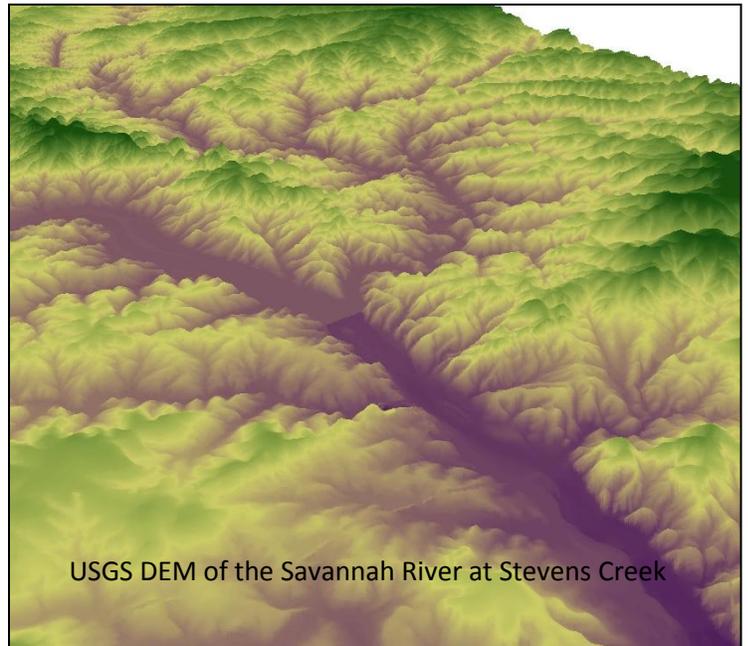


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|--|---|--|-----------------------------------|
| STEVENS CREEK DAM BREAK ANALYSIS PROJECT AUGUSTA, GEORGIA | | YEAR COMPLETED | |
| | | PROFESSIONAL SERVICES 2012-2013 | PROJECT CONSTRUCTION NA |
| PROJECT OWNER Company Name | | | |
| OWNER – POINT OF CONTACT NAME South Carolina Electric & Gas | OWNER – POINT OF CONTACT Mr. Ray Amarelle | OWNER – POINT OF CONTACT TELEPHONE NUMBER (803) 217-7322 | |

Stevens Creek Dam was constructed in 1914. The dam is a 2,600-foot long, concrete-gravity structure that consists of a 29-foot high spillway section and a 19 MW hydroelectric plant. It is located on the Savannah River at its confluence with Stephen’s Creek, upstream of Augusta, Georgia. Stevens Creek Dam is owned and operated by South Carolina Electric and Gas Company (SCE&G).

RIZZO Associates (RIZZO) was retained by SCE&G to determine the peak downstream flood levels in Augusta, Georgia, resulting from a hypothetical failure of the Stephen’s Creek Dam. The purpose was to determine the inflow design flood (IDF) by using an incremental dam breach analysis (IDA). RIZZO utilized the latest U.S. Army Corps of Engineers (USACE) Hydrological Modeling Center River Analysis System (HEC-RAS) 4.1.0. to model the dam breach, and the HEC-GeoRAS 10.1 interface was used with ESRI ARC GIS 10.1 build the HEC-RAS model inputs. RIZZO also conducted a sensitivity study to determine the incremental water surface elevation under different breach width parameters.



The quality of the HES-RAS model results is ultimately dependent on the quality of the input data. To achieve the best results, RIZZO utilized the best available data by creating composite cross-sections utilizing the channel bathymetry from the USACE, and dry-land topography from the U.S. Geological Survey’s (USGS) ten-meter (m) digital elevation model (DEM) from their National Elevation Dataset (NED), which is shown on the image to the right. By creating the composite cross sections, RIZZO provided SCE&G with high-quality dam breach results that minimized the amount of artificial data needed. Furthermore, the HEC-RAS model was based on high spatial resolution data (10 m) so that future inundation mapping may be performed with high accuracy.

The results from these new analyses based on updated data provided SCE&G with the information that the IDF could potentially be reduced from 500,000 cubic feet per second (CFS) to 200,000 CFS based on the FERC criteria for incremental water level rises downstream.

The Stevens Creek project highlights RIZZO experience with the following deliverables:

- Incremental dam breach analysis for sunny-day and peak flood scenarios
- Inflow design flood modification
- Composite cross section development for increased resolution and robust model results
- Sensitivity analysis of incremental water rise resulting from dam breach width scenarios
- Project Management

