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

Dominion Energy South Carolina, Inc. Joint RCG Meeting

September 15, 2020

Final KMK 10-12-20

#### ATTENDEES:

Amy Bresnahan (DESC) Ray Ammarell (DESC) Caleb Gaston (DESC) Alison Jakupca (Kleinschmidt) Kelly Kirven (Kleinschmidt) Henry Mealing (Kleinschmidt) Jason Moak (Kleinschmidt) Bret Hoffman (Kleinschmidt) Paula Marcinek (GDNR – WRD) Steve Schleiger (GDNR – WRD) Rusty Wenerick (SCDHEC) Elizabeth Miller (SCDNR) Jason Bettinger (SCDNR) Morgan Kern (SCDNR) Mark Scott (SCDNR) Melanie Olds (USFWS) Keith Whalen (USFS) Twyla Cheatwood (NMFS) Frank Carl (SRK) Dave Mewborn (SRK) Frank Holleman (Naturaland Trust)

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 changes to the Mussel Study Plan, Recreation Study Plan survey form, and Water Quality Study Plan. Discussion on each study plan is summarized below. The revised documents from the meeting are attached to these notes.

#### **Mussel Study Plan**

Alison noted that there is a significant amount of existing mussel data in the Project vicinity, outside of the Project boundary. The study plan focuses on the collection of mussel data in specific areas within the Project boundary. Georgia Department of Natural Resources (GADNR) requested the study area to be expanded to include portions of Uchee Creek and Little Kiokee Creek. The geographic scope in the study plan was modified to include these areas.

Frank Holleman indicated that the US Fish and Wildlife Service (USFWS) surveyed a stretch of Stevens Creek downstream of Highway 283, outside of the Project boundary. He said there was a large mussel presence in that area, although no Carolina heelsplitters were found. He will try to obtain the data from USFWS and share with the group. Frank also noted that Clemson University conducted a survey in the same stretch of Stevens Creek for Rocky Shoals Spider Lily populations. He will share that information as well.

Alison reviewed the other mussel study plan edits. Morgan asked to change the study plan timeframe to exclude the month of October. She said that leaf litter can start to inhibit visual



surveys in the fall. Keith agreed and said that the Forest Service typically conducts mussel surveys between March 1 and September 30. Alison edited the study plan to reflect this request.

#### **Recreation Study Plan**

Kelly reviewed the edits made to the Recreation Study Plan survey form. She noted that GADNR indicated they are interested in a canoe portage at Stevens Creek dam. A question was added to the survey form to solicit feedback on public interest in a canoe portage. GADNR made additional edits to the survey form, including adding a question regarding the addition of recreation facilities and boating access provisions directly downstream of the dam. Kelly noted that the Augusta Project begins immediately downstream of Stevens Creek dam, so DESC is hesitant to collect any recreation data regarding downstream recreation. Paula said that GADNR is interested in a canoe portage and a tailwater fishing area on the Georgia side of Stevens Creek dam. Amy said that she remembers provisions for a tailwater fishing pier in the past that was never constructed. She will research the FERC record to find out why the pier was never built. Stallings Island is located just downstream of the dam and adding formal recreation facilities could attract the public to the area, putting the protection of the cultural resource at risk. Paula said that a fishing pier will not provide access to the river and should not affect Stallings Island.

The group discussed the possibility of a canoe portage at the dam. The Georgia side of the dam presents issues since this is where the Project powerhouse and other Project facilities are located. In addition, there is a large substation located in this area. Safety would be a concern on the Georgia side. On the South Carolina side of the dam, the terrain is very steep and rocky, making passage difficult. Elizabeth asked if land clearing/earth moving activities and the addition of gravel would make the area more accessible. Ray said that it would take a lot of work and would be difficult to get equipment in the area. Alison suggested the Recreation RCG hold a site visit in the area to view both sides of the dam and get a better idea of how a canoe portage might be achieved. Additional representatives from GADNR and SCDNR boating access crews may attend the site visit. Alison said we will plan to conduct the site visit in the spring of 2021.

Paula noted that approximately 10 percent of the population in the Augusta area is Hispanic and suggested translating the survey form into Spanish for those individuals. Kelly said that this can be done, although it is not likely the field clerks administering the surveys will be able to speak Spanish. The Spanish surveys will be provided upon request and filled out directly by the survey respondent.

Jason B. said that many boaters access the Stevens Creek Reservoir using the two boat ramps in the Thurmond Dam tailrace, which are located outside of the Project boundary. These boat ramps are not included in the recreation study. He suggested contacting the US Army Corps of Engineers (USACE) to see if they collect use data at these boat ramps. This data will provide a more complete picture of use at the Stevens Creek Reservoir. Kelly said she will contact USACE and any data they have will be incorporated into the Recreation study report.

Henry noted that the recreation study methods, including survey forms, may be modified as the study progresses to address needs or issues that arise. Kelly said that if issues or additional data needs become apparent, she will consult with the Recreation RCG prior to modifying study methods.

#### Water Quality Study Plan

Alison said that GADNR requested nutrient sampling be conducted at all water quality collection sites, rather than the limited sampling that was originally proposed. DESC agreed to add nutrient sampling at all six sites.

Jason noted that Site 5 which was originally planned to be located at the bridge at Woodlawn Road will be moved a short distance downstream. Since the bridge does not have pilings to which the water quality monitor could be attached, keeping the monitor in that area would require use of a buoy and almost certain loss of the monitor during the study. Instead, Jason said that a homeowner downstream of the Woodlawn bridge will allow the monitor to be attached to his dock, providing protection to the monitor and discouraging vandalism.

#### **Other Discussion**

Elizabeth said that she asked Mark Scott to join the meeting to discuss a potential Redeye Bass study. Mark said that the Redeye Bass, also known as Bartram's Bass or Bartram's Redeye Bass, is known to occur in the upper Savannah River, including Stevens Creek and other tributaries located on the Georgia side of the Savannah River. The species is listed as having highest priority conservation status in both the South Carolina and Georgia State Wildlife Action Plans (SWAP). The Alabama Bass has been invading the area over the last few decades and hybridizing with the Redeye Bass. The endemic species generally inhabits the area from Augusta Shoals to the Blue Ridge, or the Piedmont Region. Since agencies have a high conservation concern for the species, more information on the species in the Stevens Creek Reservoir would be a great value. Henry asked Mark what type of study he would like to see. Mark said that backpack shocking in the general areas where the mussel surveys will be conducted would work. DNA would need to be collected on the fish to ensure positive identification. Mark will submit a written request to the Water Quality, Fish and Wildlife RCG for consideration.

Action items from this meeting are listed below.

#### ACTION ITEMS:

- Kleinschmidt will send out the revised study plans for additional review/RCG approval.
- Frank H. will provide Naturaland Trust's mussel and Rocky Shoals Spider Lily data.
- Mark will develop a written request for Redeye Bass study for WQFW RCG consideration.



# Stevens Creek Joint RCG Meeting

- REVIEW MUSSEL STUDY PLAN REVISIONS
- REVIEW RECREATION STUDY PLAN REVISIONS
- REVIEW WATER QUALITY STUDY PLAN
- Relicensing Process Discussion: Schedule and Upcoming Meetings

# Mussel Study Plan

## Proposed Mussel Survey Area

## Objective

Gather data on mussel diversity, distribution and abundance in the study area

### **Study Area**

Upstream extent of the Stevens Creek to the confluence with Horn Creek

Uchee Creek (GA)

Little Kiokee Creek (GA)

(purple)

## Methods

Fall 2021

Wading, snorkeling/batiscope

5-10 representative sites



# Recreation ("RUN") Study Plan

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#### Objective

Characterize existing use of Project Recreatic sites. Identify further recreation needs at the Project.

#### **Rec. Site Locations**

Betty's Branch Chota Drive Fury's Ferry Stevens Creek Rec. Site

### **Data Collection Measures**

Site Inventory; Spot Count; Traffic Counters; Recreation User Surveys,

**Study Season** April 1, 2021 through March 31, 2022; 7 AM-8 PM

Updates Additional Questions Added to Recreation User Survey Form

# Stevens Creek Recreation Sites



# Water Quality Study Plan

## Objective

Assess dissolved oxygen levels in Stevens Creek and the Savannah River (project tailrace).

## **Monitoring Locations**

Stevens Creek @ Woodlawn Drive; Stevens Creek Dam Forebay and Tailrace

Stevens Creek Dam – East End

#### **Monitoring Parameters**

Continuous (15-minute interval) Temperature, Dissolved Oxygen, pH, conductivity, turbidity from January through December, 2021

Monthly nutrient sampling updates

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# Upcoming Relicensing Process Updates

Activity	Timeframe
Fish Passage TWC Meeting	September 29, 2020
TLP Regulatory Date: FERC PAD/Study Request Comment Due Date	November 2, 2020
Water Quality Study Begins	January 2021
Project Site Visit with Fish Passage Review Committee	Tentative Spring 2021
Recreation Study Begins	April 1, 2021
Mussel Survey	Fall 2021

## STEVENS CREEK HYDROELECTRIC PROJECT (FERC No. 2535)

**Prepared** for:

# Dominion Energy South Carolina, Inc. Cayce, South Carolina

**Prepared by:** 

**Kleinschmidt** 

Lexington, South Carolina www.KleinschmidtGroup.com

September 2020

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#### STEVENS CREEK HYDROELECTRIC PROJECT (FERC No. 2535)

#### **DOMINION ENERGY SOUTH CAROLINA, INC.**

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#### 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 (Thurmond Dam). The Stevens Creek Reservoir is approximately 25 miles long, extending upstream to the Thurmond Dam and 12 miles up Stevens Creek. The Project occupies approximately 104 acres of federal lands within the Sumter National Forest.

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 US Fish and Wildlife Service (USFWS) formally requested a freshwater mussel study at the Project, particularly in the Stevens Creek arm of the Project reservoir. In a letter dated June 10, 2020, the Georgia Department of Natural Resources (GADNR) requested that the large tributaries on the Georgia side of the Savannah River be included in the study. This study plan was developed in consultation with the USFWS, GADNR, South Carolina Department of Natural Resources (SCDNR) and the RCG.

#### 2.0 RELEVANT SPECIES INFORMATION

#### 2.1 FEDERAL-PROTECTED SPECIES

As part of relicensing, DESC developed a Rare, Threatened and Endangered (RTE) Species Whitepaper for the Project. The whitepaper included a comprehensive list of federal-protected and Forest Service Threatened, Endangered and Sensitive (TES) mussel species that may occur in the Project boundary (Table 2-1) (Kleinschmidt 2020). In order to identify possible federally protected mussel species in the Project area, the USFWS's Information for Planning and Consultation (IPaC) online system was reviewed. Forest Service TES species that may occur in the Project area were also identified. The Forest Service provided a list of their TES Species for the Long Cane Ranger District of the Sumter National Forest on January 15, 2020. These mussel species are included in Table 2-1.

TABLE 2-1FEDERAL-PROTECTED AND FOREST SERVICE TES MUSSEL SPECIES THAT MAY<br/>OCCUR IN THE STEVENS CREEK PROJECT AREA

COMMON NAME	SCIENTIFIC NAME	FEDERAL PROTECTION	FOREST SERVICE TES Species - SNF
Atlantic Spike	Elliptio producta	TROTLETION	Sensitive
Brook Floater	Alasmidonta varicosa		Sensitive
Carolina Heelsplitter	Lasmigona decorata	Endangered	Endangered
Roanoke Slabshell	Elliptio roanokensis		Sensitive
Yellow Lampmussel	Lampsilis cariosa		Sensitive

#### ATLANTIC SPIKE

The Atlantic spike is found throughout South Carolina and prefers streams or rivers with sandy, rocky, and/or muddy bottoms in sections where the current is moderate. 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.

#### **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. This species is sensitive to habitat degradation, including excessive

silt and nutrient inputs, and is also sensitive to hypoxia. Potential host fish include blacknose dace, longnose dace, golden shiner, pumpkinseed, slimy sculpin, yellow perch, and margined madtom. This species is known to occur in Edgefield and McCormick counties in SC. Specifically, it has been documented in several streams in the Stevens Creek basin.

#### **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. One of the ten surviving South Carolina populations of Carolina heelsplitter is found in Turkey Creek and its tributaries upstream of the project boundary. The Turkey Creek Carolina heelsplitter population was stocked by the Forest Service, USFWS and SCDNR in 2019. These creeks are part of the Savannah River drainage, located in Edgefield County, SC.

#### **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. 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.

#### 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. 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.

#### 2.2 STATE PROTECTED SPECIES

In addition to federal-protected and Forest Service TES species, the RTE Whitepaper listed stateprotected mussel species that may occur in the Project vicinity (Kleinschmidt 2020). These species are listed in Table 2-2 and Table 2-3.

# TABLE 2-2GEORGIA STATE-PROTECTED MUSSEL SPECIES THAT MAY OCCUR IN THE<br/>STEVENS CREEK PROJECT VICINITY

COMMON NAME	SCIENTIFIC NAME
Atlantic Pigtoe	Fusconaia masoni
Brother Spike	Elliptio fraterna
Carolina Slabshell	Elliptio congaraea
Delicate Spike	Elliptio arctata
Roanoke Slabshell	Elliptio roanokensis
Savannah Lilliput	Toxolasma pullus
Yellow Lampmussel	Lampsilis cariosa

# TABLE 2-3SOUTH CAROLINA STATE-PROTECTED MUSSEL SPECIES THAT MAY OCCUR IN<br/>THE STEVENS CREEK PROJECT VICINITY

COMMON NAME	SCIENTIFIC NAME
Atlantic Spike	Elliptio producta
Eastern Creekshell	Villosa delumbis
Eastern Elliptio	Elliptio complanate
Florida Pondhorn	Uniomerus caroliniana
Yellow Lampmussel	Lampsilis cariosa

#### **3.0 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 portions of Stevens Creek, Little Kiokee Creek, and Uchee Creek included within the Stevens Creek Project boundary.

#### 4.0 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 the Stevens Creek Project boundary 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 surveys include the reach between the upstream extent of the Stevens Creek reservoir to the confluence with Horn Creek (Figure 4-1). In addition, GADNR requested that surveys include representative sites in the portions of Little Kiokee Creek and Uchee Creek within the Project boundary. Specific survey points will be identified in the field by the lead malacologist performing the study. Surveys will be conducted between late March and late September in 2021. Surveys will be focused during non-rainy periods 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 4-1 MUSSEL STUDY AREA

#### 5.0 DATA COLLECTION METHODS

Freshwater mussel surveys in Stevens Creek, Little Kiokee Creek, and Uchee Creek will involve timed visual (qualitative) and tactile inspections (quantitative) of suitable habitat for presence of live freshwater mussels and/or shell material. Prior to sampling, we will review existing mussel distribution data provided by SCDNR, GADNR, and the Forest Service to prioritize areas that should be surveyed or resurveyed. This will aid in identifying established populations of mussels within the project boundary that may be influenced by project operations.

Field survey methods will follow freshwater mussel survey standard operating procedures (SOP) established by the SC DNR (Appendix A) 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, of approximately 100 meters per site, will be distributed along Stevens Creek. The number of representative sites surveyed in Little Kiokee Creek and Uchee Creek will be determined by the lead malacologist following discussions with the GADNR malacologist.

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, as well as habitat for the Forest Service TES species and state-protected species listed in Section 2.0. If key species are detected during the qualitative survey, quantitative surveys will be performed to determine relative abundance.

Exact methods for conducting visual and tactile searches will vary depending on water depth and survey method. 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 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.

Specific sampling protocols, using the SC DNR methods, for both qualitative and quantitative surveys to be employed during this study are included below (Appendix A) (SCDNR 2020).

#### Qualitative

Qualitative surveys should consist of tactile and visual searches of all habitats (not just suitable habitats) within the survey area to be searched, or "prescribed search area" (PSA). When delineating the PSA, every attempt should be made to not disturb the sediment. Shells should be collected from along all exposed areas in the PSA including banks and midchannel bars. The visual search on the bank(s) should be conducted in addition to hand grubbing (probing substrate with hands 1-2 inches into substrate) search and a visual search for individuals within the water (SCDNR 2020).

Recommended survey equipment will vary with stream condition. Mask and snorkel with hand grubbing should be used in areas with water depth less than an arm's length. When habitat type or turbidity preclude the use of a mask and snorkel, only hand grubbing would be sufficient. View buckets/bathyscopes may be used as a supplemental method. (SCDNR 2020).

Surveys should be conducted from downstream to upstream to maximize visibility and should cover the stream from bank to bank using a single pass and multiple observers. A minimum search rate of  $10 \text{ m}^2/\text{min}$  (Smith et al. 2001) should be employed to ensure adequate coverage. Individuals of a native mussel species should be identified and counted, up to the first 100 individuals of each species found. One representative color photograph should be taken of each native mussel species found. If live, federally or state protected species are located, they should be identified, counted, measured for length, and photographed. If more than 100 live individuals of a single federally or state protected species, measure lengths for the first 100 individuals and count the remaining individuals. When measuring length of a mussel, calipers should be used to record the greatest distance from the anterior to the posterior shell margin to the nearest 0.1 mm (SCDNR 2020).

#### Quantitative

Quadrat surveys are used to estimate recruitment and the density or relative species abundance at a fixed site. Because mussels are typically non-uniformly distributed throughout a site, reach, or river, large sample sizes are required (SCDNR 2020). This method is not as effective for documenting species richness or the presence of rare species due to a smaller total search area but

does provide higher detection rates for juvenile mussels. This method is not recommended for monitoring mussels at a watershed or range wide scale but can be extremely useful for monitoring specific sites or meta-populations of interest (SCDNR 2020).

This method involves a fixed site location. The site is divided into a 0.25 m<sup>2</sup> grid and excavation quadrats are chosen using systematic sampling. To reduce time in water, multiple observers use snorkeling to excavate the 0.25 m<sup>2</sup> quadrat to 6 inches in depth. A minimum of 3 percent of the survey area should be surveyed when using this method (SCDNR 2020).

Live and fresh dead mussels collected during the survey will be identified to species, enumerated and returned to their habitat consistent with SCDNR SOP (Appendix A), 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. Any equipment used as part of the sampling will be cleaned before and after sampling in each area.

#### 6.0 SCHEDULE

Field surveys will be conducted from late March to late September 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.

#### 7.0 **REFERENCES**

- Federal Energy Regulatory Commission (FERC). 1995. Final Environmental Assessment for Hydropower License. Filed November 7, 1995.Kleinschmidt. 2020. Stevens Creek Hydroelectric Project FERC No. 2535: Rare, Threatened, and Endangered Species Whitepaper. February 2020.
- South Carolina Department of Natural Resources (SCDNR). 2020. Freshwater Mussel Survey Protocol. March 2020.

#### APPENDIX A

### SCDNR FRESHWATER MUSSEL SURVEY PROTOCOL

#### 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	RESPONDEN	REFUSED INTERVI	<b>EW</b> : 🗆	
NUMBER OF PEOPLE IN			T DOES NOT SPEAK		
		RESPONDEN ENGLISH):	I'S PRIMARY LANGU	JAGE (IF NOT	
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. Have you visited Stevens Creek Reservoir more, less or about the same over the last year? (Circle one)

#### MORE ABOUT THE SAME LESS

4. 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 one main	Check all other	
activity	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:

Check only	Check all	
<u>one</u> main	other	
activity	activities	Types of Activities
		bicycling
		diving/SCUBA
		tent or vehicle camping
		horseback riding
		walking/hiking/backpacking
		sightseeing
		hunting
		nature study/wildlife viewing/photography
		swimming
		picnicking
		sunbathing
		other:
		None

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

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

- ☐ YES☐ NO (If no, skip to Question 7.)
- 7A. Did you recreate on or near any of the islands today?
  - □ YES
    □ NO (If no, skip to Question 7.)
- 7B. 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:		_	
	 	)	

8. 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.*)



9A. 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.*)

Po	or			Exce	llent
1	2	3	4	5	

- 9B. Are there any additional facilities/improvements needed **at this recreation site**? (Check one box.)
  - □ YES□ NO (If no, skip to Question 9.)
- 9C. 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	□ infor	bilingual signs & mation
other (please specify:			\ \	
 	· · · · · · ·		.)	

- 9D. Are there any other improvements that you would recommend for this site?
  - □ YES □ NO
    - NO (If no, skip to Question 9.)
- 9E. What improvements do you recommend? (Fill in the blank.)

- 10A. Do you ever recreate **at Fury's Ferry or Chota Drive** recreation sites? (*Check one box.*)
  - □ YES
     □ NO (If no, skip to Question 10.)

10B. What activities have you participated in *while at Fury's Ferry or Chota Drive*? (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
□ motor-boating	kayaking/canoeing		boat fishing
□ other (please specify:		)	
	 	.)	

- 10C. Are there any additional facilities/improvements needed **at Fury's Ferry and/or Chota Drive**? (Check one box.)
  - □ YES
     □ NO (If no, skip to Question 10.)
- 10D. What improvements do you recommend **at Fury's Ferry and/or Chota Drive**? (Fill in the blank.)

11. Are there any additional **recreation facilities and/or boating access provisions** needed at the Stevens Creek Reservoir?

13. On a scale from 1 to 5, with 1 being very unlikely and 5 being very likely, how likely would you be to portage Stevens Creek Dam, if it were possible?



14.	What other lakes do you recreate at?	(Fill in blank.,	)
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What is your zip code?
In what year were you born?
Do you have any additional comments about this recreation site, including comment
existing or needed recreation facilities? ( <i>Please fill in blank and be as specific as possible.</i> )
 existing or needed recreation facilities? ( <i>Please fill in blank and be as specific as possible.</i> )

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

## STEVENS CREEK HYDROELECTRIC PROJECT (FERC No. 2535)

**Prepared for:** 

# Dominion Energy South Carolina, Inc. Cayce, South Carolina

Prepared by:



Lexington, South Carolina www.KleinschmidtUSA.com

May 2020

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#### **DOMINION ENERGY SOUTH CAROLINA, INC.**

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#### 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 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 (GDNR) expressed a desire for more information on water quality in upstream areas of Stevens Creek to determine its suitability for fish habitat. The South Carolina Department of Natural Resources (SCDNR) expressed a desire for the periodic monitoring of water quality, specifically DO, in the Savannah River arm of the Stevens Creek reservoir, in an area typically higher in aquatic vegetation. 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. This study plan addresses these requests.

#### 2.0 STUDY OBJECTIVE

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

#### **3.0 GEOGRAPHIC AND TEMPORAL SCOPE**

Water quality will be monitored at six sites in and around the Stevens Creek Reservoir, including five 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 Dam. 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. Monitoring site 6 will be located in the Savannah River arm of Stevens Creek Reservoir, just upstream of the confluence with Stevens Creek. 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 Monitoring Sites 1-5 shown in Figure 1 for temperature, dissolved oxygen, pH, conductivity, and turbidity 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 **PERIODIC MONITORING**

Water quality will be monitored periodically at Monitoring Site 6 shown in Figure 1 for temperature, dissolved oxygen, and pH during summer months for 24-48 hour periods using continuous water quality monitoring instruments. Specifically, data will be collected for one period in mid-June; two periods each in July, August and September; and one period in mid-October. 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 15-minute intervals.

A separate, calibrated meter will be used to record DO and water temperature readings during each deployment and retrieval visit to Monitoring Site 6. These data will be compared to continuous instrument data collected at Monitoring Site 6 as a check on accuracy and for use in post-processing and correction of any fouling or calibration drift.

All periodic data collected at Monitoring Site 6 will be compiled at the end of the monitoring season. The data will be analyzed by computing daily minimum, maximum, and average values for DO, water temperature, and pH and comparing them to applicable water quality criteria.

#### 4.3 NUTRIENT SAMPLING

Water samples will be collected monthly at Sites 1 through 5, and at Site 6 during periodic sampling, 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.

#### 4.4 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 continuous water quality monitoring instruments will be deployed at Monitoring Sites 1-5 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. Periodic sampling at Monitoring Site 6 will occur once in mid-June, twice monthly in July, August and September, and once in mid-October. Nutrient samples will be collected monthly during 2021 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 to inform discussion of various resource issues during the relicensing process.