

APPENDIX A-9
SALUDA HYDROELECTRIC PROJECT RT&E SPECIES MANAGEMENT PROGRAM

SOUTH CAROLINA ELECTRIC & GAS COMPANY

COLUMBIA, SOUTH CAROLINA

SALUDA HYDROELECTRIC PROJECT *(FERC NO. 516)*

RARE, THREATENED AND ENDANGERED SPECIES MANAGEMENT PROGRAM

FINAL

JULY 2009

Prepared by:

Kleinschmidt
Energy & Water Resource Consultants

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1.0 INTRODUCTION

The Saluda Hydro Project (Project) is a 202.6 megawatt (MW) licensed hydroelectric facility located on the Saluda River in Lexington, Newberry, Richland, and Saluda counties of South Carolina ([Figure 1-1](#)) that is owned and operated by South Carolina Electric & Gas Company (SCE&G or Licensee). The Project is currently licensed by the Federal Energy Regulatory Commission (FERC No. 516), and the present license is due to expire in the year 2010. To initiate relicensing of the project, SCE&G prepared and issued the Initial Consultation Document (ICD) on April 29, 2005. In response to the ICD, the United States Fish and Wildlife Service (USFWS), South Carolina Department of Natural Resources (SCDNR), National Marine Fisheries Service (NMFS), and several Non-governmental Organizations (NGO's) requested information regarding the status of a rare, threatened and endangered (RT&E) species in the Project Area and requested an assessment of potential impacts to these species from Project operations.

To address RT&E species-related relicensing requests, SCE&G formed a RT&E Species Technical Working Committee (TWC), which included representatives from the USFWS, NMFS, SCDNR, NGOs, and other stakeholders. With oversight from the RT&E TWC, the Saluda Hydro Project Rare, Threatened and Endangered Species Assessment (Kleinschmidt, 2008) was developed to provide the requested information regarding status of RT&E species in the Project vicinity, as well as potential project-related impacts. The assessment identified three species of conservation concern as having been documented within or in close proximity to the Project: rocky shoals spider lily (*Hymenocallis coronaria*), bald eagle (*Haliaeetus leucocephalus*), and wood stork (*Mycteria americana*). State and federal resource agency staff, as well as other RT&E TWC participants, subsequently requested that management plans be prepared for these species. This program was prepared pursuant to their request.

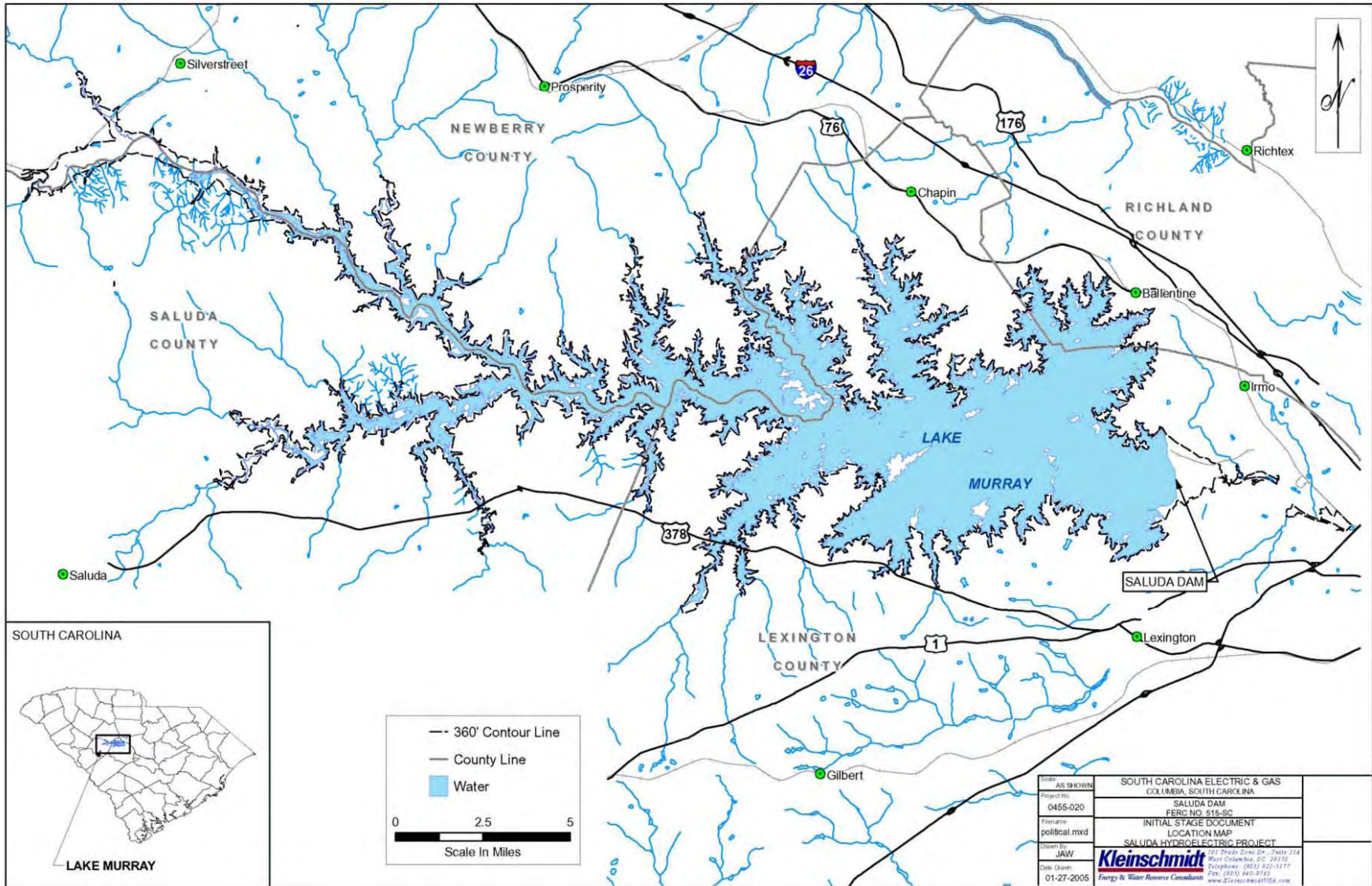


Figure 1-1: Location Map for the Saluda Hydroelectric Project (FERC No. 516)

2.0 BALD EAGLE

The bald eagle was listed as federally-endangered on March 11, 1967, partially due to significant population declines attributed to exposure to the pesticide Dichloro-Diphenyl-Trichloroethane (DDT). Subsequent to the banning of DDT, populations began to increase and the eagle's status was lowered from endangered to threatened on July 12, 1995 (USFWS 1995). Today, the species has recovered to the degree that it was recently removed from the Federal Endangered Species List, effective July 2007 (72 FR 37345 37372)(USFWS 2007). In South Carolina, the number of estimated nesting pairs has increased from 13 in 1977 to 181 in 2003 (Wilde et al. 2003). The bald eagle continues to receive protection under the South Carolina Nongame and Endangered Species Conservation Act as a state endangered species, as well as through the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act (16 U.S.C.668-668d) (72 FR 37345-37372).

Bald eagles may be found throughout North America, typically around water bodies where they feed primarily on fish and scavenge carrion. Studies suggest reservoirs, especially those associated with hydroelectric facilities, are particularly attractive to foraging bald eagles (Brown 1996). Eagles nest in large trees near water and typically use the same nest for several years, making repairs to it annually (USFWS 1989). In South Carolina, the distribution of eagle nesting has shifted, from historically being located primarily along the coast, to encompass more inland areas; this expansion has been attributed to the construction of approximately 491,000 acres of large reservoirs in the state since the early 1900's (Wilde et al. 2003).

2.1 Status in the Project Area

Bald eagles have likely used Lake Murray for foraging and nesting since its construction in 1930. Eagles utilizing the lake for foraging are thought to be a mix of native nesting adults and juveniles from South Carolina and adult and juveniles from outside the state (Wilde et al. 2003). Eagles forage on Lake Murray year round, with peak usage likely occurring during the winter months. Nesting of bald eagles on Lake Murray was first documented in 1996, and since that time, the nesting population has increased significantly (Wilde et al., 1996). The most recent survey, performed by SCDNR biologists as part of state-wide monitoring, documented seven active bald eagle nests on Lake Murray as well as one active nest on the lower Saluda River (LSR) (T. Murphy, SCDNR, unpublished data, 2007). Productivity (young produced) has also

increased substantially around the lake from two chicks in 1996 to 10 chicks in the 2002/2003 nesting season (Wilde et al. 2003).

Lake Murray was one of four South Carolina reservoirs affected by an outbreak of Avian Vacuolar Myelinopathy (AVM), which was first documented at DeGray Lake, Arkansas in the winter of 1994-1995 (Jeffers 2000). AVM has been confirmed in birds from 11 reservoirs in five southern states (SC, NC, GA, AR, TX) and has resulted in the death of at least 93 bald eagles, thousands of American coots, and smaller numbers of waterfowl and other species (Wilde et al. 2003, Birrenkott et al. 2004). AVM is thought to be linked to an unknown neurotoxin that causes lesions in the white matter of the brain and the spinal cord. Affected animals demonstrate difficulty flying, swimming and walking (Jeffers 2000). Evidence suggests that bald eagles contract AVM by preying on afflicted coots and other waterfowl that are unable to evade predators (Wilde et al. 2003).

Researchers suspect that the neurotoxin thought to cause AVM may be the product of a cyanobacteria (blue-green algae) often found growing in association with aquatic vegetation (i.e., *Hydrilla*) (Wilde et al. 2003). Sampling conducted at AVM-affected reservoirs by SDCNR and the University of South Carolina (USC) during 2001 and 2002 found that one particular species of blue-green algae, which is known to produce toxic compounds, had the greatest incidence of colonization at the location with the highest eagle mortality from AVM (Strom Thurmond Lake on the South Carolina/Georgia border). In addition, a recently-published feeding study involving mallards found a cause-effect relationship between ingestion of *Hydrilla* from these sites and AVM infection (Birrenkott et al. 2004).

As part of the Saluda Dam Remediation Project, from 2002 to 2005 SCE&G funded monthly surveys on Lake Murray to monitor for the presence of AVM-affected birds, as well as periodic collections of American coots to screen for the disease. To date, there have been no known occurrences of AVM in the Lake Murray bald eagle population; however, a low percentage of the coots collected during the winters of 1999 (2 out of 17 collected), 2000 (5 out of 27 collected), and 2003 (1 out of 30 collected) did test positive for the disease, as well as one Canada goose collected during December 2000 (Wilde et al. 2003). Despite the presence of some affected prey species, SCDNR and USC scientists have concluded that, to date, the presence of AVM at Lake Murray does not appear to have resulted in extensive losses of breeding adult bald eagles as

both the number and productivity of eagles nesting on Lake Murray have increased from 1996 level (Wilde et al. 2003). It should be noted that the presence of AVM in the lone coot from the 2003 collection was determined only through clinical testing, with no birds displaying obvious neurological impairment, suggesting that AVM was not severe at Lake Murray during the 2002/2003 season (Wilde et al. 2003).

2.2 Management Regime

Active bald eagle nests occurring within the Project Area will be managed in accordance with the National Bald Eagle Management Guidelines (USFWS, 2007), which were published following de-listing of the species to ensure adherence to the Bald and Golden Eagle Protection Act. While restrictions vary according to the type of disturbance, the guidelines generally prohibit potential “disturbance” within 660 ft of an active nest during the nesting season (September through May) and 330 ft during the non-nesting season. Additional details regarding the various disturbance categories, as well as restrictions associated with each category, are summarized in [Table 2-1](#) and [Table 2-2](#).

SCE&G will ensure adherence to the National Bald Eagle Management Guidelines by implementing the following:

- 1) As part of the shoreline permitting process, SCE&G Lake Management staff will consult the disturbance matrices ([Table 2-1](#) and [Table 2-2](#) below) to ensure that permitted shoreline activities do not violate the buffer requirements outlined in National Bald Eagle Management Guidelines (USFWS, 2007);
- 2) SCANA Corporate Environmental, SCE&G Lake Management, and/or their consultants will continue to coordinate with SCDNR endangered species biologists on an annual basis to acquire the most up-to-date data information regarding the location and status of active eagle nests in the Project vicinity;
- 3) SCE&G Lake Management and/or SCANA Corporate Environmental will consult with SCNDR and/or USFWS Ecological Services staff in the event that a yet undocumented nest is discovered in an area of proposed shoreline disturbance, or if there is difficulty in determining the disturbance category of a proposed activity; and

- 4) SCE&G will implement a Rare, Threatened, and Endangered Species Public Awareness Program, which will include the bald eagle. The Program will likely include information on bald eagle identification, habitat requirements and natural history, recent rangewide recovery successes, and the importance of Lake Murray and the LSR in providing nesting and foraging habitat for South Carolina's resident bald eagles.
- 5) SCE&G will also adhere to its Avian Protection Plan (APP) that requires incident reporting and tracking of avian interactions (collisions and electrocutions) with SCE&G power lines and electrical equipment located in its substations. Repeat occurrences may result in retrofitting problem poles or spans of lines with raptor protection devices. The APP also includes a discreet subsection on Eagle Protection and addresses annual reporting requirements.

Table 2-1: Summary of Bald Eagle Disturbance Categories, Representative Disturbance Activates, and Minimum Setback Requirements
Source: National Bald Eagle Management Guidelines (USFWS, 2007)

CATEGORY	REPRESENTATIVE DISTURBANCE ACTIVITIES	DISTANCE FROM A BALD EAGLE NEST
A	Building construction, 1 or 2 story, with project footprint of <0.5 acre Construction of roads, trails, canals, power lines, and other linear utilities Agriculture and aquaculture- new or expanded operations Alteration of shorelines or wetlands Installation of docks or moorings Water impoundments	See Table 2
B	Building construction, 3 or more stories or 1 to 2 stories but with a footprint of >0.5 acre Installation or expansion of marinas with a capacity of 6 or more boats Mining and associated activities Oil and natural gas drilling and refining and associated activities	See Table 2
C	Timber operations and forestry practices	No clear cutting or removal of trees within 330 feet of a nest No logging activities within 660 feet of a nest during the nesting season
D	Off-road vehicle use	330 - 660 ft (depending on visibility from the nest) during the nesting season*
E	Motorized watercraft use	330 ft during the nesting season
F	Non-motorized recreation and human entry	330 ft during the nesting season
G	Helicopters and fixed-wing aircraft	1,000 ft during the nesting season
H	Blasting and other loud, intermittent noises	0.5 miles (2,640 ft) during the nesting season

Table 2-2: Minimum Distances for Category A and B Disturbances for Bald Eagle Nests
Source: National Bald Eagle Management Guidelines (USFWS, 2007)

	NO SIMILAR ACTIVITY WITHIN 1 MILE OF NEST	SIMILAR ACTIVITY WITHIN OF NEST
Activity will be visible from nest	660 feet	660 feet
Activity will not be visible from nest	Category A: 330 feet* Category B: 660 feet	330 feet*

*Activities that would involve cutting trees and changing the landscape should be done outside the breeding season or at distances >660 feet from a bald eagle nest.

3.0 WOOD STORK

The wood stork is a large wading bird endemic to coastal areas of South Carolina, Georgia, Florida and is the only stork species native to North America (USFWS, 1997). Like most other wading birds, wood storks feed primarily on small fish. However, because wood storks feed by tactilocation, depressions where fish become concentrated during periods of falling water levels are particularly attractive (USFWS, 1997). Typical foraging habitats include narrow tidal creeks, flooded tidal pools, freshwater marshes, and freshwater wetlands. Wood storks typically use tall cypresses or other trees near wetlands or marshes for colonial nest sites. Nests are usually located in the upper branches of large trees and there are typically several nests in each tree. Trees utilized for nesting and roosting typically provide easy access from the air and an abundance of lateral limbs (USFWS, 1997). Currently, nesting of the species in the U.S. is thought to be limited to the coastal plain of South Carolina, Georgia, and Florida (USFWS, 1997). The wood stork was federally listed as endangered in 1984, with population declines attributed primarily to general habitat loss (USFWS, 1997).

3.1 Status in the Project Area

A local resident reported observing foraging and roosting wood storks at a number of locations in Lake Murray between approximately 2001 and 2004. Presumably based on these reports, The FERC ordered SCE&G to designate two areas near Bush River and Big Bay Creek in Lake Murray as wood stork “conservation areas” (FERC Order 107 FERC ¶ 62,273 dated June 23, 2004). Further, the order required that these areas, as well as all other wood stork roosting and foraging habitat identified within the Project boundary, remain protected and undeveloped until evidence could be submitted to indicate that protection of these areas was not warranted.

In response to the wood stork sightings on Lake Murray and the subsequent FERC Order, SCE&G initiated consultation with the SCDNR and USFWS during Summer 2004. Biologists from SCDNR and Kleinschmidt Associates subsequently performed two wood stork reconnaissance surveys on Lake Murray in August 2004, during which approximately 60 storks were observed feeding at various locations in the middle Saluda River and the upper portion of Lake Murray (Kleinschmidt 2004a). The surveys also documented two wetlands areas along the floodplain of the Saluda River upstream of the reservoir that contained nests similar to those of wood storks. Based on

these initial findings, SCE&G, SCNDR, and USFWS cooperatively developed a five-year study plan aimed at documenting where and under what conditions wood storks were utilizing habitats within the Project boundary and in the Project vicinity (Kleinschmidt, 2004b).

In accordance with the Lake Murray Wood Stork Study Plan (Kleinschmidt 2004b), aerial surveys were performed monthly during February through November of 2005 and 2006. No wood storks were observed during 2005 surveys, and a limited number (approximately 12-13) were observed during August and September of 2006 (Kleinschmidt, 2005; 2007). The storks observed in 2006 consisted of scattered individuals soaring above and foraging in wetlands off the Saluda's main channel upstream of the reservoir. No nesting of wood storks was observed during 2005 and 2006. The suspected wood stork nest was found to be occupied by great blue heron during both 2005 and 2006.

Timing of wood stork observations during 2006 (August and September), suggested that these were likely post-dispersal migrants from coastal nesting sites. During the late-summer/early-fall period, when chicks have fledged and adults are no longer tied to the nest site by chick rearing, adult and juvenile wood stork dispersing from nesting colonies often undertake extensive migrations to exploit ephemeral food resources prior to returning to coastal areas for the winter months. In South Carolina and Georgia, young-of-year storks typically fledge during July and August, but return to the nest for an additional 3 to 4 weeks to be fed before finally dispersing from the colony site in August and September (USFWS, 1997). Storks dispersing post-breeding from southern US colonies (Florida, Georgia, and South Carolina) have been documented as far north as North Carolina and as far west as Mississippi and Alabama (USFWS, 1997).

Following completion of the 2005 and 2006 surveys, SCE&G met with representatives from the USFWS and SCDNR to discuss the status of wood stork monitoring on Lake Murray (see February 7, 2007 meeting notes). Both SCDNR and USFWS concurred with the findings of the 2006 Wood Stork Monitoring Report (Kleinschmidt, 2007), agreeing that no nesting of wood stork in the Project area was evident based on study results and that timing of the observations during 2006 was consistent with post-dispersal migration. Due to the limited nature of stork activities observed in the Project vicinity, the agencies concurred with recommendations to discontinue further wood stork surveys on Lake Murray and that continued protection of

the areas identified in the FERC Order as wood stork “conservation areas” was no longer warranted or necessary. Agency staff recommended, however, that an education program be developed to assist lake users in identifying and reporting wood stork occurrence in the future.

3.2 Management Regime

In accordance with the agency recommendations, SCE&G will implement the following:

- 1) SCE&G will implement a Rare, Threatened, and Endangered Species Public Awareness Program, which will include information on wood stork identification, habitat requirements, and natural history, as well as a mechanism to report any storks observed in the Project vicinity;
- 2) SCANA Corporate Environmental, SCE&G Lake Management, and/or their consultants will coordinate annually with SCDNR and USFWS to determine whether wood storks were observed on the Lake Murray vicinity during routine resource agency bald eagle surveys on the reservoir; and
- 3) SCE&G will notify the USFWS and SCDNR in the event that additional wood storks are sighted on Lake Murray.

4.0 ROCKY SHOALS SPIDER LILY

Rocky shoals spider lily (RSSL), also referred to as Cahaba lily, is a flowering perennial that typically inhabits large streams and rivers at or above the fall line. These areas usually consist of rocky shoals and bedrock outcrops, substrates which provide anchor points for the RSSL's roots and bulbs (Patrick et al., 1995). RSSL grows best in constantly flowing water with relatively low sediment loads and water depths (to bulb) of 4 to 12 inches (Aulbach-Smith, 1998). The decline of RSSL has historically been attributed to loss of shoals habitat due to construction of impoundments and other channel modifications. Threats to current populations include flow modifications and fluctuating water levels resulting from dam operations, water pollution, and collection for use in gardens. The RSSL is considered a species of concern by the State of South Carolina (SCDNR, 2007).

4.1 Status in the Project Area

A survey conducted in May 2006 in support of relicensing revealed no viable populations of RSSL downstream of the Project in the lower Saluda River (LSR) proper (See Kleinschmidt memorandum dated July 20, 2006). However, a large RSSL population occurs in the island complex at the confluence of the Broad and Saluda rivers and just upstream of the confluence in the bypassed reach of the Broad River downstream of the Columbia Hydroelectric Project (FERC Project No. 1895). The confluence population of RSSL was first documented during SCE&G's relicensing of the Columbia Project in the late-1990's, and at that time, was estimated to consist of 7,921 plants in 48 colonies (Kleinschmidt, 1998). Although not located within the Saluda Project Area, agency staff suggested during consultation that the portion of the population on the Saluda side of the confluence could potentially be "under Project influence" and requested that a management plan be prepared.

The RSSL population located in the confluence and lower Broad River area is managed under an existing RSSL Management and Enhancement Plan (Plan) (Appendix A). The existing Plan was developed by SCE&G in accordance with Article 409 of the current FERC license for the Columbia Hydroelectric Project and filed on behalf of the City of Columbia (City), the current owner of the Columbia Project, on April 24, 2006. The Columbia Plan was implemented in 2007 and is a collaborative effort between the City, SCE&G, South Carolina Native Plant Society, Riverbanks Botanical

Gardens, and SCDNR. Implementation of the Plan has resulted in hiring of a regional RSSL expert to guide monitoring and restoration efforts, development of a RSSL propagation facility at Riverbanks Botanical Garden, updated surveys of the existing RSSL colonies, and transplantation of approximately 94 RSSL seedlings into suitable habitat in the LSR. SCE&G, the City, and other collaborators have also conducted numerous educational and outreach programs in accordance with the Plan, including the First Annual Rocky Shoals Spider Lily Festival, which was sponsored by SCE&G at the Columbia Riverfront Park in May, 2008.

In accordance with Article 409 of the Columbia Hydroelectric Project license, the existing RSSL Plan, and the FERC Order approving the plan (116 FERC ¶ 62,046 dated July 19, 2006), SCE&G filed the two RSSL monitoring reports with the FERC on behalf of the City on November 30, 2006 and November 30, 2007 (Appendix B). The reports include two progress reports from Ms. Cindy Aulbach, a botanist and regional RSSL expert hired to serve as technical lead for the RSSL monitoring and restoration efforts. According to the reports, a total of 1,443 RSSL plants in 183 colonies were found during surveys conducted during 2007, significantly fewer than indicated in the 1998 survey (7,921 plants in 48 colonies) (Kleinschmidt, 1998). Aulbach noted that, while differing personnel and survey methods between 1998 and 2007 likely contributed to the differences in population estimates, the magnitude of the disparity likely indicates a significant reduction in the RSSL population from 1998 to 2007. Ms. Aulbach speculated that the reduction in population could potentially be attributed to deeper water associated with recent implementation of license required minimum flow releases from the Columbia Project. Finally, the report found 12 of the 94 bulbs transplanted in the LSR during Fall of 2006 to be surviving (13%). Additional details regarding the 2007 surveys and other restoration and monitoring efforts to date are provided in the 2006 and 2007 RSSL reports, which are included as Appendix B.

4.2 Management Regime

Under a new license term for the Saluda Project, SCE&G will continue to assist and support the City and other partners with the RSSL monitoring and restoration efforts implemented under Columbia RSSL Enhancement Plan. Activities that will continue to be supported include:

1. RSSL Propagation – SCE&G will continue to support and assist the Riverbanks Botanical Gardens in their efforts to propagate RSSL bulbs for transplantation to the confluence area and LSR.
2. Technical Expertise – SCE&G and its partners will continue to employ the service of a regional RSSL expert to guide restoration, enhancement and monitoring efforts.
3. Monitoring – As outlined in the Columbia Plan, monitoring of RSSL colonies in the confluence area will be conducted on a minimum five year interval. Monitoring will consist of ground surveys of the entire confluence area, during which the number of live plants will be counted and colony locations documented using Global Positioning System (GPS) technology. Any diseased or distressed plants will be noted and documented.
4. Pilot Planting Phase – SCE&G will continue to support and assist the City and its partners in experimental planting of RSSL bulbs until such time that approximately 300 RSSL have been successfully transplanted. Only bulbs grown from seeds collected from the Broad River Basin will be transplanted, per request of the USFWS.
5. Phase I Planting – This phase will involve large scale propagation and transplantation of seedlings into the confluence and Broad River Bypass reach. Phase I will last for two years or more if necessary until such point that 3000 new RSSL plants have been established. Specific goals and schedule for this phase will be determined in consultation with the technical expert and agency staff and will be outlined in the annual report prior to implementation.
6. Phase II Planting – This phase will commence upon completion of Phase I and will involve commercial scale production of RSSL seedling utilizing the propagation facilities established at Riverbanks Botanical Gardens. This phase will aim at establishing up to 1,000,000 new RSSL plants. The Columbia Hydro RSSL Plan states that funding for this phase is to be provided by the River Alliance and that if funding is not available, the City will assist SCDNR and Riverbanks Botanical Gardens to obtain funding through public or business options. Specific goals and schedule for this phase will be determined in consultation with the technical expert and agency staff and will be outlined in the annual report prior to implementation.

7. Reporting – In accordance with Article 409 of the Columbia Hydroelectric Project license, the existing RSSL Plan, and the order approving the plan, a report will be filed annually to update the status of RSSL enhancement and restoration efforts. The annual report will be filed with the FERC, USFWS, SCDNR, River Alliance, and Riverbanks Botanical Gardens by November 30 of each year. A draft of the report will be circulated to the above noted parties for their review prior to filing of the annual report.
8. Public Awareness – As with the wood stork and bald eagle, the RSSL will be included as a component of the Rare, Threatened and Endangered Species Public Awareness Program. The program will likely include information on RSSL life history, tips for RSSL viewing during the blooming season, and information on the RSSL restoration and enhancement efforts that have been undertaken by SCE&G, The City and its partners in recent years.

This management plan is intended to serve as a regulatory link between the Saluda Hydroelectric Project and the restoration and enhancement efforts currently being conducted relative to the RSSL population located at the confluence of the LSR and Broad River.

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