.34E-01	3.29E+02
Kr-87	2.39E+01	2.75E+01	9.12E-05	2.75E+01
Kr-88	9.22E+01	1.19E+02	5.43E-03	1.19E+02
Xe-131m	9.96E+01	1.48E+02	5.91E-02	1.48E+02
Xe-133m	1.24E+02	1.83E+02	6.61E-02	1.83E+02
Xe-133	9.19E+03	1.37E+04	5.29E+00	1.37E+04
Xe-135m	3.44E+00	3.45E+00	0.00E+00	3.45E+00
Xe-135	2.46E+03	3.47E+02	7.10E-02	3.47E+02
Xe-138	4.56E+00	4.57E+00	0.00E+00	4.57E+00
I-130	1.79E+00	1.85E+00	2.68E-01	2.12E+00
I-131	1.21E+02	1.26E+02	3.06E+01	1.57E+02
I-132	1.42E+02	1.42E+02	1.92E+00	1.44E+02
I-133	2.16E+02	2.24E+02	4.06E+01	2.64E+02
I-134	2.74E+01	2.74E+01	4.23E-03	2.74E+01
I-135	1.27E+02	1.30E+02	1.17E+01	1.42E+02
Cs-134	1.63E+00	1.69E+00	2.16E-01	1.90E+00
Cs-136	2.42E+00	2.51E+00	3.14E-01	2.82E+00
Cs-137	1.17E+00	1.22E+00	1.56E-01	1.37E+00
Cs-138	5.64E-01	5.64E-01	5.73E-07	5.64E-01
Total	1.29E+04	1.56E+04	9.14E+01	1.56E+04

Table 7.1-8

Activity Releases for Steam Generator Tube Rupture with Accident-Initiated Iodine Spike

	Activity Release (Ci)			
Isotope	0-2 hour	0-8 hour	8-24 hour	Total
Kr-85m	5.53E+01	7.46E+01	7.53E-03	7.46E+01
Kr-85	2.20E+02	3.29E+02	1.34E-01	3.29E+02
Kr-87	2.39E+01	2.75E+01	9.12E-05	2.75E+01
Kr-88	9.22E+01	1.19E+02	5.43E-03	1.19E+02
Xe-131m	9.96E+01	1.48E+02	5.91E-02	1.48E+02
Xe-133m	1.24E+02	1.83E+02	6.61E-02	1.83E+02
Xe-133	9.19E+03	1.37E+04	5.29E+00	1.37E+04
Xe-135m	3.44E+00	3.45E+00	0.00E+00	3.45E+00
Xe-135	2.46E+03	3.47E+02	7.10E-02	3.47E+02
Xe-138	4.56E+00	4.57E+00	0.00E+00	4.57E+00
I-130	8.87E-01	1.05E+00	8.24E-01	1.87E+00
I-131	4.36E+01	5.51E+01	6.76E+01	1.23E+02
I-132	1.47E+02	1.52E+02	1.29E+01	1.65E+02
I-133	9.33E+01	1.13E+02	1.08E+02	2.22E+02
I-134	5.59E+01	5.59E+01	5.94E-02	5.60E+01
I-135	7.61E+01	8.60E+01	4.38E+01	1.30E+02
Cs-134	1.63E+00	1.69E+00	2.16E-01	1.90E+00
Cs-136	2.42E+00	2.51E+00	3.14E-01	2.82E+00
Cs-137	1.17E+00	1.22E+00	1.56E-01	1.37E+00
Cs-138	5.64E-01	5.64E-01	5.73E-07	5.64E-01
Total	1.27E+04	1.54E+04	2.40E+02	1.56E+04

Table 7.1-9 (Sheet 1 of 3)

Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks within the Reactor Coolant Pressure Boundary

	Activity Release (Ci)							
Isotope	**1.4-3.4 hr**	**0-2 hr**	**2-8 hr**	**8-24 hr**	**24-72 hr**	**72-96 hr**	**96-720 hr**	**Total**
I-130	5.64E+01	3.24E+01	7.85E+01	6.21E+00	5.11E-01	1.17E-01	6.00E-03	1.18E+02
I-131	1.68E+03	9.19E+02	2.57E+03	2.56E+02	1.33E+02	5.84E+01	5.79E+02	4.52E+03
I-132	1.23E+03	8.79E+02	1.26E+03	1.62E+01	6.00E-03	0.00E+00	0.00E+00	2.16E+03
I-133	3.23E+03	1.82E+03	4.72E+03	3.71E+02	7.41E+01	9.90E+00	7.80E+00	7.00E+03
I-134	6.60E+02	7.09E+02	4.29E+02	3.07E-02	0.00E+00	0.00E+00	0.00E+00	1.14E+03
I-135	2.56E+03	1.54E+03	3.36E+03	1.56E+02	4.79E+00	1.00E-02	0.00E+00	5.06E+03
Kr-85m	1.42E+03	6.32E+02	3.14E+03	1.87E+03	8.60E+01	0.00E+00	0.00E+00	5.73E+03
Kr-85	8.31E+01	3.22E+01	2.65E+02	7.06E+02	1.06E+03	5.28E+02	1.36E+04	1.62E+04
Kr-87	1.10E+03	6.88E+02	1.26E+03	5.00E+01	0.00E+00	0.00E+00	0.00E+00	2.00E+03
Kr-88	3.11E+03	1.50E+03	5.76E+03	1.70E+03	1.70E+01	0.00E+00	0.00E+00	8.98E+03
Xe-131m	8.26E+01	3.21E+01	2.62E+02	6.79E+02	9.42E+02	4.31E+02	5.57E+03	7.92E+03
Xe-133m	4.43E+02	1.74E+02	1.37E+03	3.15E+03	3.14E+03	9.65E+02	2.58E+03	1.14E+04
Xe-133	1.47E+04	5.71E+03	4.62E+04	1.16E+05	1.46E+05	5.97E+04	4.07E+05	7.81E+05
Xe-135m	1.06E+01	3.33E+01	2.62E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.59E+01
Xe-135	3.15E+03	1.31E+03	8.33E+03	1.01E+04	2.06E+03	4.00E+01	1.00E+01	2.19E+04
Xe-138	3.11E+01	1.14E+02	6.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E+02
Rb-86	3.04E+00	1.72E+00	4.60E+00	2.80E-01	1.00E-03	0.00E+00	8.00E-03	6.61E+00
Cs-134	2.58E+02	1.46E+02	3.92E+02	2.40E+01	1.00E-01	0.00E+00	1.20E+00	5.63E+02
Cs-136	7.33E+01	4.14E+01	1.11E+02	6.70E+00	0.00E+00	0.00E+00	2.00E-01	1.59E+02
Cs-137	1.51E+02	8.49E+01	2.28E+02	1.41E+01	0.00E+00	0.00E+00	7.00E-01	3.28E+02
Cs-138	1.50E+02	2.60E+02	6.96E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.30E+02
Sb-127	2.42E+01	1.14E+01	3.67E+01	2.14E+00	1.00E-02	0.00E+00	1.00E-02	5.03E+01
Sb-129	5.10E+01	2.71E+01	6.23E+01	1.48E+00	0.00E+00	0.00E+00	0.00E+00	9.09E+01
Te-127m	3.15E+00	1.47E+00	4.83E+00	2.95E-01	2.00E-03	0.00E+00	1.30E-02	6.61E+00
Te-127	2.05E+01	1.02E+01	2.81E+01	1.11E+00	0.00E+00	0.00E+00	0.00E+00	3.94E+01
Te-129m	1.07E+01	5.01E+00	1.64E+01	1.00E+00	1.00E-02	0.00E+00	3.00E-02	2.25E+01

Table 7.1-9 (Sheet 2 of 3)

Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks within the Reactor Coolant Pressure Boundary

	Activity Release (Ci)							
Isotope	**1.4-3.4 hr**	**0-2 hr**	**2-8 hr**	**8-24 hr**	**24-72 hr**	**72-96 hr**	**96-720 hr**	**Total**
Te-129	1.88E+01	1.39E+01	1.45E+01	3.00E-02	0.00E+00	0.00E+00	0.00E+00	2.84E+01
Te-131	3.17E+01	1.51E+01	4.69E+01	2.51E+00	0.00E+00	0.00E+00	1.00E-02	6.45E+01
Te-132	3.23E+02	1.52E+02	4.89E+02	2.84E+01	1.00E-01	0.00E+00	1.00E-01	6.70E+02
Sr-89	9.23E+01	4.31E+01	1.45E+02	5.40E+00	1.00E-01	0.00E+00	3.00E-01	1.94E+02
Sr-90	7.95E+00	3.71E+00	1.22E+01	7.50E-01	0.00E+00	0.00E+00	4.00E-02	1.67E+01
Sr-91	9.68E+01	4.79E+01	1.33E+02	5.30E+00	0.00E+00	0.00E+00	0.00E+00	1.86E+02
Sr-92	6.83E+01	3.91E+01	7.40E+01	1.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E+02
Ba-139	5.44E+01	3.74E+01	4.56E+01	1.50E-01	0.00E+00	0.00E+00	0.00E+00	8.32E+01
Ba-140	1.63E+02	7.61E+01	2.49E+02	1.51E+01	0.00E+00	0.00E+00	4.00E-01	3.41E+02
Mo-99	2.15E+01	1.01E+01	3.24E+01	1.86E+00	1.00E-02	0.00E+00	0.00E+00	4.44E+01
Tc-99m	1.47E+01	7.54E+00	1.91E+01	5.90E-01	0.00E+00	0.00E+00	0.00E+00	2.72E+01
Ru-103	1.73E+01	8.08E+00	2.65E+01	1.62E+00	0.00E+00	1.00E-02	6.00E-02	3.63E+01
Ru-105	8.18E+00	4.33E+00	1.00E+01	2.40E-01	0.00E+00	0.00E+00	0.00E+00	1.46E+01
Ru-106	5.70E+00	2.66E+00	8.75E+00	5.40E-01	0.00E+00	0.00E+00	3.00E-02	1.20E+01
Rh-105	1.03E+01	4.88E+00	1.53E+01	8.30E-01	0.00E+00	0.00E+00	0.00E+00	2.10E+01
Ce-141	3.89E+00	1.82E+00	5.96E+00	3.64E-01	1.00E-03	1.00E-03	1.20E-02	8.16E+00
Ce-143	3.46E+00	1.64E+00	5.14E+00	2.78E-01	1.00E-03	0.00E+00	0.00E+00	7.06E+00
Ce-144	2.94E+00	1.37E+00	4.51E+00	2.76E-01	1.00E-03	1.00E-03	1.30E-02	6.17E+00
Pu-238	9.16E-03	4.28E-03	1.41E-02	8.60E-04	0.00E+00	0.00E+00	4.00E-05	1.93E-02
Pu-239	8.06E-04	3.76E-04	1.24E-03	7.60E-05	0.00E+00	1.00E-06	3.00E-06	1.70E-03
Pu-240	1.18E-03	5.52E-04	1.81E-03	1.11E-04	1.00E-06	0.00E+00	5.00E-06	2.48E-03
Pu-241	2.65E-01	1.24E-01	4.08E-01	2.50E-02	1.00E-04	0.00E+00	1.20E-03	5.58E-01
Np-239	4.48E+01	2.12E+01	6.75E+01	3.84E+00	1.00E-02	1.00E-02	1.00E-02	9.26E+01
Y-90	8.08E-02	3.81E-02	1.22E-01	7.00E-03	0.00E+00	0.00E+00	0.00E+00	1.67E-01
Y-91	1.19E+00	5.54E-01	1.82E+00	1.11E-01	1.00E-03	0.00E+00	4.00E-03	2.49E+00
Y-92	7.89E-01	4.32E-01	9.19E-01	1.80E-02	0.00E+00	0.00E+00	0.00E+00	1.37E+00
Y-93	1.21E+00	6.00E-01	1.68E+00	6.80E-02	0.00E+00	0.00E+00	0.00E+00	2.35E+00

Table 7.1-9 (Sheet 3 of 3)

Activity Releases for Loss-of-Coolant Accident Resulting from a Spectrum of Postulated Piping Breaks within the Reactor Coolant Pressure Boundary

	Activity Release (Ci)							
Isotope	**1.4-3.4 hr**	**0-2 hr**	**2-8 hr**	**8-24 hr**	**24-72 hr**	**72-96 hr**	**96-720 hr**	**Total**
Nb-95	1.59E+00	7.46E-01	2.44E+00	1.49E-01	1.00E-03	0.00E+00	5.00E-03	3.34E+00
Zr-95	1.59E+00	7.41E-01	2.43E+00	1.49E-01	0.00E+00	0.00E+00	6.00E-03	3.33E+00
Zr-97	1.43E+00	6.89E-01	2.05E+00	9.80E-02	0.00E+00	0.00E+00	0.00E+00	2.84E+00
La-140	1.67E+00	7.92E-01	2.50E+00	1.39E-01	0.00E+00	0.00E+00	0.00E+00	3.43E+00
La-141	1.03E+00	5.54E-01	1.23E+00	2.70E-02	0.00E+00	0.00E+00	0.00E+00	1.81E+00
La-142	5.38E-01	3.57E-01	4.74E-01	2.00E-03	0.00E+00	0.00E+00	0.00E+00	8.33E-01
Nd-147	6.16E-01	2.89E-01	9.42E-01	5.70E-02	0.00E+00	0.00E+00	1.00E-03	1.29E+00
Pr-143	1.39E+00	6.50E-01	2.13E+00	1.28E-01	1.00E-03	0.00E+00	3.00E-03	2.91E+00
Am-241	1.20E-04	5.59E-05	1.84E-04	1.13E-05	0.00E+00	0.00E+00	6.00E-07	2.52E-04
Cm-242	2.82E-02	1.32E-02	4.33E-02	2.65E-03	1.00E-05	1.00E-05	1.20E-04	5.93E-02
Cm-244	3.46E-03	1.62E-03	5.32E-03	3.26E-04	1.00E-06	0.00E+00	1.60E-05	7.28E-03
Total	3.53E+04	1.72E+04	8.14E+04	1.35E+05	1.54E+05	6.17E+04	4.29E+05	8.78E+05

VCSNS UNITS 2 and 3

Response to NRC Information Needs

Information Item Number: SW-1 **Revision:** 0

Statement of the Information Needs Item:

Information Needs Item SW-1:

Referenced to ER Section 2.3.1.1.

Provide an expert to discuss the Broad River Monticello Reservoir, and Parr Reservoir physical description, watershed characterization (including precipitation and runoff rates), Broad River flow variability, sediment process (erosion, sedimentation, bed load and turbidity), impact of the Fairfield Pumped Storage Facility, flood flow and water flow estimates for Parr Reservoir, evaporative and seepage loss analysis for Monticello Reservoir, thermal monitoring of Monticello Reservoir including the literature and data sources and various analyses that support these characterizations.

Requested Action:

Provide clarification of 1) inconsistencies in ER and 2) impact of Fairfield Pumped Storage Facility on flows measured at Alston.

Response:

During the site audit discussions with the NRC, inconsistencies were identified relative to the Broad River slope, width, and precipitation parameters in ER Section 2.3.1 Hydrology. In response to this request, Section 2.3.1 in the ER will be revised to improve its clarity and readability, as well as to make several minor corrections. Specifically, the following inconsistencies will be addressed:

1. In Revision 1 of the ER, the slope of the Broad River near the site is stated to be 0.0007 in Section 2.3.1.1.1 and to be 0.0006 in Section 2.3.1.1.6. The 0.0007 value is approximately the average gradient in the stretch of the Broad River between the confluence of the Enoree River, upstream of the site, and the Richtex U.S. Geological Survey (USGS) station, downstream of the site. The 0.0006 slope refers to the Broad River reach between the gages near Carlisle and at Alston. Although both slopes are correct, the ER is inconsistent in its reference to the slope of the Broad River. This inconsistency will be corrected in ER Section 2.3.1.1.6.

2. The width of the Broad River at the Parr Reservoir is stated to be approximately 2,000 feet in ER Section 2.3.1.1.1. This stated width is correct, although it is not an exact number. The actual width of the Broad River varies substantially along the length of the reservoir, and 2,000 feet is representative of the typical river width through this reach. In addition, the overflow section of Parr Shoals Dam is approximately 2,000 feet long.

3. In ER Section 2.3.1.1.1, the drainage area of the Broad River upstream of Parr Shoals is erroneously stated to be 4,550 square miles. This value appears at two locations in ER Section 2.3.1.1.1. However, in ER Section 2.3.1.1.2 and footnote C

on Table 2.3-8, this same drainage area is shown as 4,750 square miles. The correct value is 4,750 square miles (reference USGS 2006, page 212). The 4,750 square mile area value was used in the ER analyses and supporting calculations.

4. ER Section 2.3.1.1.1 states that the average annual precipitation over the Broad River watershed upstream of Parr Shoals Dam is 45 inches. It should be noted that this estimate is spatially averaged over a 4,750 square mile area, and therefore it is not expected to be the same as the mean point rainfall measured at any particular rain gage. This estimate was obtained from the VCSNS Unit 1 FSAR, which further references the Final Environmental Statement: Related to the Operation of Virgil C. Summer Nuclear Station, Unit 1, January 1973 (USAEC 1973). For comparison, the average annual precipitation at the Parr rain gauge, which is the closest station to the VCSNS site, is 45.75 inches (ER Table 2.7-3).

5. ER Section 2.3.1.1.1 provides incorrect distances to Parr Shoals Dam from the USGS gauging stations near Carlisle and at Richtex. The remarks for the gauge at Richtex (USGS 1974) indicate that this gage is located 10.2 miles downstream of Parr Shoals Dam, and that the gauge is at river mile 191.2. The sum of these two distances, 201.4, provides the river mile location of Parr Shoals Dam. The remarks for the gauges near Carlisle (USGS 2006) indicate that it is located at river mile 226.0. Therefore, the gauge near Carlisle is located 24.6 miles upstream of Parr Shoals Dam (i.e., 226.0 - 201.4).

In addition to addressing these specific issues, other minor edits will be made to ER Section 2.3.1 in a future revision to improve its clarity and readability.

References:

U. S. Atomic Energy Commission (USAEC) 1973, Directorate of Licensing, *Final Environmental Statement: Related to the Operation of Virgil C. Summer Nuclear Station, Unit 1,* January

U.S. Geological Survey (USGS) 1974, *Surface Water Supply of the United States, 1966-70, Part 2. South Atlantic Slope and Eastern Gulf of Mexico Basins, Volume 1. Basins from James River to Savannah River.* Geological Survey Water-Supply Paper 2104

USGS 2006, *Water Resources Data—South Carolina, Water Year 2005, Volume 1,* prepared by T.W. Cooney, P.A. Drewes, S.W. Ellisor, T.H. Lanier, and F. Melendez, USGS-WDR-SC-05-1, March

COLA Revisions:

Below is a summary of the ER Section 2.3.1 changes that will be incorporated in a future ER revision followed by a markup of the ER section showing the changes:

Information Item Number: SW-1 **Revision:** 0

- The drainage area of the Broad River watershed upstream of Parr Shoals Dam will be corrected to 4,750 square miles in ER Section 2.3.1.1.1.
- The distances from Parr Shoals Dam to the U.S. Geological Survey (USGS) gauging stations near Carlisle and at Richtex will be changed from 21 and 14 miles, respectively, to 24.6 and 10.2 miles, using river mile locations and distances obtained from the USGS (USGS 1974, USGS 2006).
- The phrase "While the slope of the Broad River is relatively steep (0.06%) relative to the peak flood discharges at the Carlisle and Alston gauges (Table 2.3-8)" will be deleted from ER Section 2.3.1.1.6 because it is not necessary.
- The sentence: "On a mean annual basis, most of the evaporation loss is offset by precipitation." Will be added to clarify the discussion of evaporation losses from the Parr Reservoir and from Monticello Reservoir.
- In addition, several other minor edits will be made to ER Section 2.3.1 to improve its clarity and readability.

See ER Section 2.3.1 revisions below.

Information Item Number: SW-1 **Revision:** 0

2.3 WATER

This section describes the physical and hydrological characteristics of the VCSNS site and surrounding region that could affect or be affected by the construction and operation of VCSNS Units 2 and 3. The potential construction and operational impacts of the project on near- and far-field water resources are discussed in Chapters 4 and 5, respectively.

Units 2 and 3 would be located in Fairfield County, South Carolina, approximately 1 mile east of the Broad River and 2 miles northeast of the Parr Shoals Dam. The site would be situated on a hilltop with a plant grade elevation of 400 feet NAVD88a (or 400.7 feet NGVD29), about 150 feet above the Broad River floodplain. The site is located near the Monticello Reservoir, which serves as the upper pool of the Fairfield Pumped Storage Facility and the source of cooling and makeup water for Unit 1.

2.3.1 HYDROLOGY

This subsection describes the surface water bodies and groundwater aquifers that could affect the plant water supply and effluent disposal or that could be affected by the construction or operation of Units 2 and 3.

2.3.1.1 Surface Water

Figure 2.3-1 shows the major hydrologic features within a 50-mile zone around the site. Figure 2.3-2 shows the topography at and around the site based on data from a recent aerial photogrammetric survey. Figure 2.3-3 shows in more detail the major hydrologic features within a 6-mile zone around the site.

2.3.1.1.1 Rivers and Streams

The Broad River flows in a northwest-to-southeast direction approximately 1 mile west of the proposed site of Units 2 and 3. The reach of the river near the site is impounded by the Parr Shoals Dam forming the Parr Reservoir. At the Parr Reservoir, the river is approximately 2000 feet wide, with depths ranging from a few feet to approximately 15 feet. Although the width of the Broad River varies substantially along the length of the Parr Reservoir, 2000 feet is a typical width. In addition, the overflow section of Parr Shoals Dam is approximately 2000 feet long. The gradient of the Broad River near the site is about 0.0007. This is approximately the average gradient in the stretch of the Broad River between the confluence of the Enoree River, upstream of the site, and the Richtex U.S. Geological Survey (USGS) station, downstream of the site, as shown in Figure 2.3-4. The Broad River originates on the eastern slope of the Blue Ridge Mountains near Lake Lure in North Carolina, and drains an area of approximately 4,~~550~~ 750 square miles upstream of Parr Shoals Dam. The drainage area of the Broad River is located between two southeast-northwest trending ridges stretching from Columbia, South Carolina, to the headwaters of the river approximately 100 miles northwest in North Carolina. Figure 2.3-4 shows the Broad River watershed upstream of the site. For

most of its length in South Carolina, the Broad River flows through agricultural and forested land, including the Sumter National Forest, which bounds the river for some 30 miles above the Parr Reservoir. Many streams and creeks carry runoff and groundwater drainage to the Broad River. Rivers draining into the Broad River include the Enoree, the Tyger, and the Pacolet Rivers. Downstream of Parr Shoals Dam, the Broad River joins the Saluda River near Columbia, South Carolina, to form the Congaree River.

The average annual precipitation over the watershed of the Broad River upstream of Parr Shoals Dam is 45 inches with a runoff of approximately 17.8 inches, equivalent to a runoff volume over the entire watershed of 4.3 million acre-feet per year. It should be noted that this estimate is spatially averaged over a 4,750 square mile area, and therefore it is not expected to be the same as the mean point rainfall measured at any particular rain gage. For comparison, the average annual precipitation at the Parr rain gauge, which is the closest station to the VCSNS site, is 45.75 inches (Table 2.7-3).

The USGS operates, or has operated, ~~different~~ various ~~gauging~~ stream flow gauging stations on the Broad River upstream and downstream of the Parr Reservoir. The three nearest stations to the site are located at Alston, Richtex, and Carlisle. Data from these three stations ~~was~~ were used for the hydrologic evaluation of the Broad River near the site. Table 2.3-1 lists the key hydrologic data for the Alston, Richtex, and Carlisle gauging stations (Cooney et al. 2006, USGS 2006). Figure 2.3-4 shows the location of these stations.

The nearest downstream active stream flow gauging station on the Broad River is at Alston (USGS station 2161000), approximately 1.2 miles downstream of Parr Shoals Dam (USGS 2006). The Alston station has a contributing drainage area of approximately 4,790 square miles (Cooney et al. 2006), ~~i.e.,~~ which is about 5.2% greater than the drainage area of the Broad River at its closest point to the site. It has operated for 31 years. Stream flow measurements at this station began in October 1896; they were discontinued in December 1907, and started again in October 1980. The Alston station continues to operate to this date. The mean annual daily flow at Alston based on all available data from water years 1897–1907 and 1981–2005 is 6,302 cubic feet per second (cfs) (Cooney et al. 2006, p.224). The mean annual daily flow based on recorded flows from 1980 to 2003 is approximately 5,726 cfs. The highest annual mean flow on record was 11,750 cfs in 1903 and the lowest annual mean flow was 2,153 cfs in 2002. The annual seven-day minimum flow is 200 cfs recorded in August 2002. The maximum recorded mean daily flow was 130,000 cfs and the maximum peak flow was 140,000 cfs, both measured on June 7, 1903 (Cooney et al. 2006, p. 224).

The next nearest downstream gauging station on the Broad River is at Richtex (USGS station 2161500), located ~~about~~ approximately ~~14~~ 10.2 miles downstream of the Parr Shoals Dam (USGS 1974). This station was discontinued in 1983. The Richtex station had a contributing drainage area of approximately 4,850 square miles (USGS 2006). The drainage area of the Richtex gauging station is about 6.7% greater than the drainage area of the Broad River at its closest point to the site. Stream flow data collected at this station exist from October 1925 to September 1928 and from October

1930 to September 1983. The mean annual daily flow for this period was approximately 6,155 cfs. The highest flood of record at Richtex had a peak discharge of 228,000 cfs, which occurred on October 3, 1929 (USGS 2006).

The nearest active stream flow gauging station on the Broad River upstream of the site is near Carlisle (USGS 2156500), located approximately ~~21~~ 24.6 miles upstream of the site (USGS 2006). The Carlisle station has a contributing drainage area of approximately 2,790 square miles (Cooney et al. 2006, USGS 2006). It is located upstream of the confluence of the Tyger and Enoree Rivers with the Broad River. Its drainage area is approximately 39% smaller than the 4,550 square mile drainage area of the Broad River near the site. Historical data from this station cover a period of 68 years. Stream flow measurements at this station began in 1938 and continue to this date. The mean annual daily flow at this station from 1938 to 2005 was 3,880 cfs. The highest annual mean flow was 5,977 cfs in 1965 and the lowest annual mean flow was 1,255 cfs in 2002. The annual seven-day minimum flow was 220 cfs, recorded in August 2002. The maximum recorded mean daily flow was 114,000 cfs and the maximum peak flow was approximately 123,000 cfs, both measured on October 7, 1976 (Cooney et al. 2006).

Tables 2.3-2, 2.3-3, and 2.3-4 give the mean daily flows for each day of the year at Richtex, Alston, and Carlisle, respectively, based on the available flow data record at each station. Tables 2.3-5, 2.3-6, and 2.3-7 give the mean monthly flow at Richtex, Alston, and Carlisle, respectively, for all the years of record.

2.3.1.1.2 Historical Flooding and Peak Flows

The historical flow data indicates two flood seasons—one from January to April and the other from July to October. Floods during the latter period are generally associated with hurricanes and have usually been of greater magnitude than those occurring from January to April. Table 2.3-8 lists the major historic floods at Richtex and Alston gauging stations, their peak discharge rates and maximum water surface elevations, as well as estimates of the corresponding discharges and water levels at the Parr Shoals Dam. Discharges at the Parr Shoals Dam were estimated by multiplying the recorded flow values at Richtex and Alston stations by the ratios of the respective drainage areas.

Figure 2.3-5 shows the flood inundated areas delineated by the Federal Emergency Management Agency in the area near the VCSNS site (FEMA 1982). The map shows different flood-prone areas indicated as zones A, B, and C for flood insurance purposes. Zone A indicates areas of special flood hazard corresponding to the 100-year floodplain; zone B includes areas of moderate flood hazards, mainly representing the limits between 100-year flood and 500-year flood; and zone C areas of minimal flood hazards.

Figure 2.3-6 shows the flood frequency curve for the Broad River at the Parr Shoals Dam that was developed based on annual maximum flow data recorded at Richtex (1926 to 1983) and Alston (1984 to 2006) USGS gauging stations, with drainage area adjustments as mentioned above. Table 2.3-9 also presents the estimated flood frequency values at the Parr Shoals Dam for return periods of up to the 500-year event.

Information Item Number: SW-1 **Revision:** 0

The peak probable maximum flood discharge for the Broad River watershed at the Parr Reservoir, with a drainage area of 4,750 square miles, was estimated to be equal to 1,109,520 cfs. The corresponding peak flood stage was calculated to be 25.5 feet above the top of the gates of Parr Shoals Dam, which is at an elevation of ~~at EL~~ 266 feet NGVD29 (or 265.3 feet NAVD88). The maximum probable maximum flood level is 265.3 +25.5 = 290.8 feet NAVD88 (or 291.5 NGVD29).

2.3.1.1.3 Low Flows

Information on historic low flows is available at the Richtex (October 1925 to September 1983) and Alston (October 1980 to September 2003) gauging stations. The lowest observed daily mean flow at Richtex was 149 cfs on October 13, 1935, and on September 2, 1957. The lowest daily mean flow at Alston was 48 cfs on September 12, 2002. However, this value is not considered representative of natural river flows because it was influenced by the upstream flow diversion from the Parr Reservoir to Fairfield Pumped Storage Facility. Therefore, this value was not included in the low flow analysis. The next lowest flow at Alston was 156 cfs on August 13, 2002.

The *n*-day low flow for a stream is the average flow measured during the *n* consecutive days of lowest flow during any given year. Table 2.3-10 shows the 3-day, 7-day, 10-day, 30-day, 60-day, 90-day, 183-day, and 365-day average low flows for each year of record at Parr Shoals Dam.

The seven-day average low flow for the period 1929–2002 in the Broad River at Parr Shoals Dam was estimated to be 190 cfs on August 11-17, 2002. A low flow frequency analysis was performed on daily mean flows estimated at Parr Shoals Dam by plotting a best-fit curve through the annual low daily mean flows, which was extrapolated to obtain the 100-year daily mean low flow in the Broad River. This analysis showed that the 100-year daily mean low flow is about 125 cfs. A similar analysis performed on the annual minimum seven-day average flows produced the 100-year seven-day average low flow, estimated equal to 430 cfs.

An often used statistical measure of low flows is the 7Q10 low flow, defined as the lowest stream flow for seven consecutive days that occurs on average once every ten years. The USGS (USGS 2007) using the combined data at Richtex and at Alston, determined that the 7Q10 low flow at Alston is equal to 853 cfs.

2.3.1.1.4 Dams and Reservoirs

The nearest bodies of water to the site are the Parr Reservoir and the Monticello Reservoir, which serve as the lower and the upper pools, respectively, of the Fairfield Pumped Storage Facility.

The Parr Reservoir, located approximately 1 mile west of the proposed site for Units 2 and 3 on the Broad River, was created in 1914 by the construction of a dam on the

Information Item Number: SW-1 **Revision:** 0

Broad River at Parr Shoals, approximately 26 miles upstream of the confluence of the Broad and Saluda Rivers. The purpose of the dam was hydroelectric energy generation. Parr Hydro is a 15 MW run-of-the-river hydroelectric facility (SCE&G 2002a, p.2-3). In 1977, the level of the Parr Reservoir was raised by 9 feet with the construction of spillway crest gates mounted on top of the concrete portion of the dam, with a crest elevation of 266 feet NGVD29. This increased its surface area from 1,850 acres to approximately 4,400 acres. At EL 266 feet NGVD29, the Parr Reservoir extends approximately 13 miles upstream and has a usable storage capacity of 29,000 acre-feet. This modification was made as part of the development of the Fairfield Pump Storage Facility, which was built on Frees Creek, a small tributary to the Broad River. Figure 2.3-7 gives the elevation-area-capacity curves for the Parr Reservoir.

The retention time of the Parr Reservoir is about three days. This is based on a mean flow at Parr Shoals Dam of 5,334 cfs, estimated from flow data from the Alston station for the period October 1980 through September 2005, and adjusted by the ratio of the drainage areas at Parr Shoals Dam and Alston. The retention time varies with flow conditions in the Broad River. The range of this variability is 0.8 to 29.3 days, which was estimated based on maximum and minimum monthly flow values of 18,732 cfs ~~to~~ and 541 cfs, respectively.

Average evaporation loss rate from the Parr Reservoir was estimated to be 50 acre-feet/day (25 cfs) based on pan evaporation data obtained from the South Carolina Department of Natural Resources (SCE&G 2007b). On a mean annual basis, most of the evaporation loss is offset by precipitation. Seepage loss at Parr Shoals Dam is considered to be insignificant due to a relatively small hydraulic head across the dam.

Water flows out of the Parr Reservoir through the spillway and the turbines of the Parr Shoals Hydroelectric Project. The gated concrete gravity ogee spillway is approximately 2,000 feet long and 37 feet high and spans the Broad River between the non-overflow section on the east (left) and the earthen embankment on the west (right) ends of the dam. Ten bottom-hinged, bascule-type crest gates were added to the crest of the spillway to raise the Parr Reservoir approximately 9 feet, from EL 257.0 feet NGVD29 (or 256.3 feet NAVD88) to EL 266.0 feet NGVD29 (or 265.3 feet NAVD88). The spillway gates are operated by low pressure hydraulic cylinders mounted on the downstream side of the spillway (SCE&G 2006a).

The Parr Shoals Hydroelectric Project originally had six sluice gates~~,~~ located in the east section of the dam adjacent to the powerhouse. Two of the gate slots have been filled with concrete, the remaining four are not usable because of the level of siltation in the reservoir. The four unusable sluice gates are 9 x 9 feet with centerline EL 222.5 feet NGVD29 (or 221.8 feet NAVD88). There are no draft tube gates. The powerhouse has eight turbine bays. Six of the turbine bays have Francis-type turbines installed with a total authorized generation capacity of 14.88 MW, and the other two bays are empty with the original head gates being replaced with reinforced concrete arch walls. The intake passages of the six main units are 13 feet high and 25 feet wide with their centerline at EL 242.1 feet NGVD29 (or 241.4 feet NAVD88). The powerhouse also has two exciter

turbine passages. The corresponding intake passages are 9.5 feet wide and 5 feet high, with their centerline at elevation approximately 250 NGVD29 (or 249.3 feet NAVD88) (SCE&G 2006a).

The hydrodynamic circulation in the Parr Reservoir is controlled by the incoming flow of the Broad River and the operation of the Fairfield Pumped Storage Facility.

Under low flow conditions in the Broad River, the flow in part of the Parr Reservoir, between Parr Shoals Dam and the Fairfield Pumped Storage Facility, may be in the upstream direction during the night when the Fairfield Pumped Storage Facility pumps water from the Parr to the Monticello Reservoir. This flow pattern is reversed during the day when water from the Monticello Reservoir is released to generate power. No current measurements exist.

The Monticello Reservoir has a drainage area of approximately 17.4 square miles. It was formed by the Frees Creek dams, which include a main dam, referred to as Dam B, and three smaller saddle dams, referred to as Dams A, C, and D. These dams were constructed at the same time as Unit 1 and FPSF to create the Monticello Reservoir, which serves as the source of cooling water for Unit 1 and as the upper reservoir for the FPSF. The Monticello Reservoir is approximately six miles long, and has a surface area of approximately 6,800 acres and a storage volume of approximately 400,000 acre-feet at normal maximum water surface EL 425 feet NGVD29 (or 424.3 feet NAVD88). Figure 2.3-8 gives the elevation-area-capacity curves for the Monticello Reservoir. The average depth of the reservoir is 59 feet and its maximum depth is approximately 126 feet (SCDHEC, 1998). A part of the Monticello Reservoir, covering an area of approximately 300 acres, is used for recreational purposes. The maximum daily withdrawal for power generating purposes is 29,000 acre-feet, lowering the reservoir to EL 420.5 feet NGVD29 (or 419.8 feet NAVD88) and reducing the reservoir surface area to approximately 6,500 acres. Pumping during periods of off-peak power demand refills the reservoir. Operations vary, depending on the season and system needs. In the summer, the Fairfield Pumped Storage Facility generally pumps water from the Parr Reservoir to the Monticello Reservoir between the hours of 11 p.m. and 8 a.m. and generates power (by releasing water) between the hours of 10 a.m. and 11 p.m. In the winter, the Fairfield Pumped Storage Facility generally pumps water from the Parr Reservoir to the Monticello Reservoir between 11 p.m. and 6 a.m. and generates between the hours of 6 a.m. and 1 p.m. The level of generation varies from one generator up to the maximum output of eight generators, depending on demand. Maximum output may not be necessary on all days. Pumping is normally done at maximum capacity. The Fairfield Pumped Storage Facility normally operates seven days a week.

Average ambient evaporation from the Monticello Reservoir was estimated to be about 65 acre-feet/day (33 cfs) with an additional 44 acre-feet/day (22 cfs) latent evaporation from condenser water. The total evaporation rate of 55 cfs corresponds to an average daily evaporation loss of 109 acre-feet. On a mean annual basis, most of the evaporation loss from Monticello Reservoir is offset by precipitation. There is no evidence of significant seepage from the Monticello Reservoir.

Information Item Number: SW-1 **Revision:** 0

The main outlet of the Monticello Reservoir is the intake of the Fairfield Pumped Storage Facility. The approach channel of the intake is a flared, open concrete lined channel 300 feet long with a maximum width of 260 feet and a minimum width of 132 feet. The intake structure is 265 feet long with a maximum width of 132 feet and a minimum width of 115 feet with an invert at 360 feet NGVD29 (or 359.3 feet NAVD 88). It has four 225-foot long water passages tapering in width from 30 feet wide by 50 feet high at the trash racks down to 17 feet 8 inches wide by 30 feet high at the gate sections. An enclosed 40-foot long section comprised of four 26-foot diameter concrete channels transitions to 26-foot diameter, 800-foot-long steel exposed surface penstocks. (SCE&G 2006a)

As a result of the Fairfield Pumped Storage Facility operations, the Parr Reservoir is subject to daily fluctuations in water level of as much as 10 feet, but the daily average is approximately 4 feet. These water level fluctuations can expose and then inundate again up to 2,550 acres of the Parr Reservoir with each cycle of pumping and generation (release of water). The amount of water pumped from and returned to the Parr Reservoir daily represents as much as 88% of its total volume. Similarly, Fairfield Pumped Storage Facility operations can cause water levels in the Monticello Reservoir to fluctuate as much as 4.5 feet daily, from 420.5 feet to 425.0 feet NGVD29 (419.8 feet to 424.3 feet NAVD88). Daily elevation changes vary, depending on system needs.

No systematic current measurements exist for the Monticello Reservoir. Near the Fairfield Pumped Storage Facility, intake flows are influenced by the operation of the storage facility, as water is discharged into the Monticello Reservoir during the night and withdrawn during the day. In the vicinity of Unit 1, flows are influenced by the operation of the cooling water intake and outfall.

In addition to the Parr and Monticello Reservoirs, a number of small reservoirs exist upstream and downstream of the site on the Broad River and its tributaries. These reservoirs are generally small, low-head dams for hydroelectric power generation and water supply. Most of these dams were constructed in the late 1800s and early 1900s.

The Monticello Reservoir will serve as the water supply for Units 2 and 3 (Figure 2.1-1). An intake structure will be constructed at the south end of the reservoir. The water outfall structure of Units 2 and 3 will be placed in the Parr Reservoir. Bathymetric surveys were conducted in 2006 in both reservoirs. Two areas were surveyed, a 1,000 by 1,000 feet area in the Monticello Reservoir in the vicinity of the water intake, and a 1,250 by 2,500 feet area in the vicinity of the outfall in the Parr Reservoir. Using a combination of hydrographic and topographic surveying techniques and procedures, three-dimensional data ~~was~~ were acquired along transects spaced at 25 ~~feet~~ intervals in the intake area and at 50 ~~feet~~ intervals in the outfall area. Figure 2.3-9 shows the surveyed areas. The areas covered by the bathymetric survey near the intake structure are shown in Figure 2.3-9. The bathymetric contours for these two areas developed from the data collected during the surveys are presented in Figures 2.3-10 and 2.3-11.

2.3.1.1.5 Water Temperatures

Information Item Number: SW-1 **Revision:** 0

The Monticello Reservoir serves as the cooling reservoir for Unit 1. Monthly water temperature profiles of Monticello Reservoir have been performed since 1991. Continuous temperature recording was conducted during the warmest months (July, August, and September) forin the reservoir, in the area of the circulating water intake, from 1992 through 1994 (SCE&G 1994). Table 2.3-11 presents the daily water temperature data versus depths obtained near the plant circulating water intake during the summer months of 1994. The monitoring data collected in the summer of 1994 was compared with data from 1992 and 1993 to evaluate year-to-year reservoir conditions regarding vertical water temperature profiles. The result of comparison suggests that the same pattern persisted throughout the monitoring program. In the area of the circulating water intake, that the reservoir in the area of the circulating water intake maintained a uniform temperature distribution from the surface to approximately 60 feet, as a result of pumped storage activity (SCE&G 1994).

Since 1995, water quality (temperature, pH, conductivity, and dissolved oxygen) profiles were measured monthly at three locations in the Monticello Reservoir. Monthly water quality monitoring data from the years 1995, 1996, and 2006 was were used to create figures and tables in this section (Tables 2.3-12 to 2.3-14 and Figures 2.3-13 to 2.3-14 (SCE&G 1995, SCE&G 1996, SCE&G 2007a). As shown in Figure 2.3-12, these locations are designated as "Uplake 16," "Intake 2," and "Discharge 6." These stations cover three major portions of the Monticello Reservoir:

• "Intake 2" – the area near the circulating water intake for Unit 1 that is influenced by pump back and generation operations of the Fairfield Pumped Storage Facility.

• "Discharge 6" – the area near the discharge canal that is influenced by the Unit 1 thermal discharge.

• "Uplake 16" – the northern end of the reservoir whichthat is relatively unaffected less influenced, in terms of water quality, by either the operation of the Fairfield Pumped Storage Facility or Unit 1.

Tables 2.3-12 through 2.3-14 presents the monthly water temperature data versus depth at these three stations in the Monticello Reservoir for the years 1995, 1996, and 2006, respectively. Figures 2.3-13 and 2.3-14 show the vertical profile of water temperature for the coldest month—January—and the hottest month—August—for the year of 2006, respectively.

Water temperature data recorded at three USGS stations, Richtex (02161500), Alston (02161000), and Carlisle (02156500) on the Broad River is are presented in Figure 2.3-15. This These data covers the river reach nearest to Units 2 and 3, that includes including Parr Shoals Dam. located close to Units 2 and 3. Aperiodic Periodic water temperature data was were typically collected from these stations. For the Richtex station (02161500), the available water temperature data is are for the period from October 1959 to September 1960 and July 1972 to July 1973. For the Alston station

(02161000), the water temperature was recorded ~~in~~ from November 1971 to July 1972. For the Carlisle station (02156500), the water temperature record extends from year 1962 to 1975 except for the period of year 1965 to 1968. As shown in Figure 2.3-15, within this river reach, the minimum and the maximum recorded water temperatures were 38.3°F and 86°F, respectively, during the period from October 1959 to December 1975. Even though the data presented in the figure do~~es~~ not represent continuous daily records, ~~it is~~they are indicative of water temperature patterns in the river.

2.3.1.1.6 Erosion and Sedimentation

Sedimentation and erosion in the Broad River near Units 2 and 3 ~~is~~ area functions of the sediment supply relative to the transport capacity of the river (Julien 1998, p.204). While detailed measurements of the transport capacity of the Broad River have not been conducted, the potential for sedimentation and erosion near Units 2 and 3 may be assessed using previous reports, aerial imagery, and sediment samples from the Parr Reservoir. Most of the Broad River basin is located in the Southern Piedmont region, where hillside erosion increased dramatically in the 19th and early 20th centuries because of agricultural activities (Trimble 1994). However, erosion trends started reversing around 1920, and by 1967, erosion levels in the Southeastern Piedmont were only one-fifth to one-third of their peak levels (Trimble 1974). Data presented in the Broad Basinwide Water Quality Management Plan prepared in 1998 by the North Carolina Division of Water Quality Statistics suggest that there ~~has~~ was ~~been~~ a statewide decline in erosion from 1982 to 1992 (NCDWQ 1998).

With respect to the availability of sediment supply, Table 2.3-15 lists the stations where sediment and other related water quality data are available from South Carolina Department of Health and Environmental Control (SCDHEC) Water Quality Monitoring Stations along the Broad River (U.S. EPA 2006). Figure 2.3-4 shows the locations of these water quality monitoring stations, as well as the locations of the USGS stream flow gauging stations. There is no information on bed load measurements at any of the six SCDHEC station locations or at any USGS gauges on the Broad River. Only two of the SCDHEC water quality monitoring stations have data on total suspended solids (mg/L) that could be used to calculate suspended load (tons/day): ~~(*i.e.*,~~ B-047, which is located approximately 12 miles upstream of the Parr Shoals Dam, and B-046, which is located approximately 9 miles further upstream~~) have data on total suspended solids (mg/L) that could be used to calculate suspended load (tons/day)~~. An order-of-magnitude estimate of bed load can be obtained using the globally averaged ratio of suspended load to bed load sediment flux for rivers of 9:1, which was reported by Syvitski, et al. (2003).

While data for water quality monitoring stations B-046 and B-047 includes entries from 1963 to present, between 1999 and 2005 only 74 records at B-046 and 26 records at B-047 of total suspended solids are reported ~~between 1999 and 2005~~. Theise data ~~is~~ are listed in Table 2.3-16 and Table 2.3-17 for B-046 and B-047, respectively. Daily flow values from the Carlisle gauge (USGS 02156500) and the Alston gauge (USGS 02161000) are also presented in Table 2.3-16 and 2.3-17, respectively. The Carlisle gauge is about at the same river mile as station B-046 (Figure 2.3-4). The Alston gauge

is about 13 miles downstream ~~of~~ from station B-047. As shown in Tables 2.3-16 and 2.3-17, the suspended load is calculated ~~using the total suspended solids and the corresponding flow values~~as the product of the discharge and the total suspended sediments concentration. The relationship between the suspended load and the flow rate is plotted in Figure 2.3-16.

The combination of a relatively large watershed at the Parr Shoals Dam (*i.e.*, about 4,790 square miles), high local rainfall (*i.e.*, about 45 inches per year), and hillslopes with a moderate erodibility factor (*i.e.*, 0.24) (SCDHEC, 2007) has led to relatively high suspended solids loads in the Broad River (Figure 2.3-16). The high turbidity of the Broad River has been noted in several recent water quality reports (*e.g.*, NCDWQ 1998, SCDHEC 2001). In addition, data collected in the Upper Broad River (B-042 and B-044) has shown increasing turbidity (SCDHEC 2001, p. 15), suggesting the sediment supply may be in a state of disequilibrium (*i.e.*, changing with time).

With respect to the transport capacity of the Broad River, aerial imagery of the Broad River (Figure 2.3-17) upstream of Units 2 and 3 indicates the local geomorphology is comprised of anabranching islands (~~*i.e.*,~~ locations where primary and secondary channels separate and subsequently reconnect) and localized depositional bars along the channel banks (Schumm 1985). The river channel has relatively little meandering indicating a relatively stable plan form. ~~While the slope of the Broad River is relatively steep (0.06%) relative to the peak flood discharges at the Carlisle and Alston gauges (Table 2.3-8), t~~The Broad River near VCSNS is a predominantly aggradational regime (*i.e.*, sediment supply exceeds transport capacity) due to the presence of the Parr Shoals Dam. As noted in Parker (2007, p. 7), "the installation of a dam on a river typically blocks the downstream delivery of all but the finest sediment, creating a pattern of bed aggradation upstream. The dam raises base level, *i.e.*, the downstream water surface elevation to which the river upstream must adjust, forcing upstream migrating deposition. This deposition is most intense near the delta at the upstream end of the reservoir. As a result, the effect is to intensify the upward concavity of the long profile of the bed upstream of the dam. The more sharply declining bed slope intensifies selective transport of fine material, setting up strong local downstream fining." As a result, "the river bed often aggrades upstream of the dam and degrades downstream" (Parker 2007, p. 3). The backwater effects of the Parr Reservoir extend upstream by about 13 miles (Figure 2.3-17).

Several boring samples in the Parr Reservoir were taken by SCE&G in January 2007 for the possibility of dredging the reservoir (Figure 2.3-18). The sediment gradations are summarized in Table 2.3-18, and are predominantly comprised of (1) clay and clay-silt fractions and (2) sand and sand-silt fractions (*i.e.*, $0.002<D_{50}<0.409$ mm; where D_{50} is the median grain size of the sample) (Figure 2.3-19). Two of the 16 samples included gravel fractions. While these gradations are relatively fine relative to the transport capacity of the river, the high sediment load suggests future dredging will be necessary in the Parr Reservoir to preserve the longitudinal profile.

Information Item Number: SW-1 **Revision:** 0

No bed load sediment transport measurements have been reported for any reach of the Broad River. ~~and~~ Bed load in the Broad River near the site cannot be easily estimated as a fraction of the suspended load because the portion of sediment that moves as bed load varies widely between rivers and on the same river over time (Keyes and Radcliffe 2002).

2.3.1.1.7 Wetlands

Wetlands within approximately a mile and a half of Units 2 and 3 site are associated with several small streams draining to the Broad River. The mapped wetlands are shown in Figure 2.3-20. Riparian wetlands have been identified along the two unnamed creeks to the north and to the south of Units 2 and 3, as well as along other small streams. Most of these streams are dry part of the year.

With the exception of a few beaver ponds and the water bodies discussed in Section 2.3.1.1.4, there are no natural or man-made ponds at the site or within a mile and a half of Units 2 and 3.