

BATHYMETRY OF STEVENS CREEK AND NEAL SHOALS RESERVOIRS, SOUTH CAROLINA, 1990
by Whitney J. Stringfield**INTRODUCTION**

Stevens Creek Reservoir and Neal Shoals Reservoir are located in the Piedmont physiographic province of South Carolina (fig. 1). The primary purposes for the reservoirs are hydroelectric power generation and recreational activities. Because there has been no bottom surveys of these reservoirs since they were formed in the early 1900's, there is concern about the decrease in reservoir volumes due to sedimentation. An investigation was begun in 1990 by the U.S. Geological Survey (USGS) in cooperation with the South Carolina Department of Natural Resources, Water Resources Division to provide information on present water depths, on areas of rapid-sediment deposition, and on changes in lake volume. This report documents the bathymetric surveys made of Stevens Creek and Neal Shoals Reservoirs during 1990 and provides contour maps that depict the depth of each reservoir.

DESCRIPTION OF STUDY AREA

The Stevens Creek Reservoir is an impoundment of the Savannah River and is approximately 13 miles long. The dam is located at the confluence of the Savannah River and Stevens Creek, 8.7 miles upstream from Augusta, Ga. It is the fourth in a series of reservoirs that was created on the Savannah River downstream from its origin at the confluence of the Seneca and Tugaloo Rivers. The Stevens Creek Reservoir covers approximately 4,300 acres at full pool (elevation, 1,875 ft above sea level), with usable storage at full pool of approximately 10,500 acre-ft. The drainage area of the Stevens Creek drainage basin at the dam is 7,173 mi². The Stevens Creek project structures include a 2,700-ft-long dam consisting of a 390-ft-long powerhouse section; a 90-ft-wide lock section; a 2,000-ft spillway section with 1,000 ft of 4-ft-high flashboards; and two nonoverflow sections at the abutments.

The reservoir was originally completed in 1914 and is presently (1995) owned by the South Carolina Electric and Gas Company (SCE&G). The primary purposes for the reservoir are hydroelectric power generation and recreational activities.

The Neal Shoals Reservoir is an impoundment of the Broad River and is approximately 10 miles long. The reservoir is located on the Broad River in Union and Chester Counties, S.C., and is the fourth in a series of hydroelectric projects on the Broad River downstream from the North Carolina border. The Neal Shoals Reservoir area is approximately 600 acres at full pool (elevation, 333.9 ft above sea level) with usable storage estimated to be approximately 1,492 acre-ft. At the dam, the drainage area of the Neal Shoals drainage basin is 2,730 mi².

The Neal Shoals project structure consists of a 1,087-ft-long dam and a 141-ft-long powerhouse. The dam is a gravity dam constructed of granite blocks and concrete with 3-ft-high steel flashboards.

The reservoir was originally constructed in 1905 and is presently (1995) owned by the South Carolina Electric and Gas Company (SCE&G). The primary purpose for the reservoir is power generation.

BATHYMETRIC SURVEY

A boat equipped with a digital-recording fathometer and a 200 kilohertz transducer was used to collect water-depth information along selected transects. Sixty-six transects were taken at the Stevens Creek Reservoir, and 34 transects were taken at the Neal Shoals Reservoir. Transect locations and horizontal positions were established from topographic features located on USGS 7.5-minute series topographic maps. Water depths were determined at 30- to 40-ft intervals along each transect. Measured depths were considered accurate to within ±3 percent. Horizontal position was considered accurate to within 50 ft. In upper areas of the reservoirs where ponding and low velocities were not present, the transects were spaced from 1,000 to 2,000 ft apart. In the areas closer to the dams where ponding, low velocities, and sedimentation were present, transects were spaced more closely and channel profiles recorded.

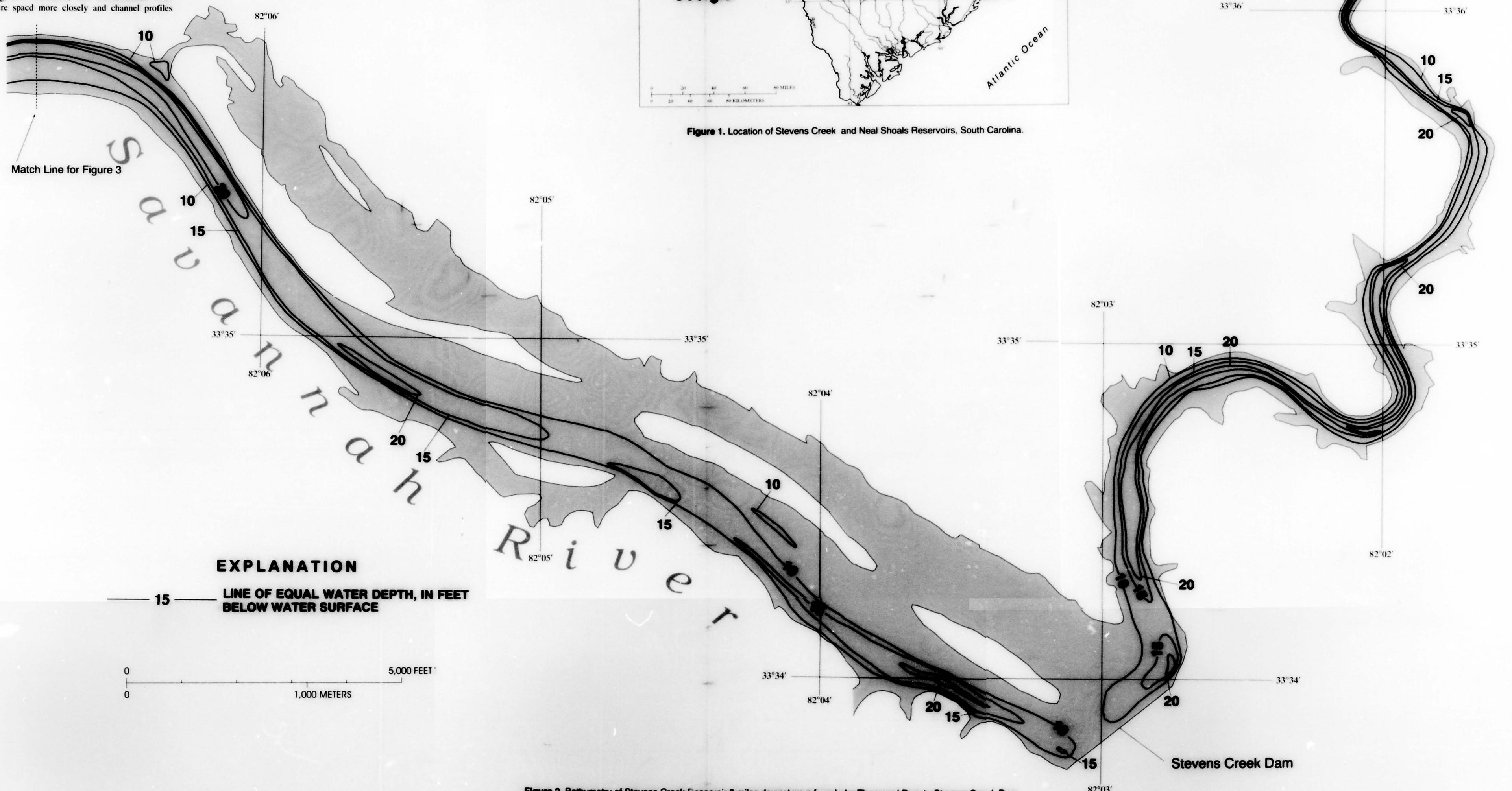


Figure 2. Bathymetry of Stevens Creek Reservoir 8 miles downstream from Lake Thurmond Dam to Stevens Creek Dam.

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