

EXHIBIT A

PROJECT DESCRIPTION

**STEVENS CREEK HYDROELECTRIC PROJECT
FERC PROJECT NO. 2535**

**APPLICATION FOR NEW LICENSE
FOR MAJOR PROJECT – EXISTING DAM**

**EXHIBIT A
PROJECT DESCRIPTION**

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EXECUTIVE SUMMARY

The Stevens Creek Hydroelectric Project (Stevens Creek Project or Project) is located at river mile 209.1 of the Savannah River, at its confluence with Stevens Creek, in Edgefield and McCormick Counties, South Carolina, and Columbia County, Georgia, approximately 8.5 miles north of Augusta, Georgia. The Project is located approximately 1 mile upstream of the Augusta Diversion Dam and approximately 13 miles downstream of the J. Strom Thurmond Dam (hereafter referred to in this document as Thurmond Dam).

Appendix A-1 provides a location map of the Project, Appendix A-2 the single line diagram for the Project transmission equipment, and Appendix A-3 a tabulation of federal lands within the Project boundary.

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1.0 PROJECT STRUCTURES

The Stevens Creek Project consists of a single dam and an integral powerhouse that were constructed between 1913 and 1914 for hydroelectric power generation. Stevens Creek Project structures include: 1) non-overflow portions, located at the abutments with a top elevation (EL) of 198.54 feet (1929 NGVD, 184.0 Plant Datum); 2) 2,000-foot spillway composed of an (a) cyclopean concrete gravity section, ogee crest, with a top elevation (EL) of 183.54 (1929 National Geodetic Vertical Datum [NGVD], 169.0 Plant Datum), (b) 1,000 feet of 5-foot-high flashboards from the lock to the center of the spillway, (c) 1,000 feet of 4-foot-high flashboards from the center of the spillway to the South Carolina abutment; 3) a concrete gravity lock 85-feet-wide by 165.5-feet-long located between the powerhouse and spillway section; 4) a 388-foot-long powerhouse, integral with the dam, consisting of a reinforced concrete substructure and a steel-framed brick superstructure, and containing eight turbine-generators.

1.1 RIGHT ABUTMENT AND NON-OVERFLOW STRUCTURES

The right abutment and the non-overflow structure are located on the west side of the powerhouse. The right abutment is of earthen materials over rock that rises in a series of terraces to in excess of EL 215 feet. Located on the abutment is the Project substation.

The non-overflow structure has a crest at EL 198.5 feet and a total length of 102.5 feet and is founded on rock with a structural height that varies from 10 to 44 feet from the top of the structure to the foundation rock. Eighty-nine feet of the structure is constructed of cyclopean concrete with post-tensioned anchors installed in 2003, and 13.5 feet is constructed of two parallel walls with concrete infill doweled into rock with a concrete slab over the top. The infilled wall section abuts a transformer platform located on the downstream side.

Six rock anchors were installed in 2003 and are of the fully bonded type, with the stressing zone having been grouted after the anchors were locked off. The anchors are grouted in a corrugated high-density polyethylene sheath that extends the full height of the anchor hole, and the sheath is grouted into the foundation rock.

1.2 POWERHOUSE

The 388-foot-long, 52-foot-wide, 57-foot-high, three-story powerhouse is integral with and located at the west end of the dam. The powerhouse has a reinforced concrete substructure and a steel-framed brick superstructure. The powerhouse contains eight vertical Francis generating units, two exciter units (abandoned), and two empty generating bays. Each vertical Francis generating unit is rated 3,125 horsepower at 27 feet of head. Each exciter and generating unit is equipped with trash racks and steel head gates. The empty generator bays are located on the east end of the powerhouse. The powerhouse has a maximum hydraulic capacity of approximately 8,300 cubic feet per second (cfs) with a generating capacity of 17,280 kilowatts (KW) at a head of 27 feet. Normal tailwater is at EL 158.5 feet.

1.3 NAVIGATION LOCK

On the east end of the powerhouse, between the powerhouse and the spillway, is a concrete gravity navigational lock structure that is 85 feet wide by 165 feet, 6 inches long (upstream to downstream direction). The lock chamber is 30 feet wide and 150 feet long with a 29-foot lift. The top of the lock structure is the same as the headgate operator deck, EL 198.5 feet. The lock is equipped with timber miter gates at both upstream and downstream ends, and it was reported that the locks have not been used for river traffic since the 1940s.

1.4 SPILLWAY DAM

The 2,000-foot overflow spillway is a cyclopean concrete gravity dam with an ogee spillway with a permanent crest at EL 183.5 feet. In 2002, 38 post-tensioned anchors were installed in 930 feet of the eastern half of the spillway. In 2020-2021, 43 post-tensioned anchors were installed in the western half of the spillway.

The spillway is regulated by steel flashboards along the full length. Starting at the lock structure, the first 1,000 feet of spillway has 5-foot-high flashboards (top of boards at EL 188.5 feet), and for the remaining length of the spillway, the flashboards are 4 feet high (top of boards at EL 187.5 feet). The flashboards pivot about a horizontal shaft and tip automatically when the headpond

reaches the top of the flashboards. The maximum height of the dam, including flashboards, is about 37 feet, with the average height being 33 feet. Normal tailwater is at EL 158.5 feet.

1.5 LEFT ABUTMENT AND NON-OVERFLOW STRUCTURE

On the east end of the spillway is the left abutment and a 97-foot-long non-overflow structure. The abutment is of earthen materials over rock and rises to in excess of EL 215 feet. The non-overflow structure is a cyclopean concrete gravity structure with a top of structure at EL 198.5 feet. The non-overflow has a structural height that varies from a few feet up to 48 feet high from the crest of the structure to the top of foundation rock.

In 2002, two post-tensioned anchors were installed in the structure. The anchors are the same type as those installed in the east half of the spillway, and one of the anchors has a load cell installed. In 2021, two additional post-tensioned rock anchors were installed in the left non-overflow section. The newer anchors have no load cells.

2.0 RESERVOIR

The Project is located on the Savannah River at river mile 209.1, near the confluence of Stevens Creek, which enters the river just upstream of the dam on the left riverbank. The 7,122 square-mile watershed area¹ is drained by the Savannah River and Stevens Creek above the Stevens Creek Dam.

The Project's impoundment extends approximately 12 miles upstream from the Stevens Creek Dam to a point about 1 mile downstream of the U.S. Army Corps of Engineers' Thurmond Dam. The surface area of the impoundment is about 2,400 acres at full pond at EL 187.5 feet. Gross storage capacity of the reservoir is about 23,600 acre-feet, and usable storage at full pool is about 7,800 acre-feet. The reservoir normally fluctuates between elevation 183.0 feet and 187.5 feet, using available storage capacity to re-regulate flow releases from Thurmond Dam.

¹ Drainage area, as calculated at the Stevens Creek Dam.

3.0 PROJECT GENERATING EQUIPMENT

The powerhouse contains eight turbine-generator units, with a total maximum rated capacity of 17,280 kW. This includes five I.P. Morris Francis vertical shaft turbines, each rated at 3,125 horsepower (hp) and 75 revolutions per minute (rpm); three S. Morgan Smith Francis vertical shaft turbines, each rated at 3,125 hp and 75 rpm; and eight synchronous Westinghouse generators, each rated at 2,700 kilovolt-amperes (kVA), 2,300 volts (V), 60 cycle, 3 phase and 75 rpm. There are four Rapid Power Technologies excitation transformers rated 125 kVA, 2,400 V/121V, each feeding two Rapid Power Technologies static DC Excitation Power Supplies with rated output of 250 ADC, 150 VDC to supply excitation power to each generator field. Governors on Units 1, 2, 4, 5, 6, and 7 are digital governors by American Governor Company, and governors on Units 3 and 8 are Woodward 700H digital governors.

4.0 PROJECT TRANSMISSION EQUIPMENT

Energy generated is conducted from the powerhouse step-up transformers through the main leads exiting the powerhouse via 46 kilovolt overhead lines to SF6 breakers approximately 100 feet west of the powerhouse and then another 100 feet west to the Project switchyard interconnecting the Project to the local grid via the Georgia Power substation. There are no transmission lines included in the Project boundary. Single-line drawings for the Project are included in Appendix A-2.

5.0 APPURTENANT EQUIPMENT

The powerhouse is equipped with both 10-ton and 50-ton Demag overhead cranes for equipment maintenance. Trash racks, with 3.75-inch-clear spacing, and rakes are installed to clear debris from the intake area and headgates.

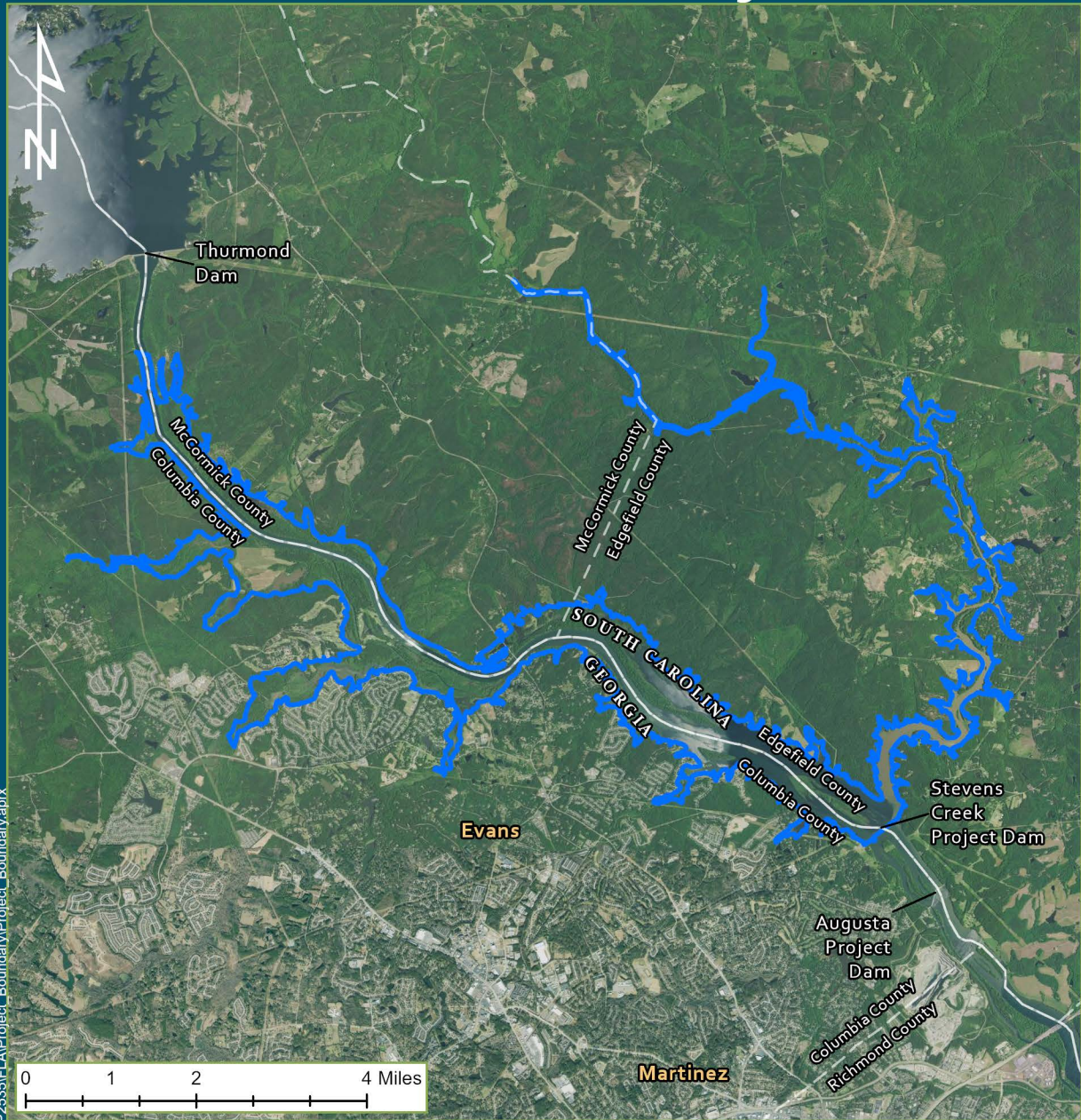
6.0 PROJECT FEDERAL LANDS

There are 104.4 acres of federal lands administered by the U.S. Forest Service, which are part of the Stevens Creek Hydroelectric Project. Of that acreage, 104.19 acres have a pre-existing easement in which Dominion Energy South Carolina, Inc. owns flowage easements, which predate the acquisition of the National Forest Lands by the United States. Appendix A-3 contains a tabulation of federal lands within the Project boundary by tract number, along with a designation as to which Exhibit G map sheet each tract is shown on.

APPENDIX A-1

PROJECT LOCATION MAP

Project Location



Legend

Project Boundary

Dominion Energy South Carolina, Inc.
Augusta, GA

Drawn By:
JJJ

Date Drawn:
10-23-2023

Checked By:
KPN

Date Checked:
10-23-2023

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APPENDIX A-2

SINGLE LINE DIAGRAM

This material contains Critical Energy Infrastructure Information (CEII).
Members of the public may obtain nonpublic or privileged information by submitting a
Freedom of Information Act Request.

APPENDIX A-3

FEDERAL LANDS

EXHIBIT A-3

STEVENS CREEK HYDROELECTRIC PROJECT P-2535

FEDERAL ACREAGE WITHIN THE PROJECT BOUNDARY

Exhibit G Sheet No.	USFS Tract No.	Federal Acreage with Pre-Existing Easement	Federal Acreage without Pre- Existing Easement
G-2	L-238	28.65	0.21
G-3	L-238	7.20	
G-3	L-320	5.52	
G-3	L-108	0.58	
G-3	L-107	0.90	
G-3	L-106	0.05	
G-3	L-105	0.60	
G-3	L-238a	1.15	
G-4	L-238	59.40	
G-5	L-263c	0.14	
Total		104.19	0.21