MEETING NOTES
Stevens Creek Hydroelectric Project (FERC No. 2353)

Dominion Energy South Carolina, Inc.
Joint RCG Meeting

February 18, 2020

Final KMK 3-25-20

ATTENDEES:

Amy Bresnahan (DESC)
Ray Ammarell (DESC)
Caleb Gaston (DESC)
Randy Mahan (DESC)
Alison Jakupca (Kleinschmidt)
Kelly Kirven (Kleinschmidt)
Henry Mealing (Kleinschmidt)
Jason Moak (Kleinschmidt)
Jordan Johnson (Kleinschmidt)
Jay Payne (GWRD)
Jeffrey Williams (GEPD)
Cameron Henderson (SCDHEC)
Elizabeth Miller (SCDNR)
Jason Bettinger (SCDNR)
Morgan Kern (SCDNR)
Melanie Olds (USFWS) via conf. call
Martha Zapata (USFWS) via conf. call
Scott Glassmeyer (USFWS) via conf. call
Derrick Miller (USFS)
Keith Whalen (USFS)
Andy Herndon (NMFS) via conf. call
Twyla Cheatwood (NMFS) via conf. call
Rachel Freeman (SRK)
Tony Hicks (individual)

These notes are a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

The purpose of the meeting was to review the revised Water Quality Study Plan, draft Mussel Study Plan, Draft Rare, Threatened and Endangered Species Whitepaper, Aquatic Habitat Outline, and revised Recreation Study Plan. The draft documents discussed during the meeting are attached to the end of the notes. A summary of the discussion on each document is included below.

Revised Water Quality Study Plan

Alison provided a review of the revisions made to the Water Quality Study Plan stemming from discussion in the 11/13/2019 meeting.

- Two additional monitoring sites were added at the east end of the dam
- The study period was extended to last from January through December 2021
- Added continuous monitoring (15-minute intervals) for parameters including pH, conductivity, turbidity and monthly nutrient samples

Alison added that Kleinschmidt and DESC will go into the field prior to the start of the study to scope out the best locations for monitor installation. Jason M. said that since the reservoir fluctuates, the monitors will be attached to buoys and will be located at least 1 meter below the water surface, or mid-depth if possible. Sites will be recorded by GPS once selected.

Amy added that the USGS does monthly profiles and collects DO, temperature, pH and specific conductivity. This information will continue to be collected during the study season.

Jason B. asked if an additional site could be added in the Savannah River portion of the Stevens Creek reservoir, specifically in an area where the powerline crosses the reservoir. This area has a lot of vegetation and not much water flow. He would like to see DO and maybe pH collected during summer months for 24-48 hours on a twice-per-month or monthly basis (one sample in mid-June, 2 samples each in July and August spaced two weeks apart, and one sample in mid-October). This request will be considered and Kleinschmidt will confirm the location with Jason after the meeting.

Mussel Study Plan

A strawman for the Mussel Study Plan was distributed prior to the meeting. USFWS identified a general area that they would like to see mussel surveys completed. This area starts at the upstream extent of the Stevens Creek arm of the Project reservoir down to the Stevens Creek confluence with Horn Creek. USFWS believes this area may have the highest potential for mussels within the Project boundary. Keith said the Forest Service contracted a malacologist to complete mussel surveys in the upper Horn Creek area. He will send that information over to Kleinschmidt and DESC. Morgan asked that the approximately 1.5 miles of Horn Creek that are within the Project boundary be added to the study area in the study plan. Keith also suggested adding to the study area portions of Dry Branch and Cheves Creek that occur in the Project boundary. He said that these areas could potentially be accessed through Forest Service roads. These areas will be checked for suitable habitat in the transition zones but may not be added to the study if such habitat does not exist in the Project boundary.

Morgan said that SCDNR generally conducts a qualitative assessment first to determine if any mussels are present in an area and then conducts a quantitative assessment within a defined boundary to determine relative abundance. Morgan will share any SCDNR standard methods used to collect data.

Melanie asked about the potential for mussels downstream of the Stevens Creek Dam and if a study in this area is necessary. Henry said this area received full river flow so it is pretty scoured and a majority of the water that flows through is cold hypolimnetic water released from Thurmond Dam. He said this may not be good habitat for mussels. In addition, this area is actually the headpond for the Augusta Diversion Project and is outside of the Project boundary so priority should be placed on studying the identified areas within the Project boundary.

Keith asked if any tributaries on the Georgia side of the Savannah River provide any habitat for mussels. Henry said there is likely a lower chance for mussels on the Georgia side of the Stevens Creek reservoir because there is more residential build-up in this area, which has significantly affected the tributaries.

Jason M. suggested adding several level loggers in various portions of the mussel study area, especially in areas where mussels are detected. He said this will provide information on project influence and potential backwatering in this area.

Alison said that the study plan strawman will be revised with a new map of the study area and sent back to stakeholders for additional review in the next few days. She requested that comments be submitted by mid-March.

Rare, Threatened and Endangered (RTE) Species Whitepaper

Alison explained that the whitepaper includes a list of federal, Forest Service, and state (Georgia and South Carolina) RTE species that occur in the Project vicinity. The federal and Forest Service species were analyzed to determine if their habitat exists within the Project boundary and potentially affected by continued Project operations. Currently, the state species that were provided by the SCDNR and GDNR are only listed in the report. However, the DNRs can request that any of these species that may have cultural significance be analyzed. Ultimately, FERC will make a determination on Project effects and ask for concurrence with the USFWS.

Elizabeth asked that the conservation status for state-listed species be added to the whitepaper (highest, high and moderate priority levels).

The group was in general agreement that the RTE Whitepaper will be beneficial for analyzing various species of concern. Alison asked that comments from the stakeholders be submitted by mid-March.

Aquatic Habitat Outline

Alison said that there was discussion of preparing an aquatic habitat whitepaper/study at the 11/13/2019 meeting. Over the next few years, data will be collected during a variety of studies that will help describe aquatic habitat (substrates, water quality, species distributions, etc.) in the Stevens Creek reservoir. The data collected in each proposed study will be rolled into a comprehensive report that will be filed with the Final License Application (FLA). Kleinschmidt and DESC have put together an outline for this report that will be filed with the Pre-Application Document (PAD). This outline will be filled in with data as it becomes available during relicensing.

The group reviewed the outline and suggested the following additions:

- Additional discussion on effects of fluctuation zones
- USACE Thurmond Dam operations
- Updated USACE Drought Contingency Plan
- Stevens Creek Project operations information
- Environmentally Sensitive Areas identified during relicensing

Henry said that this document should be helpful during Section 7 -RTE consultation and Section 18 - fish passage consultation as needed. Elizabeth asked if this document will be used to develop a Shoreline Management Plan (SMP). Alison said that an SMP isn't well-suited to this Project because DESC owns very little shoreline around the reservoir and USACE controls dock permitting. The recreation areas and Project operations lands will be described in the FLA, but there isn't a need for a separate SMP. In addition, DESC doesn't have the opportunity to establish a buffer zone around the reservoir since they don't own much land, however, this Aquatic Habitat whitepaper can help inform those that might have control over a buffer zone (i.e. USACE or Forest

Service). A land ownership map is also under development and will be shared with stakeholders when complete.

Recreation Study Plan

The revised Recreation Study Plan was distributed to stakeholders for review prior to the meeting. The use of trail cameras for activity monitoring at the Fury's Ferry and Chota Drive recreation sites was discussed at a previous meeting and added into the study plan. However, Derrick said that since that time, an incident was brought to the Forest Service's attention that caused the Service to be wary of trail camera use. Keith and Derrick said that they can find out if trail camera placement further down the access road may be possible. If trail cameras can't be used at these sites, spot counts will be conducted by two people throughout the study season.

Keith also noted that there was discussion of adding questions to the surveys regarding use at Fury's Ferry and Chota Drive, since surveys would not be conducted at these sites during the study. Kelly said that these questions would be added to the survey form.

Alison said that the next meeting would be conducted via conference call to discuss the updates to the PAD. Alison said that the official start of relicensing occurs when the Notice of Intent (NOI) and PAD are filed with FERC, which will occur around May 2020. At this time, DESC will also request the use of the Traditional Licensing Process (TLP). DESC requested that stakeholders send in letters to FERC supporting the use of the TLP. FERC will decide on the TLP request by June 2020. The Joint Agency Meeting (JAM) and site visit will occur around August 2020.

Action items from this meeting are listed below. Comments on the study plans/whitepapers are requested by March 17, 2020.

ACTION ITEMS:

- Kleinschmidt will revise the Water Quality Study Plan, Mussel Study Plan, RTE Whitepaper, Aquatic Habitat Outline and Recreation Study Plan and send back out to stakeholders for review.
- Morgan will send information on SCDNR standard measures and procedures for mussel surveys.
- Keith will send information on Forest Service mussel studies near Horn Creek.
- Derrick will explore the Forest Service's position on using trail cameras on FS properties.

WATER QUALITY STUDY PLAN

STEVENS CREEK HYDROELECTRIC PROJECT
(FERC NO. 2535)

Prepared for:

Dominion Energy South Carolina, Inc.
Cayce, South Carolina

Prepared by:

Kleinschmidt

Lexington, South Carolina
www.KleinschmidtUSA.com

February 2020

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DOMINION ENERGY SOUTH CAROLINA, INC.

1.0 INTRODUCTION

Dominion Energy South Carolina, Inc. (DESC) is the licensee of the Stevens Creek Hydroelectric Project (FERC No. 2535) (Project). The Project, which has an installed capacity of 17.28 megawatts (MW), is located in Edgefield and McCormick counties, South Carolina and Columbia County, Georgia, at the confluence of Stevens Creek and the Savannah River. The Project's dam is located approximately one mile upstream of the Augusta Diversion Dam, and approximately 13 miles downstream of the U.S. Army Corps of Engineers (USACE) J. Strom Thurmond Dam (Thurmond Dam). The Stevens Creek Reservoir is approximately 25 miles long, extending upstream to the Thurmond Dam and 12 miles up Stevens Creek. The surface area of the reservoir is 2,400 acres at the normal full pond EL 187.5 feet. The Project drainage area is approximately 7,173 square miles.

DESC operates the Project to generate clean, renewable energy and re-regulate highly variable river flows discharged by the USACE from the Thurmond Dam. DESC's operational protocols include releasing all Thurmond Dam discharges on a weekly basis and operating to achieve full pool in the Stevens Creek reservoir by Friday evening to provide a continuous weekend downstream discharge.

On November 22, 1995, FERC issued a 30-year license which is scheduled to expire on October 31, 2025. DESC intends to file an application for a new license with FERC on or before October 31, 2023. The Project is currently involved in a relicensing process which involves cooperation and collaboration between DESC, as licensee, and a variety of stakeholders including state and federal resource agencies, state and local government, non-governmental organizations (NGO), and interested individuals. DESC established a Water Quality, Fish and Wildlife Resource Conservation Group (RCG), with interested stakeholders to address Project issues related to aquatic and terrestrial resources. The RCG determined there was a need for supplemental water

quality data at the Project, particularly dissolved oxygen (DO) and temperature. The Georgia Department of Natural Resources expressed a desire for more information on water quality in upstream areas of Stevens Creek to determine its suitability for fish habitat. The National Marine Fisheries Service expressed that the collection of continuous downstream water quality data over a period of time would aid in supporting the baseline water quality data currently available, as summarized in the Pre-Application Document prepared for the Project relicensing.

2.0 STUDY OBJECTIVE

The objective of this study is to assess the water quality, specifically DO levels, of the Savannah River, immediately downstream of the Stevens Creek Hydroelectric Project and in Stevens Creek.

3.0 GEOGRAPHIC AND TEMPORAL SCOPE

Water quality will be monitored at four sites in the Savannah River and one site in Stevens Creek. Monitoring Site 1 will be used as a control, and will be located in Stevens Creek Reservoir, upstream of the hydro station. Monitoring Site 2 will be located directly downstream of the Stevens Creek Hydroelectric Project. Monitoring Sites 3 and 4 will be located downstream and upstream of the east end of Stevens Creek Dam, respectively. Monitoring Site 5 will be located in Stevens Creek at Woodlawn Road, approximately 4.5 miles upstream of its confluence with the Savannah River at Stevens Creek Dam. The monitoring sites are shown in Figure 1.

The study will begin January 1, 2021 and extend through December 31, 2021.

FIGURE 1 STEVENS CREEK HYDROELECTRIC PROJECT WATER QUALITY STUDY SITES

4.0 DATA COLLECTION METHODS AND ANALYSIS

4.1 CONTINUOUS MONITORING

Water quality will be monitored at the five monitoring sites shown in Figure 1 for temperature, dissolved oxygen, pH, conductivity, and turbidity and using continuous water quality monitoring instruments. The instruments will be deployed at approximately mid-depth in the stream channel. The instruments will be calibrated according to the manufacturer's specifications and will be set to record measurements at hourly intervals.

The instruments will be cleaned, checked for accuracy, and downloaded on a monthly basis, at minimum, though more frequent checks will be conducted after initial deployment to determine the extent of fouling from aquatic vegetation. A separate, calibrated meter will be used to record DO and water temperature readings during each maintenance visit to the sites. These data will be compared to deployed instrument data as a check on accuracy and for use in post-processing and correction of any fouling or calibration drift.

All continuous data will be compiled at the end of the monitoring season. The data will be analyzed by computing daily and monthly minimum, maximum, and average values for DO and water temperature and comparing them to applicable water quality criteria.

4.2 NUTRIENT SAMPLING

Water samples will be collected monthly at Sites 2, 3, and 5 and submitted to a certified laboratory for analysis of ammonia, nitrate-nitrite, total Kjeldahl nitrogen, orthophosphate, and total phosphorus. A set of duplicate samples and one field blank sample will also be included for quality assurance.

4.3 EXISTING MONITORING DATA

Data collected by the USGS in 2020 and 2021 as required by Article 405 of the existing license will be summarized and included in the final report.

5.0 SCHEDULE

The water quality monitoring instruments will be deployed at each monitoring site on, or around, January 1, 2021 and will collect data for approximately twelve months. The instruments will be checked monthly, at a minimum, during the study period. Nutrient samples will be collected monthly during the same time period and timed to coincide with maintenance visits to the continuous monitors. Study methodology, timing and duration may be adjusted based on consultation with resource agencies and interested stakeholders.

A final report summarizing study findings will be issued within four months of the end of field work. The report will include tabular and graphical summaries of the DO and water temperature data, as well as summaries of pertinent hydrologic and meteorological data, and data collected by the USGS as part of the existing Project license requirement.

6.0 USE OF STUDY RESULTS

Study results will be used as an information resource during the discussion of resource issues with relicensing stakeholders.

DRAFT

MUSSEL STUDY PLAN

STEVENS CREEK HYDROELECTRIC PROJECT
(FERC NO. 2535)

Prepared for:

Dominion Energy South Carolina, Inc.
Cayce, South Carolina

Prepared by:

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January 2020

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On November 22, 1995, FERC issued a 30-year license which is scheduled to expire on October 31, 2025. DESC intends to file an application for a new license with FERC on or before October 31, 2023. The Project is currently involved in a relicensing process which involves cooperation and collaboration between DESC, as licensee, and a variety of stakeholders including state and federal resource agencies, state and local government, non-governmental organizations (NGO), and interested individuals. DESC established a Water Quality, Fish and Wildlife Resource Conservation Group (RCG), with interested stakeholders to address Project issues related to aquatic and terrestrial resources. During an RCG meeting on November 13, 2019, the USFWS formally requested a mussel study at the Project, particularly in the Stevens Creek arm of the Project reservoir. This study plan was developed in consultation with the USFWS and the RCG.

2.0 STUDY OBJECTIVE

The purpose of this study is to gather quantitative and qualitative data on the diversity, spatial distribution and relative abundance (density) of the mussel fauna inhabiting the portion of Stevens Creek included within the Stevens Creek Project boundary.

3.0 GEOGRAPHIC AND TEMPORAL SCOPE

Hypolimnetic releases from J.S. Thurmond Reservoir are both low in oxygen and much colder than southeastern river typical temperatures. Therefore, mussel surveys will focus on selected habitats within Stevens Creek that are more likely to support populations of native freshwater mussels. Due to the accumulation of silt in the lower portions of Stevens Creek, a majority of the surveys will take place in the upper portion of Stevens Creek within the Project boundary. USFWS requested that the reach between the upstream extent of the Stevens Creek reservoir to the confluence with Horn Creek be surveyed (Figure 3-1). Specific survey points will be identified in the field by the lead malacologist performing the study. Surveys will be conducted in the summer and early fall months in 2021 when water clarity and temperatures are sufficiently high to support wading, snorkeling, and other in-water survey methods. We do not anticipate that scuba will be needed to perform surveys in the identified areas.

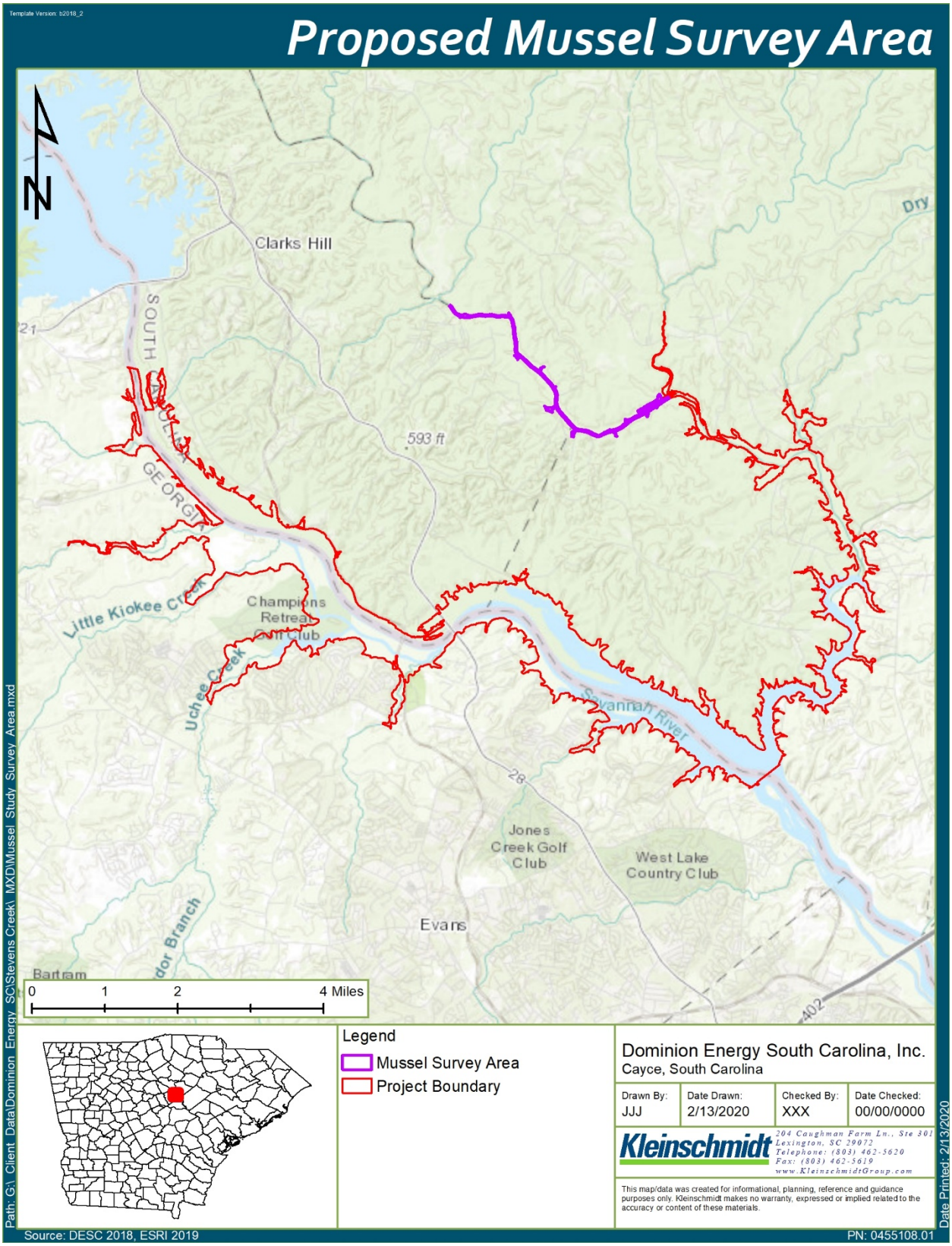

FIGURE 3-1 MUSSEL STUDY AREA

4.0 DATA COLLECTION METHODS

Freshwater mussel surveys in Stevens Creek will involve timed visual and/or tactile inspections of suitable habitat for presence of live freshwater mussels and/or shell material and will be conducted by a qualified malacologist with expertise in Savannah River fauna. Although the number and specific location of qualitative survey points will likely be refined in the field based on professional judgement of the lead malacologist, it is expected that a range of 5 to 10 representative sites will be distributed along the creek. Particular attention will be placed upon the examination of potential Carolina heelsplitter (*Lasmigona decorata*) (federal-endangered species and South Carolina state-endangered species) habitat within areas of Stevens Creek.

Exact methods for conducting visual and tactile searches will vary depending on water depth. Daily and weekly fluctuations of the Stevens Creek reservoir within a 4.5-foot band to accommodate flow releases from Thurmond Dam result in routine changes to the water surface elevation, microhabitat characteristics (e.g., water depth and water velocity), and change water levels along shoreline habitats. The maximum reservoir drawdown of 4.5-feet exposes approximately 575 acres of littoral zone habitat (FERC 1995). Because of this, mussel surveys will focus primarily on those areas below the 4.5-foot depth contour where mussels are likely to become established. Depending on water depths, wading, batiscope, or snorkeling will be used to conducted timed surveys at each of the selected sites:

- Wading – Where water is relatively shallow, clear, and flat (no disturbances by wind), a biologist walks over an area to conduct a visual and/or tactile survey for live mussels and shells. This method is typically focused upon examinations of exposed near-shore habitats.

- Batiscope or snorkeling – In clear to slightly turbid waters up to 2 meters deep, or in waters with wind-disturbed surfaces, a batiscope or snorkeling will be used to conduct a visual and/or tactile survey for live mussels and shells.

Live and fresh dead mussels collected during the survey will be identified to species, enumerated and returned to their habitat, although some shell material and/or live specimens may be preserved and returned to the laboratory for taxonomic confirmation. All sampling stations, as well as any significant mussel beds found during sampling, will be documented using a GPS receiver. Mussel habitat and substrate surveyed at each sample location, as well as the species

collected during the survey, will also be noted and photo documented. Basic water quality parameters (temperature, dissolved oxygen and conductivity) will be collected near the substrate at representative sample areas.

5.0 SCHEDULE

Field surveys will be conducted during the summer or fall of 2021 over 2-3 days. Study methodology, timing and duration may be adjusted based on consultation with resource agencies and interested stakeholders. A final report will be issued to the RCG within four months of the completion of field work.

6.0 REFERENCES

Federal Energy Regulatory Commission (FERC). 1995. Final Environmental Assessment for Hydropower License. Filed November 7, 1995.

STEVENS CREEK HYDROELECTRIC PROJECT

FERC NO. 2535

RARE, THREATENED AND ENDANGERED SPECIES WHITEPAPER

Prepared for:

Dominion Energy South Carolina, Inc.
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RARE, THREATENED AND ENDANGERED SPECIES WHITEPAPER
DOMINION ENERGY SOUTH CAROLINA, INC.

1.0 INTRODUCTION

Dominion Energy South Carolina, Inc. (DESC) is the licensee of the Stevens Creek Hydroelectric Project (FERC No. 2535) (Project). The Project, which has an installed capacity of 17.28 megawatts (MW), is located in Edgefield and McCormick counties, South Carolina and Columbia County, Georgia, at the confluence of Stevens Creek and the Savannah River. The Project's dam is located approximately one mile upstream of the Augusta Diversion Dam, and approximately 13 miles downstream of the J. Strom Thurmond Dam. The Project occupies approximately 104 acres of federal lands within the Sumter National Forest. A project location map is included in Figure 3-1.

On November 22, 1995, FERC issued a 30-year license for the Project which is scheduled to expire on October 31, 2025. DESC intends to file an application for a new license with FERC on or before October 31, 2023. The Project is currently undergoing a relicensing process which involves cooperation and collaboration between DESC, as licensee, and a variety of stakeholders including state and federal resource agencies, state and local government, non-governmental organizations (NGO), and interested individuals. During early stakeholder meetings, DESC and stakeholders identified the need for a Rare, Threatened and Endangered (RTE) Species Whitepaper to provide baseline information on federal and state-listed RTE species within the FERC project boundary[1] and the area of potential Project influence (project area)[2]. The information included in this whitepaper will be used during the development of the Draft License Application (DLA) and Final License Application (FLA) and identify potential Project effects on RTE species within the project area.

[1] The FERC-delineated boundary surrounding those lands and waters necessary for operation of a federally-licensed hydroelectric project.
[2] For the purposes of this whitepaper the "project area" is considered those lands and waters in the vicinity of the Project that may be influenced by operation and maintenance of the Project. The Project area may include lands and water adjacent to, but outside of, the FERC Project boundary.

2.0 CONSULTATION HISTORY

When developing the Pre-Application Document (PAD), DESC reached out to the Georgia Department of Natural Resources (GDNR), South Carolina Department of Natural Resources (SCDNR), United States Forest Service (Forest Service), and the United States Fish and Wildlife Service (USFWS) to compile a comprehensive list of federal and state-listed RTE species and Forest Service species of conservation concern. Consultation records are included in Appendix A.

3.0 METHODOLOGY

The Project area for the purpose of this study includes the main stem of the Savannah River from the Thurmond Dam downstream to the Stevens Creek Dam (approximately 13 River Miles [RMs]), the main stem of Stevens Creek, from the Stevens Creek Dam upstream to the top of the Project boundary (approximately 12 RMs), and associated shoreline habitats (Figure 3-1).

As an initial step, a comprehensive list was developed that includes federal-protected and Forest Service Threatened, Endangered and Sensitive (TES) species that may occur in the Project boundary (Table 3-1). In order to identify federal-protected species in the Project area, the USFWS's Information for Planning and Consultation (IPaC) online system was reviewed. Results from the IPaC review are included in Table 3-1 and Appendix A. Forest Service TES species that may occur in the Project area were also identified. The Forest Service provided a list of their Threatened, Endangered and Sensitive (TES) Species for the Long Cane Ranger District of the Sumter National Forest on January 15, 2020. These species are also in Table 3-1 and Appendix A.

After identification of federal-protected and Forest Service TES species, habitat requirements for each species were reviewed to determine the likelihood of each species to occur within the Project boundary. Species that were deemed likely to occur within the Project boundary were then analyzed to determine if continued Project operations would have any adverse effect on the species.

FIGURE 3-1 STEVENS CREEK RARE, THREATENED, AND ENDANGERED SPECIES STUDY AREA

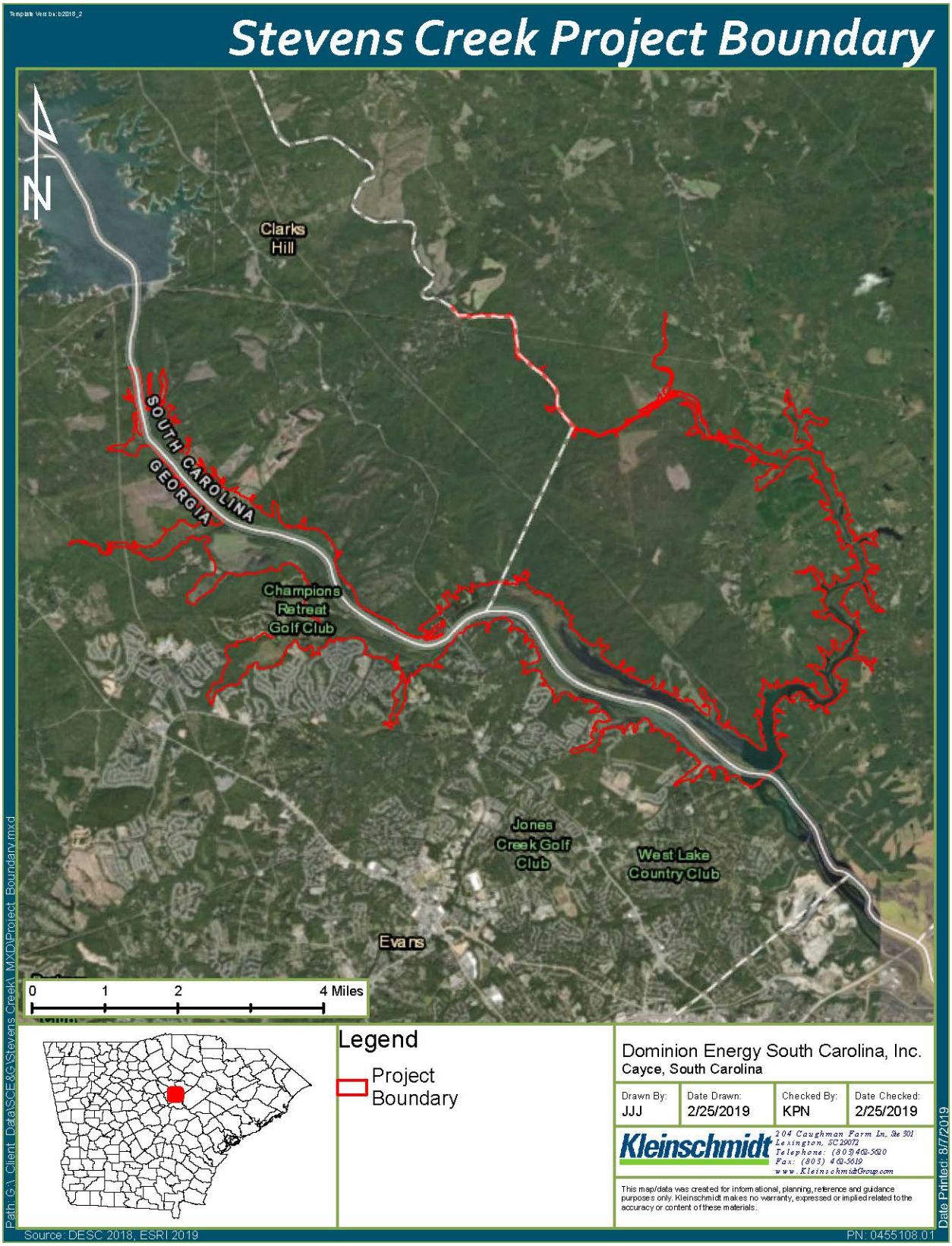

TABLE 3-1 FEDERAL-PROTECTED AND FOREST SERVICE TES SPECIES IN THE STEVENS CREEK PROJECT AREA

COMMON NAME	SCIENTIFIC NAME	FEDERAL PROTECTION	FOREST SERVICE TES SPECIES - SNF
ANIMALS			
Atlantic Spike	*Elliptio producta*		Sensitive
Bachman's Sparrow	*Peucaea aestivalis*		Sensitive
Bald Eagle	*Haliaeetus leucocephalus*	*	
Bartam's Bass	*Micropterus coosae*		Sensitive
Brook Floater	*Alasmidonta varicosa*		Sensitive
Carolina Heelsplitter	*Lasmigona decorata*	Endangered	Endangered
Monarch Butterfly	*Danaus plexippus*		Sensitive
Piedmont Prairie Burrowing Crayfish	*Distocambarus crockeri*		Sensitive
Red-Cockaded Woodpecker	*Dryobates borealis*	Endangered	Endangered
Roanoke Slabshell	*Elliptio roanokensis*		Sensitive
Robust Redhorse	*Moxostoma robustrum*		Sensitive
Tricolored Bat	*Perimyotis subflavus*		Sensitive
Webster's Salamander	*Plethodon websteri*		Sensitive
Wood Stork	*Mycteria americana*	Threatened	Endangered
Yellow Lampmussel	*Lampsilis cariosa*		Sensitive
PLANTS			
Faded Trillium	*Trillium discolor*		Sensitive
Georgia Aster	*Symphyotrichum georgianus*		Sensitive
Lanceleaf Trillium	*Trillium lancifolium*		Sensitive
Miccosukee Gooseberry	*Ribes echinellum*	Threatened	Threatened
Oglethorpe Oak	*Quercus oglethorpensis*		Sensitive
Relict Trillium	*Trillium reliquum*	Endangered	Endangered
Shoals Spider Lily	*Hymenocallis coronaria*		Sensitive
Sweet Pinesap	*Monotropsis odorata*		Sensitive

* This species is protected under the Bald and Golden Eagle Protection Act of 1940.

In addition to federal-protected and Forest Service TES species, this report identifies state-protected species that may occur in the Project area. On February 4, 2019, the Georgia Department of Natural Resources (Georgia DNR) provided a letter summarizing Georgia's State Wildlife Action Plan priority species that may occur in the Project area. On November 4, 2019, the South Carolina Department of Natural Resources (South Carolina DNR) provided information on the South Carolina State Wildlife Action Plan priority species that may occur in the Project area. These species are also included in Table 3-2 and Appendix A.

Although these species were not analyzed for likelihood of existence within the Project boundary and potential Project operations effects, they are included in this report for informational purposes.

TABLE 3-2 GEORGIA AND SOUTH CAROLINA STATE-PROTECTED SPECIES IN THE PROJECT AREA

COMMON NAME	GEORGIA SWAP SPECIES	SOUTH CAROLINA SWAP SPECIES
ANIMALS		
American Eel		*
Atlantic Pigtoe	*	
Atlantic Spike		*
Atlantic Sturgeon	*	
Bald Eagle		*
Baltimore Oriole		*
Bartram's Bass		*
Brother Spike	*	
Carolina Slabshell	*	
Christmas Darter		*
Delicate Spike	*	
Dwarf Waterdog	*	
Eastern Creekshell		*
Eastern Elliptio		*
Flat Bullhead		*
Florida Pondhorn		*
Highfin Shiner		*
Ironcolor Shiner	*	
Notchlip Redhorse		*
Roanoke Slabshell	*	
Rosyface Chub		*
Robust Redhorse	*	*
Savannah Elimia	*	
Savannah Lilliput	*	
Shortnose Sturgeon	*	
Snail Bullhead		*
Spotted Turtle	*	
Tiger Salamander		*
Turquoise Darter		*
Webster's Salamander		*
Yellow Lampmussel	*	*
PLANTS		
Aethusa-like Trepocarpus		*

COMMON NAME	GEORGIA SWAP SPECIES	SOUTH CAROLINA SWAP SPECIES
American Barberry	*	
American Ginseng		*
Carolina Larkspur		*
Carolina Trefoil	*	
Curly-Heads	*	
Dixie Mountain Breadroot	*	
Dutchman's Breeches		*
Eared Goldenrod		*
Faded Trillium		*
False-Rue Anemone	*	*
Georgia Aster		*
Georgia Plume	*	
James' Sedge		*
Lanceleaf Wakerobin		*
Log Fern	*	
Lowland Bladderfern		*
Miccosukee Gooseberry		*
Ocmulgee Skullcap	*	*
One-Flowered Broomrape		*
Pale Yellow Trillium	*	
Pineland Barbara Buttons	*	
Relict Trillium	*	*
Shoals Spider Lily	*	*
Side-Oats Grama	*	
Slender Sedge		*
smooth indigobush		*
Southern Nodding Trillium		*
Streambank Mock Orange		*
Tall Bellflower		*
Tuberous Gromwell		*
Virginia Spiderwort		*
Weak Nettle		*
Whiteleaf Sunflower		*
Wingpod Purslane	*	
Yellow Nailwort	*	

4.0 PROPOSED ACTION, SPECIES DESCRIPTIONS AND ANALYSIS

4.1 PROPOSED ACTION

For the purpose of this analysis, we have assumed that the Project will continue operating as a re-regulating facility for flows released from the upstream U.S. Army Corps of Engineers' J. Strom Thurmond Dam. Stevens Creek reservoir fluctuations and downstream releases are anticipated to continue under the new license in the same form and capacity as they have over the past 30 years. Moreover, much of the land in the Project area is easement/Forest Service lands, not owned by DESC. Therefore, DESC does not actively manage or maintain these lands, and they are generally left in a natural state. If the proposed action changes prior to submittal of the Final License Application, species discussions will be updated accordingly.

4.2 FEDERAL-PROTECTED SPECIES

Table 4-1 lists the federal-protected species that may occur in the Project area. Habitat descriptions of each species along with an analysis of likelihood to exist in the Project boundary and potential for adverse effects from continued Project operations are included below.

TABLE 4-1 FEDERAL-PROTECTED SPECIES IN THE PROJECT AREA

COMMON NAME	SCIENTIFIC NAME	FEDERAL PROTECTION STATUS
Bald Eagle	*Haliaeetus leucocephalus*	*
Carolina Heelsplitter	*Lasmigona decorata*	Endangered
Miccosukee Gooseberry	*Ribes echinellum*	Threatened
Red-Cockaded Woodpecker	*Dryobates borealis*	Endangered
Relict Trillium	*Trillium reliquum*	Endangered
Wood Stork	*Mycteria americana*	Threatened

***** This species is protected under the Bald and Golden Eagle Protection Act of 1940.

4.2.1 BALD EAGLE

The bald eagle was removed from the federal list of threatened species in 2007 (USFWS 2007) but remains protected under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act (16 U.S.C. 668-668d) (72 FR 37345-37372). Bald eagles are found throughout North American, typically around water bodies, where they feed on fish and carrion. Studies have shown that foraging bald eagles are particularly attracted to reservoirs associated with

hydroelectric facilities (Brown 1996). Bald eagles nest in large trees near water and typically use the same nest for several years (Degraaf and Rudis 1986).

Status in the Project Boundary and Effects of Continued Project Operations

The USACE monitors eagles on an annual basis on Lake Thurmond and in the immediate tailrace. During the 2020 survey, approximately 37 bald eagles were documented. In addition, SCDNR tracks bald eagle nests around the state. One nest is documented very close to the Project, however outside the Project boundary. It is likely that bald eagles reside and forage within the Project boundary, although no nests have been documented. Since much of the land surrounding the Project reservoir is maintained in a natural state, continued operation of the Project is not likely to result in negative effects on eagle foraging or nesting.

4.2.2 CAROLINA HEELSPLITTER

The Carolina heelsplitter is found in cool, well-oxygenated reaches of rivers and streams. The current range of this species is limited as compared to its historic range. These declines and loss of populations are associated with factors including pollutants from municipal and industrial wastewater releases. The species is sensitive to silt and is generally found in silt-free areas with banks that are stabilized and shaded by trees and shrubs (USFWS 2011). One of the eight surviving populations of Carolina heelsplitter is found in Turkey Creek and its tributaries. These creeks are part of the Savannah River drainage, located in Edgefield County, SC (NRC 2020).

Status in the Project Boundary and Effects of Continued Project Operations

As mentioned, the Carolina heelsplitter is known to occur in the Savannah River drainage in Edgefield County, SC. DESC is conducting a mussel study as part of the relicensing process, with special focus on identification of this species. Effects of continued Project operations will be determined as part of that study in the event this species is found within the project area of influence.

4.2.3 MICCOSUKEE GOOSEBERRY

The Miccosukee gooseberry is a bushy shrub that flowers in late February to early April and produces spiny green berries. The Miccosukee gooseberry is associated with a deciduous, mixed hardwood forest with an overstory canopy dominated by oak and hickory trees. Specifically, the

species is known to occur in three locations, including the shores of Lake Miccosukee in Jefferson County, Florida; and along Stevens Creek and a site on the Sumter National Forest in McCormick and Edgefield counties, South Carolina (NatureServe 2019).

Status in the Project Boundary and Effects of Continued Project Operations

This species is known to occur on north-facing hardwood slopes in the Stevens Creek drainage and at a site in the Long Cane Ranger District of the Sumter National Forest in McCormick and Edgefield counties. It is likely a portion of this population occurs within the Project boundary. Continued Project effects are unlikely to adversely affect this species, as the population in the Sumter National Forest appears stable and no modifications to Project operations are proposed.

4.2.4 RED-COCKADED WOODPECKER

The red-cockaded woodpecker is found in open, mature, and old growth pine ecosystems in the southeastern portion of the United States (USFWS 2003). Suitable nesting habitat includes open pine forests and savannahs with large, older pines and minimal hardwood midstory or overstory. Older living trees that are easily excavated due to susceptibility to red-heart disease are preferred nesting trees for the species. Suitable foraging habitat includes open-canopy, mature pine forests with low densities of small pines, little midstory vegetation, limited hardwood overstory, and abundance bunchgrass and forb groundcover (USFWS 2003).

Status in the Project Boundary and Effects of Continued Project Operations

Although the species is known to occur in Edgefield County (Forest Service 2020), it is unlikely the species occurs in the Project boundary, since there is limited suitable woodland habitat within the Project boundary. If the species did nest or forage in trees within the Project, they would remain unaffected as no logging or construction is proposed to occur as part of continued Project operations.

4.2.5 RELICT TRILLIUM

Relict trillium is typically found in mesic hardwood forests that can be on slopes or on bottomlands and floodplains. Soils and subsoils include rocky clays to alluvial sands all with high organic matter content. The largest populations are found in the drainages of the Savannah and Chattahoochee Rivers. The species is not indicated to occur in areas that have ever been

disturbed by fire. The species is known to occur in Aiken County in proximity to the Sumter National Forest (Forest Service 2020).

Status in the Project Boundary and Effects of Continued Project Operations

This species is known to occur in Edgefield County and likely occurs within the Project boundary. This species is most often threatened by residential and urban development. The potential of Project effects to this species are minimal and would likely only occur during any development activities proposed through the new license. Consideration of the potential occurrence of this species should take place prior to the development or expansion of recreation facilities proposed under the new license.

4.2.6 WOOD STORK

The wood stork, a large colonial wading bird, is the only stork species that breeds in the United States (USFWS 1996). The wood stork uses a variety of wetlands for nesting, feeding, and roosting. Wood storks require periods of flooding, during which fish populations increase, alternating with dryer periods, during which receding water levels trap fish, leaving higher densities for easier foraging (USFWS 2020b). Nesting habitat includes primarily cypress swamps with nests located in the upper branches of large black gum or cypress trees. Nesting in the United States is currently thought to be limited to the coastal plain of South Carolina, North Carolina, Georgia and Florida (Murphy and Hand 2013).

Status in the Project Boundary and Effects of Continued Project Operations

Although the wood stork is not likely to nest within the Project boundary, it may forage periodically in the freshwater wetlands associated with the Stevens Creek reservoir. Project operations are expected to result in no adverse effects on wood storks or their foraging habitat.

4.3 U.S. FOREST SERVICE THREATENED, ENDANGERED AND SENSITIVE SPECIES

Table 4-2 lists the Forest Service TES species that may occur in the Project area. Habitat descriptions of each species along with an analysis of likelihood to exist in the Project boundary and potential for adverse effects from continued Project operations are included below. See Section 4.1 for the habitat descriptions and analysis of species that are also federal-protected species, as indicated in Table 4-2 with an asterisk (*).

TABLE 4-2 FOREST SERVICE TES SPECIES FOR THE LONG CANE DISTRICT OF SUMTER NATIONAL FOREST

COMMON NAME	SCIENTIFIC NAME	FOREST SERVICE TES SPECIES
ANIMALS		
Atlantic Spike	*Elliptio producta*	Sensitive
Bachman's Sparrow	*Peucaea aestivalis*	Sensitive
Bartam's Bass	*Micropterus coosae*	Sensitive
Brook Floater	*Alasmidonta varicosa*	Sensitive
Carolina Heelsplitter*	*Lasmigona decorata*	Endangered
Monarch Butterfly	*Danaus plexippus*	Sensitive
Piedmont Prairie Burrowing Crayfish	*Distocambarus crockeri*	Sensitive
Red-Cockaded Woodpecker*	*Dryobates borealis*	Endangered
Roanoke Slabshell	*Elliptio roanokensis*	Sensitive
Robust Redhorse	*Moxostoma robustrum*	Sensitive
Tricolored Bat	*Perimyotis subflavus*	Sensitive
Webster's Salamander	*Plethodon websteri*	Sensitive
Wood Stork*	*Mycteria americana*	Endangered
Yellow Lampmussel	*Lampsilis cariosa*	Sensitive
PLANTS		
Faded Trillium	*Trillium discolor*	Sensitive
Georgia Aster	*Symphyotrichum georgianus*	Sensitive
Lanceleaf Trillium	*Trillium lancifolium*	Sensitive
Miccosukee Gooseberry*	*Ribes echinellum*	Threatened
Oglethorpe Oak	*Quercus oglethorpensis*	Sensitive
Relict Trillium*	*Trillium reliquum*	Endangered
Shoals Spider Lily	*Hymenocallis coronaria*	Sensitive
Sweet Pinesap	*Monotropsis odorata*	Sensitive

4.3.1 ATLANTIC SPIKE

The Atlantic spike is found throughout South Carolina (Bogan and Alderman 2008) and prefers streams or rivers with sandy, rocky, and/or muddy bottoms in sections where the current is not too rapid (Forest Service 2020). This species is found throughout Maryland, Pennsylvania, North Carolina, Virginia, and South Carolina, although it has been extirpated from some reaches where it was previously found, possibly due to environmental factors including decreased water quality associated with sedimentation and pollution. The host fish for this species is not known (NatureServe 2020a).

This species is found throughout the Savannah River Basin (NatureServe 2020a) and is found in the Long Cane Ranger District of the Sumter National Forest (Forest Service 2020).

Status in the Project Boundary and Effects of Continued Project Operations

As mentioned, this mussel is found throughout the Savannah River Basin and may occur within the Project boundary. DESC is conducting a mussel survey as part of the relicensing process and will document any individuals found during the survey. Effects of continued Project operations on the species will be assessed as part of that survey, if the species is found.

4.3.2 BACHMAN'S SPARROW

Bachman's sparrow, known by its "buffy" brownish-gray under plumage tinged with reddish streaks, typically yields two broods each breeding season (USFWS 2015). The female sparrow builds nests of grasses at or just above ground level. The species historically preferred mature pine forests, however since most of these areas have been logged, today the sparrow is typically found in pine forests with a more open understory and herbaceous understories. The sparrow is known to span the Coastal Plains and Piedmont regions of the southeastern United States.

Status in the Project Boundary and Effects of Continued Project Operations

Bachman's sparrow is found in the Piedmont region of the southeastern United States and within the Long Cane Ranger District of the Sumter National Forest. This species is unlikely to occur in the Project boundary area as it has not been documented in the counties in which the Project is located. Continued Project operations are not expected to affect this species.

4.3.3 BARTRAM'S BASS

The Bartram's Bass is a small to medium sized black bass species that occurs in the Savannah River drainage above the fall line and has been introduced in the Saluda River drainage (Forest Service 2020). This species utilizes shoal habitats in small to moderate size upland streams, particularly upland reaches with cool water temperatures. Specifically, it is generally found in areas with boulders, submerged logs, and undercut banks with vegetation such as water willow (Forest Service 2020). It can also be found in some lentic habitats over rocky substrates. The diet consists of terrestrial insects, crayfish, small fish, salamanders, and aquatic insects. Threats to the species include hybridization with Spotted Bass and Smallmouth Bass. Spotted Bass have spread throughout the upper Savannah River system, and hybridization between the two species has eliminated Bartram's Bass from several reaches. Additional threats include increased water

temperatures and increased turbidity from loss of riparian vegetation along stream banks (SCDNR 2020).

Status in the Project Boundary and Effects of Continued Project Operations

Bartram's Bass have been collected from the mainstem of the Savannah River and in upstream reaches of Stevens Creek well upstream of the Project Boundary (SCDNR 2020, Freeman et al. 2015). Bartram's Bass inhabiting reaches of Stevens Creek upstream of the Project Boundary would not be affected by Project operations. Bartram's Bass inhabiting the Savannah River downstream of the Project would likely benefit from flow reregulation resulting habitat stability in the Augusta Shoals.

4.3.4 BROOK FLOATER

The brook floater is a freshwater mussel species that is usually found in high gradient, consistently flowing reaches of rivers and streams. Preferred substrates are characterized by sand and gravel, often with adjacent boulders (PNHP 2020; USFWS 2019). This species is sensitive to habitat degradation, including excessive silt and nutrient inputs, and is also sensitive to hypoxia (PNHP 2020; USFWS 2019). Potential host fish include blacknose dace, longnose dace, golden shiner, pumpkinseed, slimy sculpin, yellow perch, and margined madtom (PNHP 2020). This species is known to occur in Edgefield and McCormick counties in SC. Specifically, it has been documented in several streams in the Steven's Creek basin (USFWS 2019).

Status in the Project Boundary and Effects of Continued Project Operations

The brook floater is known to occur in the Upper Stevens Creek watershed on the Long Cane Ranger District in the Sumter National Forest. DESC is conducting a mussel survey as part of the relicensing process and will document any individuals found during the survey. Effects of continued Project operations on the species will be assessed as part of that survey, if the species is found.

4.3.5 MONARCH BUTTERFLY

The monarch butterfly is a migratory insect that passes through South Carolina and Georgia on a seasonal basis. The species has declined 80 percent during the last 20 years, in large part due to habitat loss at overwintering sites in Mexico and breeding sites in the American Midwest. The

monarch butterfly population in Eastern North America overwinters in central Mexico, with northern migrations to the United States and Canada occurring during March, and southward migrations occurring between August and September. Adult female monarch butterflies lay their eggs on milkweed plants and utilize a variety of other plant species as nectar sources throughout their migrations (USFWS 2020). Summer breeding habitat includes woodlands, roadsides, or utility rights-of-way containing nectaring plants (Forest Service 2020).

Status in the Project Boundary and Effects of Continued Project Operations

As mentioned, the monarch butterfly passes through South Carolina and Georgia on a seasonal basis. Summer breeding may occur within the Project boundary in woodlands, roadsides, or utility rights-of-way. Continued Project operations are not expected to affect the species as significant disturbance of these potential breeding areas is not expected to occur as a result of Project operation or maintenance activities.

4.3.6 PIEDMONT PRAIRIE BURROWING CRAYFISH

The Piedmont prairie burrowing crayfish is a semi-terrestrial species that utilizes the eastern watershed of the South Carolina Piedmont. Habitats can include intermittently flooded low lying areas and agricultural land. Specifically, it is found in terrestrial habitats around intermittent streams and colluvial valleys with treeless, prairie-like characteristics. Non-hydric well drained soils with seasonally perched water tables are necessary for the species' life history needs, as compared to species that require more aquatic and semi-aquatic habitats (Eversole and Welch 2013; NatureServe 2020b). Piedmont prairie burrowing crayfish spend much of the year in burrows, often below layers of leaf litter and organic matter, and are most likely to venture from burrows during wet periods in search of food or breeding opportunity. (Eversole and Welch 2013).

Status in the Project Boundary and Effects of Continued Project Operations

This species is present in Thurmond Lake – Savannah River, Upper Stevens Creek, Kiokee Creek – Savannah River, Turkey Creek – Stevens Creek, Bush River – Saluda River, and Little River – Savannah River watersheds that contain Forest Service land on the Long Cane Ranger District (Forest Service 2020). It is not likely that this species occurs within the Project boundary as it is most often found on a perched water table along ridge tops and not in aquatic habitats (Forest Service 2020). Continued Project operations are not expected to affect this species.

4.3.7 ROANOKE SLABSHELL

The Roanoke slabshell is typically found in large rivers and occasionally in small creeks. The mussel tolerates large variations in flow levels and higher water temperatures, making it able to survive in some locations near dams and hydroelectric plants (Price 2006). In South Carolina, the mussel is found in the Pee Dee River and the Catawba, Congaree and Savannah River basins. Although it has the potential to be found in watersheds on the Long Cane Ranger District in the Savannah River basin, no known records in the Sumter National Forest exist (Forest Service 2020).

Status in the Project Boundary and Effects of Continued Project Operations

In 2006, the Catena Group inventoried freshwater mussels in the Savannah River from the Augusta Shoals area (near RM 203) downstream to RM 23. The Roanoke slabshell was identified during this inventory. DESC is conducting a mussel survey as part of the relicensing process and will document any individuals found during the survey. Effects of continued Project operations on the species will be assessed as part of that survey, if the species is found.

4.3.8 ROBUST REDHORSE

Once presumed extinct, the Robust Redhorse, a large, heavy-bodied sucker, was rediscovered in the Oconee River below Georgia Power's Sinclair Hydroelectric Project (FERC No. 1951) in the early 1990s. This rediscovery sparked the formation of the Robust Redhorse Conservation Committee (RRCC) in 1995 to guide recovery efforts for the species. While little is still known about habitat preferences of juvenile Robust Redhorse, adults typically inhabit areas of the river where the current is moderately swift. Preferred habitat includes riffle areas or in/near outside bends, where depths are greater, and accumulations of logs and other woody debris are present (Evans 1997). Spawning occurs between April and June over gravel substrate in deep and shallow waters (Hendricks 1998). In South Carolina, it is found in the Savannah River and Pee Dee River basins (Forest Service 2020).

Status in the Project Boundary and Effects of Continued Project Operations

The Robust Redhorse is known to occur in the Savannah River and the Georgia DNR documented the species in the shoals below the Augusta Diversion Dam in 2005. Continued Project operations are not expected to adversely affect the species since the Project reregulates

large pulses from Thurmond Dam, providing increased flow and associated habitat stability in the Augusta Shoals and further downstream.

4.3.9 TRICOLORED BAT

The tricolored bat is a small bat weighing 0.2 to 0.3 ounces, that roosts in trees in the summertime and hibernates in caves, mines and rock crevices during the winter (USFWS 2019b). The species is found statewide in South Carolina, but populations have declined recently due to the white-nose-syndrome (USFWS 2019b).

Status in the Project Boundary and Effects of Continued Project Operations

The tricolored bat may roost in trees around the Project reservoir in the summertime but is unlikely to hibernate in the area due to a lack of hibernacula. Continued Project operations are unlikely to have any effect on the species as DESC does not plan to significantly change the Project shoreline or remove trees used for roosting.

4.3.10 WEBSTER'S SALAMANDER

The Webster's salamander is a woodland species that is often found on hardwood-forested hillsides underneath cover including rocks, logs, and leaf litter. The species breeds in early winter and lays eggs during the summer months. With the exception of June and July breeding activity, adults are mostly active between October and May, likely to avoid the high heat of the summer months. Unlike some other salamander species, there is no aquatic larval lifestage, and hatchlings emerge during August and September. The range of the species is fragmented, with isolated populations occurring across Louisiana, Mississippi, Alabama, Georgia, and South Carolina (Rogers 2020). In South Carolina, it has been documented in both Edgefield and McCormick counties (NatureServe 2020c).

Status in the Project Boundary and Effects of Continued Project Operations

This species may occur in the forested habitat surrounding the Project boundary. Nevertheless, much of the land surrounding the Project has been left in its natural state, and there are no Project-related disturbance activities proposed under the new license. Therefore, continued Project operations are unlikely to affect populations occurring in the Project boundary.

4.3.11 YELLOW LAMPMUSSEL

The yellow lampmussel is a freshwater mussel species found primarily in medium to large rivers and streams with a variety of substrates including silt or sand, gravel bars and bedrock cracks (Price 2006b). Distribution in South Carolina spans the Savannah, Broad, Wateree, Congaree, and Pee Dee River basins. The species is found in the Long Cane Ranger District in the Lower Stevens Creek and Turkey Creek-Stevens Creek watersheds with the potential to also occur in the Upper Stevens Creek watershed (Forest Service 2020).

Status in the Project Boundary and Effects of Continued Project Operations

The yellow lampmussel may occur within the Project boundary, as it is found throughout the Savannah River basin, including Stevens Creek watersheds. DESC is conducting a mussel survey as part of the relicensing process and will document any individuals found during the survey. Effects of continued Project operations on the species will be assessed as part of that survey, if the species is found.

4.3.12 FADED TRILLIUM

The faded trillium (or pale yellow trillium) is a perennial herb characterized by three whorled leaves and a pale yellow or cream-colored flower. The faded trillium sends up leaves and flowers in early spring before the forest canopy has fully leafed out. The above ground plant is not present during the fall and winter, persisting as an underground rhizome. Mature faded trillium are long lived, as the rhizomes continue to persist and produce shoots as other portions decay (Chafin 2007). Habitat types for the species include wooded slopes, rich cove forests, oak-pine woods, and cane breaks. They are often found in areas that are sheltered with dense forest canopies (NatureServe 2020d).

This species is only found in the Savannah River Basin across Georgia, North Carolina, and South Carolina (Chafin 2007), and has been documented in Columbia County, GA and Edgefield and McCormick counties, SC (NatureServe 2020d).

Status in the Project Boundary and Effects of Continued Project Operations

Although the faded trillium has not been documented within the Project boundary, it may occur in wooded areas around the shoreline. As no changes to Project operation or maintenance activities are proposed, continued Project operations are unlikely to affect this species.

4.3.13 GEORGIA ASTER

Georgia aster is a flowering plant that prefers a habitat of open woodlands, savannas and prairies, including open woodlands associated with utility and roadside rights-of-way (Forest Service 2020). It is thought to be a relict species of the post oak-savannah communities that existed in the southeast prior to fire suppression.

Status in the Project Boundary and Effects of Continued Project Operations

Georgia aster is known to occur in the Long Cane Ranger District of the Sumter National Forest and in McCormick and Edgefield counties, SC. Habitat for Georgia aster may exist within the Project boundary, however potential occurrences would be limited to terrestrial sites, which should not be affected by continued operation of the Project.

4.3.14 LANCELEAF TRILLIUM

The lanceleaf trillium occurs in a variety of habitat types, including floodplains, rocky upland woodlands, brushy thickets, canebrakes, and shaded or open woods. It is most commonly associated with alluvial soils. This regional endemic species is relatively small compared to other southeastern trilliums, with narrow leaves, a flower comprised of 3 maroon petals, and an ovoid pulpy fruit that contains several seeds (NatureServe 2020i).

Known populations of this species exist in Edgefield and McCormick Counties, SC (NatureServe 2020i).

Status in the Project Boundary and Effects of Continued Project Operations

Lanceleaf trillium is known to occur in the Long Cane Ranger District of the Sumter National Forest and in McCormick and Edgefield counties, SC. Habitat for this species may exist within the Project boundary, however potential occurrences would be limited to terrestrial sites, which should not be affected by continued operation of the Project.

4.3.15 OGLETHORPE OAK

The Oglethorpe oak is a "white oak" species that is associated with wet clay soils and is found in disjunct populations throughout Georgia, Alabama, Mississippi, Louisiana, and South Carolina. The species can grow up to 80 ft. tall and is characterized by reddish-gray bark that covers the tree in loose plates. It is generally found in seepage swamps, stream edges, and moist areas of hardwood forests adjacent to these types of habitats. Like other oak species, the Oglethorpe oak is wind-pollinated, and must be cross pollinated in order to produce acorns. Habitat fragmentation can isolate individuals, decreasing pollination and associated acorn production (Chafin 2008).

Oglethorpe oak has been documented in McCormick and Edgefield counties in SC (NatureServe 2020f).

Status in the Project Boundary and Effects of Continued Project Operations

The Oglethorpe oak is known to occur in the Long Cane Ranger District of the Sumter National Forest and in McCormick and Edgefield counties, SC. Habitat for this species within the Long Cane Ranger District is limited to streamside forests and depressional wetlands in the Carolina Slate belt, located north and outside of the Project boundary (Forest Service 2020). It is unlikely this species exists within the Project boundary and therefore, continued Project operations should have no effect on this species.

4.3.16 SHOALS SPIDER LILY

The shoals spider lily occurs mostly above the fall line in Alabama, Georgia, and South Carolina. This flowering plant is often found in bedrock outcroppings or in large cobble and boulder substrates where the plants' roots and bulbs can anchor into the substrate. Habitat requirements for the species include direct sunlight, constantly flowing water, and low sediment loads (Kleinschmidt 2015).

Status in the Project Boundary and Effects of Continued Project Operations

Shoals spider lilies are currently found at multiple locations in Edgefield and McCormick counites, SC and Columbia County, GA, with populations known in Stevens Creek (NatureServe

2020h). Since no changes to Project operations are proposed, no adverse effects to this species are expected.

4.3.17 SWEET PINESAP

The sweet pinesap is an herbaceous perennial wildflower characterized by a fleshy stalk, scale-like leaves, and pink or yellowish flowers that produce a strong odor of violets. The flowers are present in mid to late spring. The sweet pinesap is generally found in mature, moist hardwood forests under areas that are well shaded by the canopy (Forest Service 2020b). Specifically, the species is known to occur in shortleaf pine-oak heaths in the Southern Appalachians and Piedmont (Forest Service 2020).

Status in the Project Boundary and Effects of Continued Project Operations

The sweet pinesap is not expected to occur within the Project boundary due to a lack of habitat. Continued Project operations should not have any effect on this species.

4.4 STATE-PROTECTED SPECIES

On February 4, 2019, the Georgia DNR provided a list of Natural Heritage Database occurrences within 3 miles of the Project site for terrestrial species and within the local HUC10 watershed for aquatic species. These species are listed below in Table 4-3. For more information on the locations of these species, see Appendix A.

TABLE 4-3 GEORGIA STATE-PROTECTED SPECIES WITHIN 3 MILES OF THE PROJECT AREA

COMMON NAME	SCIENTIFIC NAME
American Barberry	*Ververis canadensis*
Atlantic Pigtoe	*Fusconaia masoni*
Atlantic Sturgeon	*Acipenser oxyrinchus oxyrinchus*
Brother Spike	*Elliptio fraterna*
Carolina Slabshell	*Elliptio congaraea*
Carolina Trefoil	*Acmispon helleri*
Curly-Heads	*Clematis ochroleuca*
Delicate Spike	*Elliptio arctata*
Dixie Mountain Breadroot	*Pediomelum piedmontanum*
Dwarf Waterdog	*Necturus punctatus*
False-Rue Anemone	*Enemion biternatum*
Georgia Plume	*Elliottia racemosa*
Ironcolor Shiner	*Notropis chalybaeus*

COMMON NAME	SCIENTIFIC NAME
Log Fern	*Dryopteris celsa*
Ocmulgee Skullcap	*Scutellaria ocmulgee*
Pale Yellow Trillium	*Trillium discolor*
Pineland Barbra Buttons	*Marshallia ramosa*
Relict Trillium	*Trillium reliquum*
Roanoke Slabshell	*Elliptio roanokensis*
Robust Redhorse	*Moxostoma robustum*
Savannah Elimia	*Elimia caelatura*
Savannah Lilliput	*Toxolasma pullus*
Shoals Spiderlily	*Hymenocallis coronaria*
Shortnose Sturgeon	*Acipenser vrevirostrum*
Spotted Turtle	*Clemmys guttata*
Wingpod Purslane	*Portulaca umbraticola ssp.coronata*
Yellow Lampmussel	*Lampsilis cariosa*
Yellow Nailwort	*Paronychia virginica*

Source: GDNR, Letter dated February 4, 2019

On November 4, 2019, the South Carolina DNR provided a list of species having conservation priority through the South Carolina State Wildlife Action Plan (SWAP) that are located within the Project boundary and within 3 miles of the Project boundary. These species are listed below in Table 4-4. Additional details on these species are included in Appendix A.

TABLE 4-4 SOUTH CAROLINA STATE-PROTECTED SPECIES IN THE PROJECT AREA

COMMON NAME	SCIENTIFIC NAME
Aethusa-like Trepocarpus	*Trepocarpus aethusae*
American Eel	*Anguilla rostrate*
American Ginseng	*Panax quinquefolius*
Atlantic Spike	*Elliptio producta*
Bald Eagle	*Haliaeetus leucocephalus*
Baltimore Oriole	*Icterus galbula*
Bartram's Bass	*Micropterus*
Carolina Larkspur	*Delphinium carolinianum*
Christmas Darter	*Etheostoma hopkinsi*
Dutchman's Breeches	*Dicentra cucullaria*
Eared Goldenrod	*Solidago auriculate*
Eastern Creekshell	*Villosa delumbis*
Eastern Elliptio	*Elliptio complanate*
Faded Trillium	*Trillium discolor*
False-Rue Anemone	*Enemion biternatum*
Flat Bullhead	*Ameiurus platycephalus*

COMMON NAME	SCIENTIFIC NAME
Florida Pondhorn	*Uniomerus caroliniana*
Georgia Aster	*Symphyotrichum georgianum*
Highfin Shiner	*Notropis altipinnis*
James' Sedge	*Carex jamesii*
Lanceleaf Wakerobin	*Trillium lancifolium*
Lowland Bladderfern	*Cystopteris protrusa*
Miccosukee Gooseberry	*Ribes echinellum*
Notchlip Redhorse	*Moxostoma collapsum*
Ocmulgee Skullcap	*Scutellaria ocmulgee*
One-Flowered Broomrape	*Orobanche uniflora*
Relict Trillium	*Trillium reliquum*
Robust Redhorse	*Moxostoma robustum*
Rosyface Chub	*Hybopsis rubrifrons*
Shoals Spider Lily	*Hymenocallis coronaria*
Slender Sedge	*Carex gracilescens*
Smooth Indigobush	*Amorpha glabra*
Snail Bullhead	*Ameiurus brunneus*
Southern Nodding Trillium	*Trillium rugelii*
Streambank Mock Orange	*Philadelphus hirsutus*
Tall Bellflower	*Campanulastrum americanum*
Tiger Salamander	*Ambystoma tigrinum*
Tuberous Gromwell	*Lithospermum tuberosum*
Turquoise Darter	*Etheostoma inscriptum*
Virginia Spiderwort	*Tradescantia virginiana*
Weak Nettle	*Urtica chamaedryoides*
Webster's Salamander	*Plethodon webster*
Whiteleaf Sunflower	*Helianthus glaucophyllus*
Yellow Lampmussel	*Lampsilis cariosa*

5.0 SUMMARY

There are several federal-protected and Forest Service TES species that have either been documented within the Project boundary or have potential to occur within the Project boundary due to availability of suitable habitat. These species are listed below.

- Atlantic Spike
- Bald Eagle
- Bartram's Bass
- Brook Floater
- Carolina Heelsplitter
- Faded Trillium
- Miccosukee Gooseberry
- Monarch Butterfly
- Relict Trillium
- Roanoke Slabshell
- Robust Redhorse
- Shoals Spider Lily
- Tricolored Bat
- Webster's Salamander
- Wood Stork
- Yellow Lampmussel

Although these species occur or have the potential to occur within the Project boundary, continued Project operations are not expected to have any adverse effect on these species. DESC is not proposing any changes to Project operations and does not have any plans for significant logging or shoreline changes within the Project boundary. If the need arises for tree removal, construction, or other shoreline modifications in the future, DESC will consult with the USFWS, Forest Service, and the Georgia DNR and/or South Carolina DNR (as appropriate) prior to the commencement of these activities.

In addition, DESC is conducting a mussel survey within the Project boundary with methodology developed in consultation with federal and state agencies. The results of this study will determine the presence of any mussel species listed in this report within the Project boundary and will identify the potential for Project effects on these species. The results of this study will be included in the Project's Final License Application.

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APPENDIX A

CONSULTATION RECORD

STEVENS CREEK HYDROELECTRIC PROJECT

FERC NO. 2535

AQUATIC HABITAT WHITEPAPER

Prepared for:

Dominion Energy South Carolina, Inc.
Cayce, South Carolina

Prepared by:

Kleinschmidt

Lexington, South Carolina
www.KleinschmidtGroup.com

February 2020

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RECREATION STUDY PLAN

STEVENS CREEK HYDROELECTRIC PROJECT
(FERC NO. 2535)

DOMINION ENERGY SOUTH CAROLINA, INC.

1.0 INTRODUCTION

Dominion Energy South Carolina, Inc. (DESC) is the licensee of the Stevens Creek Hydroelectric Project (FERC No. 2535) (Project). The Project, which has an installed capacity of 17.28 megawatts (MW), is located in Edgefield and McCormick counties, South Carolina and Columbia County, Georgia, at the confluence of Stevens Creek and the Savannah River. The Project's dam is located approximately one mile upstream of the Augusta Diversion Dam, and approximately 13 miles downstream of the J. Strom Thurmond Dam. The Project occupies approximately 104 acres of federal lands within the Sumter National Forest, with three existing Project recreation sites located on federal land and managed through agreement with the U.S. Forest Service (Forest Service).

2.0 PURPOSE OF THE STUDY

On November 22, 1995, FERC issued a 30-year license which is scheduled to expire on October 31, 2025. DESC intends to file an application for a new license with FERC on or before October 31, 2023. The Project is currently involved in a relicensing process which involves cooperation and collaboration between DESC, as licensee, and a variety of stakeholders including state and federal resource agencies, state and local government, non-governmental organizations (NGO), and interested individuals. DESC established a Recreation and Land Management Resource Conservation Group (RCG), with interested stakeholders to address Project issues related to recreation and land management. The RCG determined there was a need for a recreation study at the Project.

DESC is proposing to perform an assessment of existing and future recreational use, opportunities, and needs for the Project. The assessment is designed to provide information pertinent to the current and future availability and adequacy of DESC-owned and managed recreation sites, Forest Service owned and managed recreation sites, and Columbia County, Georgia owned and managed recreation sites at the Project. The overall study plan objective is to identify current and potential recreation opportunities, use, and needs at the Project by addressing the specific goals and objectives listed below. Results from the study will be used to develop a new Recreation Management Plan (RMP) for the Project.

<u>Goal 1</u>: *Characterize the existing use of recreation sites at the Project. This will be accomplished by meeting the following objectives:*

i. Identify recreation sites; inventory the services and facilities offered; and assess the general condition of each site (including whether the site provides barrier free access).
ii. Identify patterns of use at each site (type, volume, and daily patterns of use).
iii. Assess existing recreation sites located on federal land for consistency with Forest Service Sustainable Recreation Strategy.

<u>Goal 2</u>: *Identify future needs relating to public recreation sites at the Project. This will be accomplished by meeting the following objectives:*

i. Identify existing user needs and preferences, including perceptions of crowding at recreation sites.
ii. Estimate future recreation use of existing recreation sites.
iii. Identify future needs for new recreation sites and facilities.

3.0 STUDY AREA

Recreation sites at the Project that will be included in this study are listed in Table 3-1 and shown in Figure 3-1.

TABLE 3-1 EXISTING PROJECT RECREATION SITES AT THE STEVENS CREEK PROJECT[1]

RECREATION SITE NAME	RECREATION SITE NAME AS LISTED IN 2014 RECREATION PLAN	RECREATION SITE NAME AS LISTED IN 1995 PROJECT LICENSE/EXHIBIT G DRAWINGS	RECREATION SITE OWNER/ MANAGER
Stevens Creek Recreation Site	SC Recreation Site #1	Stevens Creek Recreation Site	DESC
Fury's Ferry Recreation Site	SC Recreation Site #2	Fury's Ferry Recreation Site	Forest Service
Chota Drive Recreation Site	SC Recreation Site #4	Recreation Site #2	Forest Service
Betty's Branch/ Riverside Park	SC Recreation Site #5	GA Recreation Site	Columbia County, GA

Source: SCE&G 2014

[1] The 2014 Recreation Management Plan (RMP) includes an additional recreation site – Stevens Creek Recreation Site #3 (also known as Recreation Site #1 or the Mims Recreation Site). This site is located on Forest Service property and is maintained by the Forest Service. The Forest Service has decided that this recreation site is not in line with their Sustainable Recreation Strategy and will no longer be supported by the Forest Service. The Forest Service has asked that this site be removed from the RMP and therefore not be studied during relicensing.

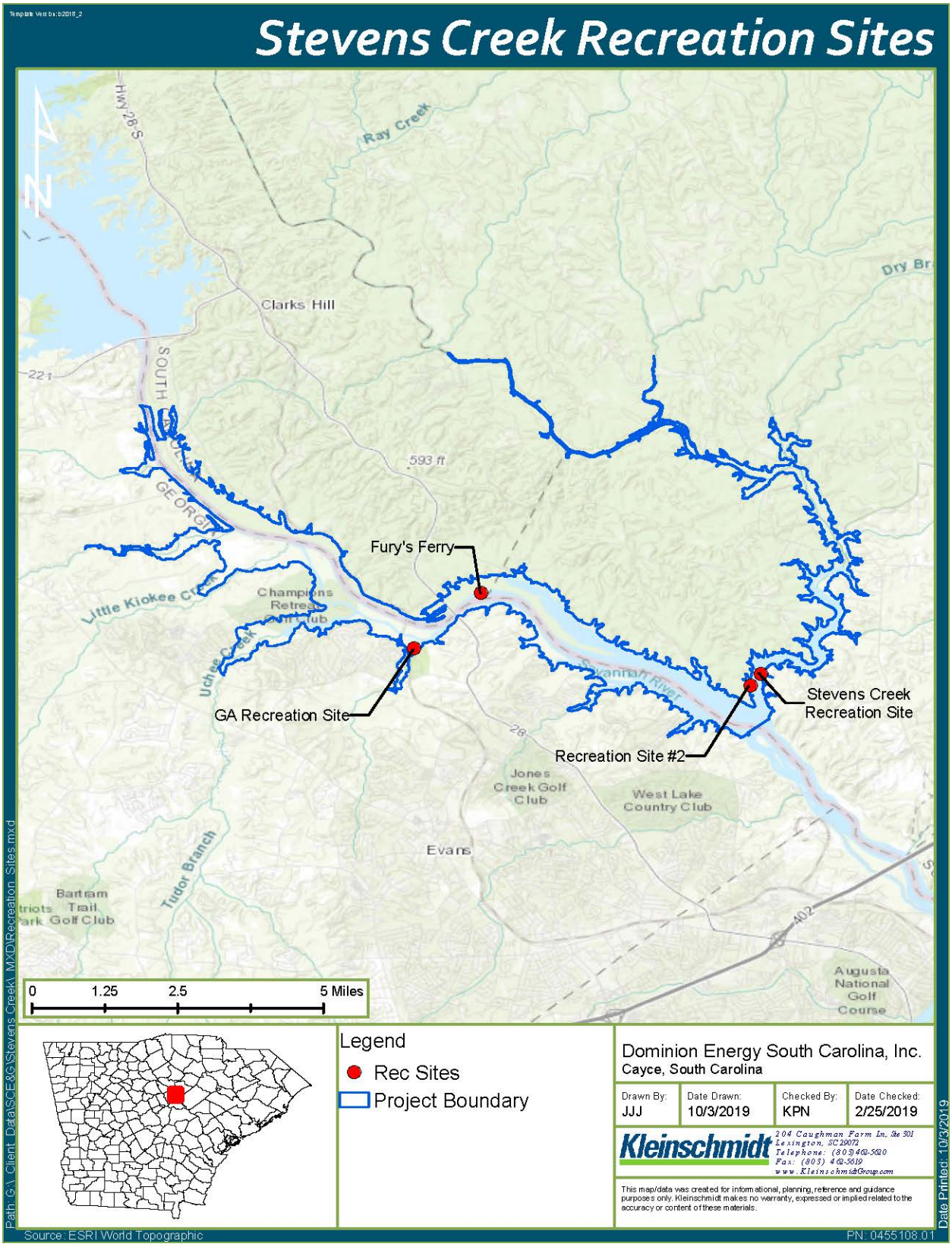


FIGURE 3-1 STEVENS CREEK PROJECT RECREATION SITES

4.0 STUDY SEASON

Generally, the study season will last for one year, beginning on April 1, 2021 and ending on March 31, 2022. During this time, traffic counters will be deployed at all four recreation sites, collecting continuous data for one full year. Within this general study season, recreation user surveys and spot counts will be collected during the peak recreation season, from April 1, 2021 through Labor Day weekend or September 6, 2021.

5.0 DATA COLLECTION METHODS

A variety of data collection techniques will be used to obtain the information necessary to meet the study objectives and goals listed in Section 2.0. Both primary and secondary data will be collected. Primary data will entail site inventories, spot counts, traffic counter data, trail camera data, and recreation user surveys. Primary data will be collected at each site as shown in Table 5-1.

TABLE 5-1 DATA COLLECTION METHODS AT STEVENS CREEK RECREATION SITES

	DATA COLLECTION METHOD				
RECREATION SITE	**SITE INVENTORY**	**SPOT COUNT[2]**	**TRAFFIC COUNTER DATA**	**RECREATION USER SURVEYS[3]**	**TRAIL CAMERA DATA**
Stevens Creek Recreation Site	*	*	*	*	
Fury's Ferry Recreation Site	*	*Periodic*	*	*Periodic*	*
Chota Drive Recreation Site	*	*Periodic*	*	*Periodic*	*
Betty's Branch/ Riverside Park	*	*	*	*	

[2] Spot counts will be administered at Fury's Ferry and Chota Drive during traffic counter/trail camera data download events.
[3] Recreation user surveys will be administered at Fury's Ferry and Chota Drive if recreation users are present during traffic counter/trail camera data download events.

Secondary data will include U.S. Bureau of Census data, the South Carolina Statewide Comprehensive Outdoor Recreation Plan (SCORP), SC Recreation Participation & Preference Study, and other relevant, readily available literature. Additional input will be solicited from the RCG, Columbia County, and Forest Service. Table 5-2 summarizes the study objectives, information needed to meet these objectives, and sources for information. Sections 5.1 through 5.4 summarize the primary data collection methods.

TABLE 5-2 RECREATION USE AND NEEDS STUDY PLAN OBJECTIVES AND EFFORTS

OBJECTIVES	INFORMATION NEEDED	SOURCE
Goal 1: Characterize existing recreational use of Project recreation sites		
Goal 1a: Identify formal recreation sites, inventory the services and facilities offered at each, and assess the general condition and ADA compliance of each site	• Physical inventory of all facilities at each recreation site • General assessment of site condition to include maintenance, basic rehabilitation needs, etc. • Visitors' assessment of site conditions • Identification of activities that occur at each site • Barrier free/ADA compliance assessment	• Recreation Site Inventory • Recreation User Surveys
Goal 1b: Identify the patterns of use at each site (type, volume, and daily patterns of use)	• Utilize vehicle counts as an estimation of people • Estimate of # people/vehicle • Estimate of # vehicles/site • Parking capacity	• Traffic Counter Data, Trail Camera Data • Spot Count Data • Recreation User Surveys - # of people per vehicle and length of visit • Recreation Site Inventory - # of parking spaces • Columbia County/Forest Service data, if available
Goal 1c: Assess existing recreation sites located on federal land for consistency with Forest Service Sustainable Recreation Strategy.	• Results from Goal 1a and Goal 1b for recreation sites located on federal land	• Forest Service input • Forest Service Sustainable Recreation Strategy

OBJECTIVES	INFORMATION NEEDED	SOURCE
Goal 2: Identify future recreational needs at the Project		
Goal 2a: Identify existing user needs and preferences, including perceptions of crowding at Project recreation sites	• User preferences and opinions of needs and crowding at sites • Condition assessment	• Recreation User Surveys • Recreation Site Inventory

OBJECTIVES	INFORMATION NEEDED	SOURCE
Goal 2b: Estimate future recreation use of existing Project recreation sites	• Inventory and use data • Population projections for the project area • Recreational use trends	• Results of Goal 1 • U.S. Bureau of Census Data • SC Division of Research & Statistics (Budget and Control Board) • SCORP, SC Recreation Participation & Preference Study, or other readily available literature
Goal 2c: Identify future needs for new recreation sites and/or facilities	• Estimate of future recreation use at the Project • Parking capacity at recreation sites vs. existing and projected use density • Condition/perception assessment	• Results of Goal 1a, 1b, 2a, 2b, • Columbia County, USFS, and RCG input on future needs

5.1 RECREATION SITE INVENTORY

Prior to completion of a recreation site inventory, GPS points and land area of each recreation site will be collected and recorded. Then a recreation site inventory will be completed for each recreation site included in Table 3-1. A site visit will be made to collect data on the type, number, and size of facilities (restrooms, parking areas, boat ramps, picnic shelters and tables, etc.) located at each site. The general condition of all recreation facilities will be noted during the inventory. In addition, any facilities that qualify as barrier free will be identified as such. A copy of the inventory form is provided in Appendix A.

Upon completion of the inventory, all data will be uploaded into an Excel database. The database will be structured so that it can be used in a variety of formats (brochure, maps, web pages, etc.) and can be updated as recreation sites are modified, added, or changed in any way.

5.2 TRAFFIC COUNTS

Traffic counters will be installed at all recreation sites included in Table 3-1 to record the number of vehicles that enter and exit the public recreation areas. Traffic count data will be collected for one year in order to capture use during the various seasons. Counters will be installed by April 1, 2021 and will collect data through March 31, 2022. Traffic counter data will be downloaded from the counter at a minimum of twice per month to ensure the counter is working properly and to minimize the potential for lost data.

5.3 TRAIL CAMERA DATA

Trail cameras will be installed at Fury's Ferry and Chota Drive recreation sites to capture the number of recreators and types of activities in which recreators partake at the recreation sites. Trail camera data will be collected during the peak recreation season, from April 1, 2021 through September 6, 2021 at Chota Drive and from April 1, 2021 through March 31, 2022 at Fury's Ferry. The trail camera will be installed at Fury's Ferry for a full year to capture the waterfowl hunting season. Trail camera data will be used in addition to periodic spot counts and recreation user surveys at Fury's Ferry and Chota Drive in order to characterize each site's recreation use and recreation activity types.

5.4 RECREATION USER SURVEYS

The preferences and perceptions of people using Project recreation sites weigh heavily into the determination of need for recreation site improvements and/or new recreation sites. Information from recreation site users will be collected through on-site surveys. Surveys will be conducted at recreation sites as shown in Table 5-1. Surveys may be collected at Chota Drive Recreation Site and Fury's Ferry Recreation Site when traffic counter/trail camera data is downloaded. However, a recreation clerk will not be stationed at these sites.

Surveys will be administered to recreation site users at the close of their recreation day[4]. Data collected will include user demographics, group size, the type of land-based and water-based recreation activities individuals are participating in, length of stay, and perceptions of crowdedness and condition of recreation facilities at the Project. The data collected will be used to identify recreation use patterns and use estimates at the recreation sites. The data will also characterize user perceptions on crowdedness, which will be considered during the future needs analysis.

The survey will be pre-tested in the field prior to implementation and revisions will be incorporated, as necessary. If any significant revisions to the survey or study protocol are deemed necessary following field pre-testing, the RCG will be notified. A copy of the survey is provided in Appendix B.

Surveys will be administered during the peak recreation season from April 1 through Labor Day weekend, 2021. Each recreation site will be sampled according to a sampling plan that will be prepared in consultation with the RCG. Sampling days will include weekdays, weekends and peak use weekends[5]. The sampling plan will be developed using a stratified random sampling method, with weekends being sampled at a greater rate than weekdays to account for the heavier use that typically occurs on these days. During each sampling day, survey clerks will be on-site for a four-hour shift, collecting as many complete surveys as possible. The shifts will occur

[4] FERC defines a recreation day as a visit by a person to a development for recreational purposes during any portion of a 24-hour period.
[5] FERC defined peak use weekends as weekends when recreation use is at its peak for the season (typically Memorial Day, Independence Day and Labor Day). All three days in a holiday weekend should be included.

randomly throughout the day within the window of 7:00 AM to 8:00 PM. Shift start times will be listed in the sampling plan.

All survey clerks will be trained thoroughly as a means of quality control. Survey clerks will be provided with detailed information on the study schedule, appropriate materials to aid in data collection, and direction on appropriate interviewing techniques and attire. Interviewers will also be provided with an incentive for survey respondents to complete the survey.

5.5 SPOT COUNTS

Spot counts will be conducted at the recreation sites listed in Table 3-1 once per sampling day, prior to the start of survey collection. Spot counts will document the number of vehicles present at a recreation site at one moment in time. Information recorded during spot counts will include: date, time, and weather; number of vehicles and vehicles with trailer at recreation site; type of activities observed at the site; and state license plate data. Spot count data will be used in parallel with traffic counter data. Spot counts will only be collected at Chota Drive Recreation Site and Fury's Ferry Recreation Site when traffic counter/trail camera data is downloaded. However, a recreation clerk will not be stationed at these sites.

6.0 ANALYSIS

The following sections provide a description of the approach for estimating existing and future recreational use, recreation site capacity and use density percentages, and future recreation needs.

6.1 CURRENT RECREATION USE ESTIMATES

The reported estimates of recreation will be presented in "recreation days". The FERC defines a recreation day as one visit by a person to a development for purposes of recreation during any 24-hour period. The weekday, weekend, and peak weekend average recreation days will be calculated for each recreation site utilizing the traffic counters and recreation site survey data. The average number of people at each site within the morning and afternoon periods will be estimated within each day type and converted to a daily estimate. Daily estimates for each day

type will be expanded to represent the study period and summed for a total estimate for each recreation site.

6.2 FUTURE RECREATION USE ESTIMATES

Estimated projections of future recreation use at the Project will be developed using the average annual increase in population growth over the past 10 years, as reported by the Census Bureau or the State Division of Research and Statistics, for Edgefield and McCormick counties, SC and Columbia County, GA. The estimates will be augmented with discussion of trends reported in the SCORP (2014) and the SC Recreation Participation & Preference Study (2005). Estimated projections will be provided in 5-year intervals for the anticipated term of the license up to 50 years into the future (through year 2075).

While it is acknowledged that future changes in the supply of recreation resources, either in their quantity, accessibility, and/or quality may influence future demand and use, the demand analysis undertaken for this study does not attempt to predict what these future changes might consist of or how they might specifically affect levels of use at Project facilities. Therefore, the demand analysis results should be viewed as a general guide of potential future recreation pressure developed for planning purposes only.

6.3 RECREATION SITE CAPACITY

For purposes of this study, the carrying capacity for a recreation site is defined as the number of vehicles and boat trailers that can be parked at a recreation site at one time, based on the number of available parking spaces associated with each site. For paved parking areas, this will be achieved by counting the number of designated parking spaces available at the recreation site. For gravel parking areas, the number of available parking spaces for each recreation site will be estimated by measuring the area (sq ft) available for parking and estimating the number of vehicles that could be parked at the location, if optimal space were utilized. These estimates will be based on parking capacity standards for vehicle length, width, and available turn around space.

6.4 RECREATION SITE USE DENSITY

The use density of recreation sites will be estimated by comparing the average observed number of vehicles at the sites on sampled weekday, weekend, and peak weekend days with the available parking capacity for each recreation site. The average observed number of vehicles divided by the parking capacity will provide an estimated use density for each site. The average number of vehicles at the site will be determined using spot count and traffic counter data.

6.5 RECREATION NEEDS ASSESSMENT

The need for recreation and site development or modification of existing recreation resources will be assessed based on the inventory, condition assessment results, parking capacity and use density assessment results, user survey results, and Forest Service consultation. The needs assessment will focus on the existing condition and user opinions of recreation sites, the presence of "barrier free" facilities at recreation sites, and the ability of sites to meet current and anticipated future recreation demand. Consideration will also be given to site opportunities and constraints, as well as support facilities such as signage and maintenance. The need for new recreation sites and/or facilities will be determined through assessment of the information collected and the input of stakeholders through the RCG and the Forest Service.

7.0 SCHEDULE

The proposed schedule for completion of the Recreation Use and Needs Study is as follows:

TASK	DATE
Mobilization for field work (includes field clerk hiring, training, etc.)	March 2021
User survey pre-testing	March 2021
Installation of traffic counters/trail cameras	April 1, 2021
Traffic counter data collection	April 1, 2021 – March 31, 2022
User survey collection	April 1 - September 6, 2021
Preliminary data entry, cleaning, and processing	October 2021
Conduct analyses	April-May 2022
Submit draft report	July 2022
Determine if additional data collection is needed	July 2022[6]
Finalize report	August 2022

8.0 REFERENCES

Federal Energy Regulatory Commission (FERC). 2018. 18 CFR Parts 8 and 141: Elimination of Form 80 and Revision of Regulations on Recreational Opportunities and Development at Licensed Hydropower Projects. Issued December 20, 2018.

South Carolina Electric & Gas Company (SCE&G). 2014. Revised Recreation Plan: Stevens Creek Hydroelectric Project, FERC Project No. 2535. January 2014.

[6] If additional data collection is required, data collection methods, results and analyses will be developed and assessed in cooperation with the RCG and will be provided in an addendum to the report.

APPENDIX A

SITE INVENTORY FORM

DOMINION ENERGY SOUTH CAROLINA, INC.

RECREATION STUDY

STEVENS CREEK HYDROELECTRIC PROJECT

(FERC NO. 2535)

Recreation Site Inventory Form

Inspector: _____

Date: _____

Site Name: _____

Site Address: _____

City: _____ **State:** _____ **Zip Code:** _____

Road Access:

	Paved	Unpaved/Gravel
Road Access		

Parking:

	Paved	Unpaved/Gravel
Vehicle Spaces		
Vehicle with Trailer Spaces		
ADA/Barrier Free Spaces		

Restrooms:

	Flush Toilets	Vault Toilets	Portable Toilets	ADA/Barrier Free
Women				
Men				
Unisex				

Boat Launches (# of lanes):

	Hard Surface (concrete/paved)	Gravel	Informal
Trailer Launch			
Carry-In			

Docks:

	# of Docks	ADA/Barrier Free
Courtesy Dock		
Fishing Dock/Pier		

Camping:

	# of Sites	ADA/Barrier Free
RV Sites		
Cabins		
Tent Sites		
Primitive Sites		

Operations (circle the one that applies):

Manning	Manned	Unmanned
Availability	Seasonal	Year Round
Fees	Yes	No

Amenities:

	Yes	No	Additional Information
Marina			
Whitewater Boating			
Portage			
Tailwater Fishing			
Reservoir Fishing			
Swim Area			
Trails			
Active Recreation Area			
Picnic Area			
Overlook/Vista			

	Yes	No	Additional Information
Interpretive Display (Signage/Kiosk/Billboard)			
Hunting Area			
Trash Cans			
Other			

APPENDIX B

RECREATION USER SURVEY

Recreation User Survey
Stevens Creek Hydroelectric Project (FERC No. 2535)

Clerk:_____ **Site:** _____ **Date:** _____ **Time:** _____ **am/pm**

Weather: ☐ **Sunny** ☐ **Partly Cloudy** ☐ **Cloudy** ☐ **Light Rain** ☐ **Heavy Rain**

RESPONDENT GENDER: ☐ **Male** ☐ **Female** **RESPONDENT REFUSED INTERVIEW:** ☐

NUMBER OF PEOPLE IN VEHICLE: _____ **RESPONDENT DOES NOT SPEAK ENGLISH:** ☐

RESPONDENT'S PRIMARY LANGUAGE (IF NOT ENGLISH): _____

VEHICLE HAS A BOAT TRAILER: ☐ **RESPONDENT IS NOT 18 YEARS OR OLDER:** ☐

RESPONDENT HAS BEEN INTERVIEWED AT THIS SITE PREVIOUSLY: ☐

THE FIRST FEW QUESTIONS ASK ABOUT YOUR EXPERIENCE HERE TODAY

1. Including yourself, how many people are in your party today? *(Fill in blank.)*

   _____ people in party

2. What time did you arrive at this recreation site today? *(Fill in blank.)*

   _____ am / pm

3. What is the primary recreation activity that you participated in today at this recreation site? *(Please read the list to respondents. Check only one main activity in the first column.)*

What other activities did you participate in today at this recreation site? *(Check all that apply in the second column.)*

Check only <u>one</u> main activity	Check all other activities	Types of Activities
		FISHING:
☐	☐	**boat fishing**
☐	☐	**pier/dock fishing**
☐	☐	**bank fishing**
☐	☐	**bow fishing/spear fishing**
		BOATING:
☐	☐	**motor boating**
☐	☐	**pontoon/party boating**
☐	☐	**canoeing/kayaking**
☐	☐	**paddle-boarding**
☐	☐	**Jet-skiing**
		OTHER:
☐	☐	**bicycling**
☐	☐	**diving/SCUBA**
☐	☐	**tent or vehicle camping**
☐	☐	**horseback riding**
☐	☐	**walking/hiking/backpacking**
☐	☐	**sightseeing**

Check only one main activity	Check all other activities	Types of Activities
☐	☐	**hunting**
☐	☐	**nature study/wildlife viewing/photography**
☐	☐	**swimming**
☐	☐	**picnicking**
☐	☐	**sunbathing**
☐	☐	**other:_____**
	☐	**None**

4. If you are hunting or fishing today, what is/are your target species? *(List all that are stated.)*

_____

_____

5. Did you spend any time on the water today? *(Check one box.)*

☐ YES
☐ NO *(If no, skip to Question 7.)*

6A. Did you recreate on or near any of the islands today?

☐ YES
☐ NO *(If no, skip to Question 7.)*

6B. What activities did you participate in **while on/near the island(s)**? *(Do not read this list. Allow respondent to answer and check all that apply and/or fill in the blanks.)*

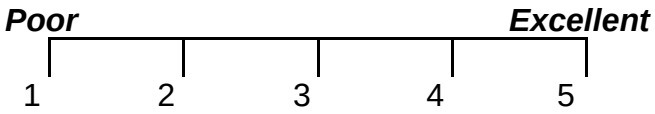
☐ sunbathing	☐ bank fishing	☐ hunting
☐ camping	☐ walking/hiking	☐ sightseeing
☐ nature study/wildlife viewing/photography	☐ swimming	☐ picnicking
☐ other (please specify: _____)		

7. On a scale from 1 to 5, with 1 being light, 3 being moderate, and 5 being heavy, how would you rate the crowdedness ***at this recreation site*** today? *(Circle one number.)*

Light ***Moderate*** ***Heavy***

1 2 3 4 5

8A. On a scale from 1 to 5, with 1 being poor and 5 being excellent, how would you rate the overall condition ***of this recreation site*** today? *(Circle one number.)*



8B. Are there any additional facilities/improvements needed ***at this recreation site***? *(Check one box.)*

☐ YES
☐ NO *(If no, skip to Question 9.)*

8C. What do you recommend? *(Do not read this list. Allow respondent to answer and check all that apply and/or fill in the blanks.)*

☐ access road	☐ bank fishing area	☐ boat dock
☐ boat launch	☐ camping area	☐ fish cleaning station
☐ fishing pier/dock	☐ lighting	☐ parking lot
☐ picnic tables/shelter	☐ restrooms	☐ signs & information
☐ swimming area	☐ trails	☐ trash cans
☐ RV camping	☐ tent camping	☐ bilingual signs & information
☐ other (please specify: _____)		

8D. Are there any other improvements that you would recommend for this site?

☐ YES
☐ NO *(If no, skip to Question 9.)*

8E. What improvements do you recommend? *(Fill in the blank.)*

_____

_____

_____

_____

9. What other lakes do you recreate at? *(Fill in blank.)*

_____

_____

_____

_____

10. What is your zip code? _____

11. In what year were you born? _____

12. Do you have any additional comments about this recreation site, including comments on existing or needed recreation facilities? (*Please fill in blank and be as specific as possible.*)

_____

_____

_____

_____

_____

_____

THANK YOU FOR YOUR HELP! WE APPRECIATE YOUR TIME TODAY!

APPENDIX C

SPOT COUNT FORM

Spot Count Form
Dominion Energy South Carolina, Inc.
Stevens Creek Hydroelectric Project

MONITOR: _____	**DATE**: _____ / _____ / _____ (month) (day) (year)	**Day Type**: **1 weekday** **2 weekend** **3 holiday**

WEATHER AT START (PLEASE CIRCLE AS MANY DESCRIPTORS AS APPLY)	1. SUNNY 2. PARTLY SUNNY 3. CLOUDY 4. LIGHT SHOWERS 5. HEAVY RAIN 6. WINDY	

SPOT COUNT				
RECREATION SITE	**TIME**	**TOTAL VEHICLES W/O TRAILERS**	**TOTAL VEHICLES W BOAT TRAILERS**	**TOTAL VEHICLES W KAYAK/CANOE TRAILERS**
	AM/PM			

TYPES OF ACTIVITIES	**Check all**
FISHING	
Boat Fishing	
Pier/dock Fishing	
Bank Fishing	
BOATING	
Motor Boating	
Pontoon/party Boating	
Sailing	
Canoeing/Kayaking	
Windsurfing	
Paddle-boarding	
OTHER	
Bicycling	
Tent or Vehicle Camping	
Walking/Hiking/Backpacking	
Sightseeing	
Hunting	
Nature Study/Wildlife	
Swimming	
Picnicking	
Sunbathing	
Other:	
TOTAL:	

STATE LICENSE PLATES	**# FROM EACH STATE**
South Carolina	
Georgia	
North Carolina	
Other:	