UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

August 1, 2005

Mr. James M. Landreth, Vice President
Fossil & Hydro Operations
South Carolina Electric & Gas Company
111 Research Drive
Columbia, South Carolina 29203

Re: Saluda Hydroelectric Project (FERC Project No. 516), Application for New License, First Stage Consultation

Dear Mr. Landreth:

The National Marine Fisheries Service (NMFS) has reviewed the April, 29, 2005, Initial Stage Consultation Document (ICD) prepared by South Carolina Electric & Gas Company (SCE&G). The following comments are provided to supplement the ICD with regard to proposed environmental studies and information needs for relicensing of the Saluda Hydroelectric Project (Project).

Project Description

The Project is located on the Saluda River near the City of Columbia, South Carolina. Power generation began in 1930. Facilities include the 1.5-mile-wide Saluda Dam, the project head pond (Lake Murray), and appurtenant hydropower generation systems. The Project's licensed hydroelectric power generating capacity is 202.6 megawatts which are produced by four power generation units.

The Saluda River drainage basin encompasses over 2,420 square miles and is one of the larger sub-basins of the Santee River Basin of North and South Carolina. The Saluda River receives inflow from the Little River, Little Saluda River, Ninety Six Creek, Bush River, and Reedy River. The Saluda River Basin above Lake Murray contains over 220 miles of riverine habitat and 13 major dams, including several hydropower dams licensed by FERC. Lake Murray covers approximately 75 square miles; is 41 miles long; and is 14 miles wide at its widest point. The river extends approximately ten miles from the Project dam to its confluence with the Congaree River in Columbia, South Carolina.

Fishery Resources of the Santee-Saluda River Basin

The Santee River Basin provides habitat for important wild populations of diadromous fishes including American shad *(Alosa sapidissima)*, hickory shad *(Alosa mediocris)*, blueback herring *(Alosa aestivalis)*, striped bass *(Morone saxatilis)*, American eel *(Anguilla rostrata)*, Atlantic sturgeon *(Acipenser oxyrinchus)*, and the federally listed endangered shortnose sturgeon *(Acipenser brevirostrum)*. These and other diadromous species formerly ranged throughout the Saluda River and supported important subsistence and commercial river fisheries into the late 19th Century.

The Saluda River is one of the three primary sub-basins of the Santee River, and formerly contained a major portion (estimated 30 percent) of the basin's rocky rapids and shoal habitat, which served as high quality spawning habitat for anadromous and resident fish. Rapids or "rapids-complex" areas are higher-gradient riverine reaches containing shoals, rock outcrops, pools, and riffles with hard substrates of bedrock and boulders, cobble-gravel mixtures, and/or coarse sand. The locations provide well-oxygenated sites for reproduction and maturation of micro- and macro- invertebrates and resident and migratory fishes. Because of habitat diversity, water quality (oxygenation), and protection from predators, rapids-complex locations are optimal and essential habitat for egg, larval and juvenile life stages of anadromous species such as American shad, sturgeon, and striped bass. In the Santee River Basin, most rapids-complex habitats are found in the fall-line zone and the Piedmont -- ranging from the upper Coastal Plain to the Appalachian foothills. In the Saluda, Broad, and Catawba-Wateree sub-basins much of the original rapids-complex habitat remains, but is blocked by major mainstem dams. Spawning habitat for anadromous species in the Saluda River is presently restricted to the ten-mile-long river reach between the Saluda Dam and the Congaree River.

National Marine Fisheries Service Management Goals and Objectives

The overall goal of NMFS with respect to licensing of the Saluda Project is to foster protection, restoration, and prudent management of living marine resources, including diadromous species within the Santee River Basin. Specific goals include provision of safe and effective passage to essential spawning and maturation habitats for all diadromous fish species, maintenance of aquatic habitat quality, and recovery of depressed populations of diadromous species. The NMFS considers the Saluda River as an important habitat component for restoration and recovery of American shad, American eel, the endangered shortnose sturgeon, and the Atlantic sturgeon, a species of concern. Shortnose sturgeon are known to occur in the upper Congaree River and their occurrence in the lower Broad and Saluda Rivers is considered probable due to their proximity to the Congaree River and occurrence of accessible habitat. Since construction of the Saluda Dam, blockage of fish migrations in combination with altered water temperature, flow, and dissolved oxygen levels have adversely affected fish habitat and populations in the Saluda River.

Recommended Studies and Information Needs

During 2003-2004 NMFS personnel worked with your staff and representatives of the U.S. Fish and Wildlife Service, and the South Carolina departments of Natural Resources (SCDNR) and Health and Environmental Control (DHEC) to identify the environmental studies needed for relicensing of the Project. The following study requests were developed through interagency coordination, including continuance of the "early start" studies already begun. The requested studies have direct relevance to our fishery protection and conservation mandates.

1 Comprehensive Habitat Assessment

Provide quantitative and qualitative data in GIS format of available and potential spawning, rearing, and foraging habitats (i.e., riffles, shoals, open water, shallow coves, littoral zones) for diadromous and resident fishes in Lake Murray, the Saluda River and its major tributaries, and the Lower Saluda River below the project.

Justification. Information is needed on the existing available diadromous and resident fish spawning, rearing, and foraging habitat and candidate areas for restoration upstream, downstream, and within the project. This information will aid in the assessment of project impacts on aquatic resources, determination of the need for fish passage, development of fish species target numbers, potential habitat restoration areas, and alternative mitigation alternatives for continuing Project impacts.

2. Instream Flow Study

Project operations have altered instream flows and aquatic habitats in the Saluda and Congaree Rivers in terms of water quantity (timing and delivery) and water quality (dissolved oxygen, pH, temperature, nutrients, and suspended solids). A comprehensive instream flow study of the lower Saluda River is needed.

Acceptable standard flow assessment methods may include the Instream Flow Incremental Methodology, Physical Habitat Simulation Model (PHABSIM), MESOHABSIM, Indicators of Hydrologic Alteration (IHA), or others acceptable to the interagency relicensing team to evaluate Project effects on aquatic and riparian communities. We look forward to participating in an interagency team to determine detailed study plans including identification of target species and/or habitat guilds, habitat suitability model relationships, location of study reaches, and placement of transects. At a minimum, the study should address:

(a) Potential operational scenarios involving ramping of discharges to dampen the effects of peaking and load following operations on downstream habitats.
(b) Potential stable spawning flow "windows" for target species.
(c) The effects of project operations on sediment transport, riparian erosion, and sedimentation of important habitats in the ten mile reach of the lower Saluda River and upper Congaree River.

Justification. An instream flow study is needed to determine the affects of project operations at the Saluda Dam on the aquatic habitat and resources in the downstream ten mile reach of the lower Saluda River. This reach consists of rocky shoal habitat which is important to a variety of species including a put-grow-and-take trout fishery, and resident and shoal-dependent species. This reach of the river also provides potential high quality habitat for anadromous fish spawning and maturation. This information is also needed for development of potential enhancement and mitigation measures.

3. Benthic Macroinvertebrate Study

Identify and evaluate benthic macroinvertebrate assemblages in the lower and upper Saluda River including crayfish and EPT's (*Ephemeroptera, Plecoptera, and Trichoptera)* to describe and evaluate project related effects on benthic communities/resources. Sampling should occur in spring and summer and sites should be located directly below the dam, downstream of the dam, in major tributaries, in representative reaches of the Saluda River above the reservoir, and in a reference reach of the Broad River or other river reach as determined by the interagency study team.

Justification. Benthic macroinvertebrates form a vital base of aquatic food webs and, due to their sedentary nature, server as an indicator of local long term and short term ecological conditions and environmental stressors. The status of benthic macroinvertebrate communities and populations is directly related to the health and condition of the riverine ecosystem and its ability to support fishery resources.

4. Water Quality

The NMFS and partner state and federal natural resource agencies will continue working with SCE&G to improve water quality in Lake Murray and the Saluda River tailwater areas to meet state standards, to improve aquatic ecosystem health, and to provide suitable habitat for target species including the endangered shortnose sturgeon. Sturgeon are particularly sensitive to low dissolved oxygen levels. Extensive historic and recent water quality data collection and modeling has been undertaken by SCE&G and the State of South Carolina. A special water quality study should be designed by the interagency team and undertaken to review existing information and hydrodynamic models, and to determine the need for additional data collection and analyses.

Justification. Important progress has been made in improvement of dissolved oxygen conditions in the Saluda River during recent years. The effectiveness of recent operational improvements and turbine runner hub baffle installation should be evaluated to ensure protection for aquatic resources and recreational fisheries, and to restore high quality habitat for sensitive native species including but not limited to shortnose sturgeon, American shad, and striped bass.

5. Entrainment and Out-migration Study

An evaluation of existing and resident and diadromous fish out-migration and entrainment/mortality potential at the dam is needed to assess project-related factors influencing fish populations. Out-migration (spillway and turbine passage) may be significant in terms of recruitment for river basin populations. An understanding of existing and potential out-migration and turbine passage is needed in connection with diadromous fish passage feasibility analyses at the project.

The out-migration study should include the frequency and characteristics of spillway water releases with respect to potential out-migration by target resident and diadromous fish species at the project dams. Limnological studies should be included to document monthly changes in dissolved oxygen, temperature, conductivity, turbidity, thermocline development and overturn under normal hydropower operations. This study element should include multiple years of data to help provide an understanding of limnology and habitat conditions likely to be encountered by out-migrating adult, juvenile, and egg/larval fish life stages at the project dams.

A literature-based study summarizing entrainment mortality studies on similar projects should be conducted. It is conceivable that a sufficient database exists on similar sites with similar turbines from which to draw reasonable conclusions relative to entrainment and mortality in lieu of conducting a site-specific study. NMFS would be pleased to provide criteria, specifications and methods, and examples of "desk-top" turbine mortality studies for review by the interagency team.

Justification. The cumulative loss of fish from entrainment and mortality at the project is a concern. A reasonable determination of these losses at the project is needed for determining the type and extent of mitigation (avoidance, minimization, compensation) necessary to offset the loss of public trust resources. Additionally, an analysis of possible entrainment of diadromous species (adults and juvenile out-migrants) is needed for evaluation of potential fish passage at the project, and/or the feasibility of fish fry stocking programs in upstream riverine habitats.

6. Rare, Threatened, and Endangered Species

NMFS acknowledges the cooperative "early start" study being undertaken by SCE&G to evaluate diadromous fish population abundance (including shortnose sturgeon) in the Saluda and upper Congaree rivers. We recommend that this study be continued and that an annual review of methods and results and methods be provided. Provisions for adjusting the study design and term, as needed, should also be included. A goal of the study should be establishment of a protection and recovery plan for sturgeon in the Saluda River.

Justification. As previously noted, NMFS considers the lower Saluda River to be within the historical range of shortnose sturgeon. This wide ranging migratory species is known

to include open reaches of the upper Santee, Congaree, and Wateree rivers. Prudent protective determination of the range of this species in the Santee Basin extends throughout all tributary river systems up to the first physical habitat barrier. Accordingly, NMFS considers all waters up to the base of the Saluda, Columbia, and Wateree dams to be within the distribution limits of the endangered shortnose sturgeon; hence, important for protection and recovery of the species. Construction of the Saluda Dam and its operation from 1930 to present has blocked upstream migrations of sturgeon and other migratory species and has adversely impacted spawning and maturation habitat quality and recruitment potential in the Saluda River. NMFS looks forward to continuing cooperation with SCE&G and partner agencies to develop a protection and recovery plan for shortnose sturgeon.

7. **Diadromous Fish Surveys**

Continue diadromous fish surveys in the lower Saluda River during the spring 2006 spawning period as outlined in the *2005 Diadromous Fish Studies* study plan. This plan was developed in the fall of 2004 in concert with state and federal natural resource agencies as an "early start" study. NMFS recommends the study be conducted for a minimum of two sampling seasons.

Justification. The Saluda River below the Project dam contains approximately ten miles of typical fall-zone riverine habitat. Currently, diadromous fish are mechanically passed upstream of the Santee Cooper Hydroelectric Project and migrate up the Congaree, Broad, and Wateree rivers. The ten miles of river below the Saluda project contains potential high quality spawning habitat for American shad, hickory shad, blueback herring, shortnose sturgeon and Atlantic sturgeon. The study plan and surveys would allow evaluation of exiting diadromous fish utilization of the lower Saluda River and aid in identification of limiting factors and project impacts. The study is needed for determining protection, mitigation, and enhancement measures for diadromous fishes affected by the project.

NMFS appreciates the opportunity to work with SCE&G and the natural resource agency team to address management of important public water and fish and wildlife resources in the Saluda River Basin. Please direct related questions or comments to the attention of Mr. Prescott Brownell at our South Atlantic Branch Office. He may be reached at P.O. Box 12559, Charleston, South Carolina 29422, or at (843) 953-7204.

Sincerely,

for Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

Enclosure

cc:
OCRM, Charleston
SCDNR, Charleston
EPA, Atlanta
FWS, Charleston
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