USGS
science for a changing world

Prepared in cooperation with the
South Carolina Department of Transportation

Magnitude and Frequency of Rural Floods in the Southeastern United States, 2006: Volume 3, South Carolina

Scientific Investigations Report 2009–5156

U.S. Department of the Interior
U.S. Geological Survey

Cover. **Station 02160200, Enoree River at Taylors, South Carolina, September 8, 2004.** *Photograph by James M. Hall, U.S. Geological Survey.*

Magnitude and Frequency of Rural Floods in the Southeastern United States, 2006: Volume 3, South Carolina

By Toby D. Feaster, Anthony J. Gotvald, and J. Curtis Weaver

Prepared in cooperation with the South Carolina Department of Transportation

Scientific Investigations Report 2009–5156

U.S. Department of the Interior
U.S. Geological Survey

U.S. Department of the Interior
KEN SALAZAR, Secretary

U.S. Geological Survey
Suzette M. Kimball, Acting Director

U.S. Geological Survey, Reston, Virginia: 2009

For more information on the USGS—the Federal source for science about the Earth, its natural and living resources, natural hazards, and the environment, visit http://www.usgs.gov or call 1-888-ASK-USGS

For an overview of USGS information products, including maps, imagery, and publications, visit http://www.usgs.gov/pubprod

To order this and other USGS information products, visit http://store.usgs.gov

Suggested citation:
Feaster, T.D., Gotvald, A.J., and Weaver, J.C., 2009, Magnitude and frequency of rural floods in the Southeastern United States, 2006—Volume 3, South Carolina: U.S. Geological Survey Scientific Investigations Report 2009–5156, 226 p.

Contents

Figures

Tables

Conversion Factors

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
square mile (mi^2)	259.0	hectare (ha)
square mile (mi^2)	2.590	square kilometer (km^2)
	Flow rate	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

$$°C = (°F – 32) / 1.8$$

Vertical coordinate information is referenced to North American Vertical Datum of 1988 (NAVD 88) or National Geodetic Vertical Datum of 1929 (NGVD 29).

Horizontal coordinate information is referenced to North American Datum of 1983 (NAD 83).

Elevation, as used in this report, refers to distance above the vertical datum.

Acronyms and Abbreviations Used in the Report

APS	all possible subsets
AVP	averaged variance of prediction
DEM	digital elevation model
DRG	digital raster graphics
FEMA	Federal Emergency Management Agency
FSC	flood-storage capacity
GDOT	Georgia Department of Transportation
GLS	generalized least squares
GIS	geographic information system
HR1	hydrologic region 1
HR2	hydrologic region 2
HR3	hydrologic region 3
HR4	hydrologic region 4
IACWD	Interagency Advisory Committee on Water Data
LIDAR	Light Detection and Ranging
m	meter
ME	mean error
MID	map identification number
MOVE.1	Maintenance of Variance Extension, Type 1
MSE	mean square error
NCDOT	North Carolina Department of Transportation
NED	National Elevation Dataset
NHD	National Hydrography Dataset
NWIS	National Water Information System
OLS	ordinary least squares
Q	streamflow
QA/QC	quality assurance and quality control
R^2 or r^2	coefficient of determination
RMSE	root mean square error
ROI	region of influence
SC	South Carolina
SCDOT	South Carolina Department of Transportation
SSE	sum of square error
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VIF	variance inflation factor
WLS	weighted least squares

Magnitude and Frequency of Rural Floods in the Southeastern United States, 2006: Volume 3, South Carolina

By Toby D. Feaster, Anthony J. Gotvald, and J. Curtis Weaver

Abstract

A multistate approach was used to update methods for estimating the magnitude and frequency of floods in rural, ungaged basins in South Carolina, Georgia, and North Carolina that are not substantially affected by regulation, tidal fluctuations, or urban development. Annual peak-flow data through September 2006 were analyzed for 943 streamgaging stations having 10 or more years of data on rural streams in South Carolina, Georgia, North Carolina, and adjacent parts of Alabama, Florida, Tennessee, and Virginia. Flood-frequency estimates were computed for the 943 stations by fitting the logarithms of annual peak flows for each station to a Pearson Type III distribution. As part of the computation of flood-frequency estimates for the stations, a new value for the generalized skew coefficient was developed using a Bayesian generalized least-squares regression model. Additionally, basin characteristics for these stations were computed by using a geographical information system and automated computer algorithms.

Exploratory regression analyses using ordinary least-squares regression completed on the initial database of 943 gaged stations resulted in defining five hydrologic regions for South Carolina, Georgia, and North Carolina. Stations with drainage areas less than 1 square mile were removed from the database, and a procedure to examine for basin redundancy (based on drainage area and periods of record) also resulted in the removal of some stations from the regression database.

Regional regression analysis, using generalized least-squares regression, was used to develop a set of predictive equations that can be used to estimate the 50-, 20-, 10-, 4-, 2-, 1-, 0.5-, and 0.2-percent chance exceedance flows for rural, ungaged basins in South Carolina, Georgia, and North Carolina. Flood-frequency estimates and basin characteristics for 828 streamgaging stations were combined to form the final database used in the regional regression analysis. The final predictive equations are all functions of drainage area and percentage of the drainage basin within each hydrologic region. Average errors of prediction for these regression equations range from 34.0 to 47.7 percent.

Peak-flow records at 25 regulated stations were assessed to determine if a flood-frequency analysis was appropriate. Based on those assessments, flood-frequency estimates are provided for three regulated stations. Annual peak-flow data are provided for the regulated stations in an appendix.

Introduction

Reliable estimates of the magnitude and frequency of floods are required for the design of transportation and water-conveyance structures, such as roads, bridges, culverts, dams, and levees. Federal, State, regional, and local officials rely on these estimates to effectively plan and manage land use and water resources, to protect lives and property in flood-prone areas, and to determine flood-insurance rates. Griffis and Stedinger (2007a) showed that estimates of magnitude and frequency of floods using streamgaging (or gaged) stations with a shorter record of annual peak-flow data have higher standard errors or uncertainties when compared to estimates using streamgages with longer annual peak-flow record. Thus, long-term data collection at streamgaging stations is important in the determination of reliable estimates of the magnitude and frequency of floods.

Estimates of the magnitude and frequency of floods are needed at locations where gaged stations monitor streamflow continuously as well as at ungaged sites, where streamflow information is not available for use in determining the estimates. A process known as regionalization—where flood-frequency information determined for a group of gaged stations within a hydrologic region forms the basis of estimates for ungaged sites within that region—is used to estimate the magnitude and frequency of floods for ungaged sites. Historically, these hydrologic regions were determined individually by State, which sometimes led to differences in the hydrologic regions at the State boundaries. These differences cause some discontinuity and confusion about which flood-frequency techniques and results are most appropriate for river basins near or crossing State boundaries. In the current study, conducted in cooperation with the South Carolina, Georgia, and North Carolina Departments of Transportation (SCDOT, GDOT, and NCDOT, respectively) and the North Carolina Floodplain Mapping Program, a multistate approach with hydrologic regions that cross State boundaries is used to provide continuity at the State boundaries.

Purpose and Scope

The purpose of this report is to present methods for estimating the magnitude and frequency of floods on rural streams in South Carolina, Georgia, and North Carolina. For this report, a rural basin was defined as one having no more than 10 percent of the drainage area being considered as impervious during the period of record, not tidally influenced, and not significantly regulated at medium to high flows. The data in this report are based on flood-frequency analyses of annual peak-flow data through September 2006 at streamgaging stations. The report (1) includes regional equations for estimating the magnitude and frequency of peak flows on rural, ungaged streams in South Carolina, Georgia, and North Carolina that are not significantly affected by regulation; (2) presents estimates of the magnitude of floods at the 50-, 20-, 10-, 4-, 2-, 1-, 0.5-, and 0.2-percent chance exceedance levels for 65 streamgaging stations in South Carolina; (3) describes techniques used to develop regression equations for use in estimating the magnitude of floods for ungaged sites in South Carolina, Georgia, and North Carolina; (4) describes the accuracy and limitations of the equations; and (5) presents example applications of the methods.

In addition to the flood-frequency analysis of rural, gaged stations, the report presents envelope curves developed from maximum flood data for stations included in this investigation. The curves provide a tool to help users assess the maximum flood that might be anticipated to occur in those regions for a given drainage area size and to evaluate the reasonableness of a given flood-frequency estimate. Also, gaging stations on regulated streams are assessed and if determined to be appropriate, flood-frequency estimates are provided.

This report focuses on the gaged stations in South Carolina that were evaluated during the study. Two additional volumes present similar information for the gaged stations in Georgia (volume 1, Gotvald and others, 2009) and North Carolina (volume 2, Weaver and others, in press) that were evaluated in the study. Many of the descriptions for standard definitions, processing methods, and analytical techniques described in this report were originally presented in Ries and Dillow (2006), Feaster and Tasker (2002), and Pope and others (2001).

Previous Studies

In 1960, the U.S. Department of Commerce, Bureau of Public Roads, published a multistate approach for estimating the magnitude and frequency of floods in the Piedmont Plateau (Potter, 1960). The Piedmont Plateau extends from New Jersey to Alabama and encompasses portions of nine States. The study provided graphical methods for estimating the 10-, 25-, 50-, and 200-year recurrence-interval flows. The estimating procedure was based on an analysis of 55 streamflow records with drainage areas ranging from 0.03 to 762 square miles (mi^2). The study highlighted the similarities of the runoff characteristics in the region and found the differences were largely due to variations in drainage area size and precipitation intensity.

Speer and Gamble (1964) documented the earliest U.S. Geological Survey (USGS) investigation of flood frequency for streams in South Carolina. They presented methods for estimating the magnitude of floods for selected recurrence intervals for rural streams in the South Atlantic slope basin, which extends from the James River in Virginia to the Savannah River along the South Carolina-Georgia State boundary. Methods by Dalrymple (1960) were used for the statistical and hydrological analyses.

Whetstone (1982a) used data from 74 streamgaging stations collected through water year[1] 1975 to estimate the magnitude and frequency of floods on streams in South Carolina. Flood records for 25 gaged stations were synthesized using rainfall-runoff models. Those data were combined with long-term measured data at 49 additional gaged stations. The streamgaging flood-frequency analyses (log-Pearson Type III) were completed in accordance with recommendations by the U.S. Water Resources Council (1967), which later became known as the Interagency Advisory Committee on Water Data (IACWD), Hydrology Subcommittee (1982). Generalized skew coefficients from Hardison (1974) were used in the log-Pearson Type III analysis. The generalized skew coefficients ranged from 0.1 in the Blue Ridge and Piedmont to 0.5 in the lower Coastal Plain.

Whetstone (1982b) used multiple regression analyses to define the relation between basin characteristics and flows having recurrence intervals of 2, 5, 10, 25, 50, and 100 years for unregulated, rural streams with drainage areas greater than 1.0 mi^2. Sauer and others (1983) used data from 269 gaged basins in 56 cities in 31 states to develop flood-frequency relations for urban watersheds in the United States. Guimaraes and Bohman (1991) used generalized least squares (GLS) regression methods to define the relation of magnitude and frequency of flows to various basin characteristics on ungaged, rural streams that were not significantly affected by regulation.

Bohman (1992) described methods for determining peak-flow frequency relations, flood hydrographs, average basin lag times, and runoff volumes associated with a given peak flow for ungaged, urban basins by using data from 34 streamgaging stations in 15 cities in South Carolina, Georgia, and North Carolina. A rainfall-runoff model was calibrated for 23 urban drainage basins in South Carolina. The model was then used to synthesize from 50 to 70 annual peaks, depending on the

[1] The water year is the annual period from October 1 through September 30 and is designated by the year in which the period ends. For example, the 2006 water year is from October 1, 2005, through September 30, 2006.

length of the long-term rainfall data from nearby National Weather Service stations. The logarithms of these peaks were fitted to a Pearson Type III distribution to determine the frequency of peak flows having recurrence intervals of 2, 5, 10, 25, 50, 100, and 500 years at each gaged station. The final step in analyzing these data was to develop regression equations that could be used to predict the magnitude and frequency of floods at ungaged, urban sites in South Carolina. Detailed descriptions of the rainfall-runoff model calibration, the long-term simulation, and the regression analyses are provided in Bohman (1992).

Feaster and Tasker (2002) used GLS regression to develop a set of predictive equations that can be used to estimate flows at the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year recurrence intervals for rural, ungaged basins in the Blue Ridge, Piedmont, and upper and lower Coastal Plain Physiographic Provinces of South Carolina. In addition, a region-of-influence (ROI) method was developed to interactively estimate the recurrence-interval flows for rural, ungaged basins. The predictive abilities of the regional regression equations were compared with the ROI methods for each physiographic province in South Carolina. The ROI method systematically performed better only in the Blue Ridge Province, which limited its usefulness to that province only.

Feaster and Guimaraes (2004) used GLS regression to define the relation of magnitude and frequency of floods on small, unregulated, urban streams in or near South Carolina. Predictive equations were developed to estimate flows at the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year recurrence intervals for small, urban streams in the Piedmont, upper Coastal Plain, and lower Coastal Plain of South Carolina. Measured peak flows were compared with simulated peak flows from a rainfall-runoff model that was developed in an earlier investigation. The results indicated statistically significant differences in the variances and means at a number of the urban, gaged stations included in both investigations and, therefore, only measured data were included in the flood-frequency analyses.

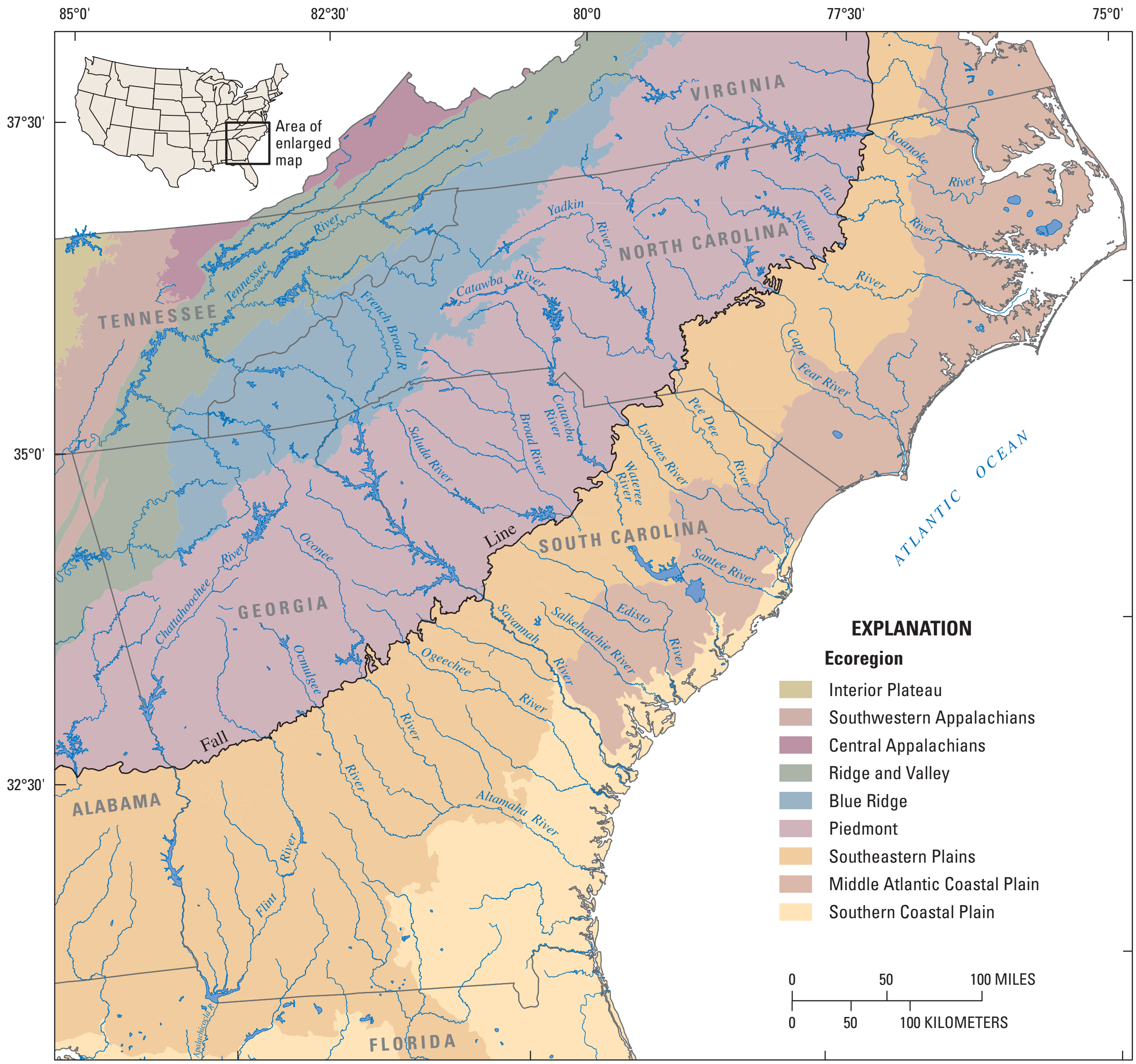
Description of Study Area

The study area includes all of South Carolina, Georgia, and North Carolina, covering an area of about 142,500 mi^2 within seven U.S. Environmental Protection Agency (USEPA) level III ecoregions—Southwestern Appalachians, Blue Ridge, Ridge and Valley, Piedmont, Southeastern Plains, Southern Coastal Plain, and Middle Atlantic Coastal Plain (fig. 1; U.S. Environmental Protection Agency, 2007). The ecoregions represent areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. The ecoregions provide a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. The ecoregions were determined from an analysis of the spatial patterns and the composition of biotic and abiotic phenomena that include geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology (Griffith and others, 2002). The Fall Line separates the higher elevation Southwestern Appalachians, Blue Ridge, Ridge and Valley, and Piedmont ecoregions from the low lying Southeastern Plains, Southern Coastal Plain, and Middle Atlantic Coastal Plain ecoregions.

The Southwestern Appalachians ecoregion is composed of open, low mountains. The eastern boundary of this ecoregion, along the more abrupt escarpment where it meets the Ridge and Valley ecoregion, is relatively smooth and only slightly notched by small, eastward-flowing streams. The Ridge and Valley is composed of roughly parallel ridges and valleys that have a variety of widths, heights, and geologic materials. Springs and caves are relatively numerous, and present-day forests cover about 50 percent of the ecoregion. The Blue Ridge ecoregion varies from narrow ridges to hilly plateaus to more massive mountainous areas. The mostly forested slopes; high-gradient, cool, clear streams; and rugged terrain overlie primarily metamorphic rocks, with minor areas of igneous and sedimentary geology. The Piedmont ecoregion is composed of a transitional area between the mostly mountainous ecoregions of the Appalachians to the northwest and the relatively flat Coastal Plain to the southeast. It is a complex mosaic of metamorphic and igneous rocks of Precambrian and Paleozoic age, with moderately dissected irregular plains and some hills. The soils tend to be finer textured than in coastal plain regions to the south. Once largely cultivated, much of this ecoregion has reverted to pine and hardwood woodlands, with increasing conversion to urban and suburban land cover (Omernik, 1987).

The Southeastern Plains ecoregion is composed of irregular plains made up of a mixture of cropland, pasture, woodland, and forest. The sands, silts, and clays of this ecoregion contrast geologically with the older rocks of the Piedmont ecoregion. Elevations and relief are greater than in the Southern Coastal Plain, but generally are less than in much of the Piedmont. Streams in this area have relatively low gradient and sandy bottoms. The Southern Coastal Plain ecoregion consists of mostly flat plains, but it is a heterogeneous ecoregion containing barrier islands, coastal lagoons, marshes, and swampy lowlands along the Gulf and Atlantic coasts. This ecoregion is lower in elevation with less relief and wetter soils than the Southeastern Plains ecoregion. The Middle Atlantic Coastal Plain ecoregion consists of low-elevation flat plains, with many swamps, marshes, and estuaries. The ecoregion's low terraces, marshes, dunes, barrier islands, and beaches are underlain by unconsolidated sediments. Poorly drained soils are common, and the ecoregion has a mix of coarse and finer textured soils compared to the mostly coarse soils in the majority of the Southeastern Plains ecoregion. The Middle Atlantic Coastal Plain ecoregion typically is lower, flatter, and more poorly drained than the Southern Coastal Plain ecoregion (Omernik, 1987).

The average annual precipitation in the study area ranges between 40 to 60 inches per year with the exception of the southern portion of the Blue Ridge ecoregion, which receives up to 80 inches of precipitation per year (U.S. Geological



Base modified from U.S. Geological Survey 1:100,000-scale digital data
Ecoregions from U.S. Environmental Protection Agency 1:7,500,000-scale digital data (2002; revised Omernik, 1987)

Figure 1. Study area and ecoregions in South Carolina, Georgia, North Carolina, and surrounding States.

Survey, 2008). Precipitation in the study area typically is associated with the movement of warm and cold fronts from November through April and isolated summer thunderstorms from May through October. Occasionally, tropical storms or hurricanes along the Atlantic and Gulf coasts produce unusually heavy amounts of rainfall throughout the study area. The mean annual air temperature ranges from 55 degrees Fahrenheit (ºF) in northern North Carolina to 68 ºF in southern Georgia (National Oceanic and Atmospheric Administration, 2008).

For South Carolina, the boundaries of the Blue Ridge and Piedmont level III ecoregions are approximately the same as the boundaries of the Blue Ridge and Piedmont Physiographic Provinces as defined in Feaster and Tasker (2002). The Sand Hills level IV ecoregion, located in the northern part of the Southeastern Plains level III ecoregion, is the upper part of what Feaster and Tasker (2002) referred to as the upper Coastal Plain Physiographic Province. The upper boundaries of both the Sand Hills ecoregion and the upper Coastal Plain Physiographic Province coincide with the Fall Line. Parts of the Sand Hills ecoregion, however, do not extend as far south as the upper Coastal Plain Province. Bloxham (1976) noted that the lower boundary of the upper Coastal Plain Physiographic Province, which at that time was called the Inner Coastal Plain, generally coincided with the Citronelle Escarpment (Doering, 1960), which marks the innermost sea-cut terraces of the Coastal Plain Province. The lower Coastal Plain Physiographic Province as defined by Feaster and Tasker (2002) begins in the southern part of the Southeastern Plains level III ecoregion and extends to the coast thus also encompassing the Middle Atlantic Coastal Plain and Southern Coastal Plain level III ecoregions.

Acknowledgments

The authors gratefully acknowledge the leadership and guidance provided by Larry R. Bohman, the Surface-Water Specialist of the USGS Eastern Region, South. Mr. Bohman often took the lead in coordinating meetings among the three USGS Water Science Centers involved in this investigation, served as liaison with the USGS Office of Surface Water, and provided valuable technical guidance throughout the entire investigation. Additionally, the authors acknowledge the valuable guidance and assistance in flood-frequency estimation and statistical regionalization procedures provided by Dr. Timothy A. Cohn of the USGS Office of Surface Water. We also acknowledge the participation of Dr. Jery R. Stedinger and Andrea Gruber of Cornell University in Ithaca, New York, for their substantial contributions in developing the generalized skew coefficient for the study area.

The peak-flow data used in the analyses described in this report were collected throughout South Carolina, Georgia, and North Carolina, and adjoining States at streamgaging stations operated in cooperation with a variety of Federal, State, and local agencies. The authors also acknowledge the dedicated work of the USGS field-office staff in collecting, processing, and storing the peak-flow data necessary for the completion of this investigation. In South Carolina, the authors acknowledge the support and encouragement of Wayne Corley and Michael R. Sanders of the South Carolina Department of Transportation.

Data Compilation

The first step in the regionalization of flood-frequency estimates for rural streams is the compilation of a list of all rural, gaged stations with 10 or more years of annual peak-flow record. It is important that the peak-flow data are reviewed for quality assurance and quality control (QA/QC) as well as for homogeneity or absence of trends, which implies relatively constant watershed and climatic conditions during the period of record. Once peak-flow records are compiled and reviewed, then basin characteristics need to be determined for each of the gaged stations.

Peak-Flow Data

The annual peak-flow data for this investigation were collected either at continuous-record stations or crest-stage, partial-record stations, hereafter referred to as crest-stage stations. At continuous-record stations, the water-surface elevation, or stage, of the stream is recorded at fixed intervals, typically 15 minutes. At crest-stage stations, only the crest, or highest, stage that occurs between site visits is recorded. Regardless of the type of gage, measurements of flow are determined throughout the range of recorded stages, and a relation between stage and flow is developed for the gaged station. Using this stage-flow relation, or rating, flows for all recorded stages are determined. The highest peak flow that occurs during a given year is the annual peak flow for the year, and the list of annual peak flows is the annual peak-flow record. The peak-flow records for gaged stations are available from the USGS National Water Information System (NWIS) database at http://nwis.waterdata.usgs.gov/usa/nwis/peak. In addition, the peak flows for the South Carolina stations included in this investigation can be found in appendix A.

Gaged stations in South Carolina, Georgia, and North Carolina as well as adjacent parts of Alabama, Florida, Tennessee, and Virginia were investigated for possible use in the current study. Stations were only used in the analysis if 10 or more years of annual peak-flow data were available and if peak flows at the stations were not affected substantially by dam regulation, flood-retarding reservoirs, tides, or urbanization. The peak-flow record for rural, gaged stations that meet these criteria were then compiled and reviewed for QA/QC by using computer programs that were developed with commercial statistical software. Details on these computer programs are available in Feaster and Tasker (2002). The Kendall's tau statistic was chosen to assess the significance of trends for each station (Helsel and Hirsch, 1992). If it was determined that a station record was not homogeneous, the entire record for that station was not considered. However, if a substantial portion of the record was found to be homogeneous, only the homogeneous portion of the record was considered for the current study. The QA/QC analysis resulted in the selection of 943 gaged stations that were considered for use in the current study (fig. 2, p. 49; table 1, p. 55). The 943 gaged stations comprise 82 in South Carolina, 357 stations in Georgia, 333 in North Carolina, 35 in Alabama, 23 in Florida, 41 in Tennessee, and 72 in Virginia.

Physical and Climatic Basin Characteristics

Peak-flow information can be estimated at ungaged sites through multiple regression analysis that relates streamflow characteristics (such as the 1-percent chance exceedance flow, which is also often referred to as the 100-year recurrence-interval flow) to selected physical and climatic basin characteristics for gaged drainage basins. Drainage-basin boundaries are needed for each station before the basin characteristics can be determined. Drainage-basin boundaries for the current study were generated by using two different geographical information system (GIS) methods. In Georgia, basin boundaries for gaged stations were generated from National Elevation Dataset (NED) digital elevation models (DEMs) at 30-meter (m) horizontal resolution (or 10-m when available; U.S. Geological Survey, 1999a). In North Carolina, basin boundaries were generated by using a Light Detection and Ranging (LIDAR)-derived DEM, with 3-m horizontal resolution, available through the North Carolina Floodplain Mapping Program (2003). To improve boundary delineations, processing was done to make the DEM conform to stream locations defined in the high-resolution National Hydrography Dataset (NHD; U.S. Geological Survey, 1999b). In South Carolina, basin boundaries were delineated by using topographic contours from 1:24,000-scale digital raster graphics (DRGs).

Basin characteristics were selected for use as potential explanatory variables in the regression analyses on the basis of the conceptual relation to flood flows and the ability to measure the basin characteristics using digital datasets and GIS technology. Twenty basin characteristics for each of the 943 rural, gaged stations were determined and considered for the current study. Those determined were drainage area, main channel length, basin perimeter, main channel slope, mean basin slope, basin shape factor, mean basin elevation, maximum basin elevation, minimum basin elevation, percentage of basin that is impervious, percentage of basin that is forested, mean annual precipitation, maximum 24-hour precipitation with recurrence intervals of 2, 10, 25, 50, and 100 years, soil drainage index, hydrologic soil index, and drainage density. The names, unit of measures, method of measurements, and source data for the measured basin characteristic that were considered for use in the current study are listed in table 2.

The drainage areas computed using the GIS methods were compared to the previously published drainage areas for the gaged stations as a means of quality assurance. The measured and published drainage areas agreed closely for most gaged stations in South Carolina with only two stations having differences greater than 5 percent. In most of those cases, the published drainage areas were determined from

Table 2. Basin characteristics considered for use in the regional regression analysis.–

[DEM, digital elevation model; DRG, digital raster graphic; USGS, U.S. Geological Survey; NED, National Elevation Dataset; m, meter; LIDAR, Light Detection and Ranging; %, percent; STATSGO, State Soil Geographic]

Name	Units	Method	Source data
Drainage area	Square miles	For Georgia, North Carolina, Alabama, Tennessee, and Florida stations: Area within the watershed boundary, which is represented as a polygon of cells that flow to the streamgage location based on the primary down-slope flow direction of the DEM For South Carolina and Virginia stations: Area within the watershed boundary, which is digitized on screen using the 1:24,000-scale DRG contours	For Georgia, Alabama, Tennessee, and Florida stations: USGS NED DEM at 10- and 30-m resolution (http://ned.usgs.gov), conditioned to conform with National Hydrography Dataset streams, 1:24,000 scale (http://nhd.usgs.gov/) For South Carolina and Virginia stations: USGS DRG, 1:24,000-scale (http://topomaps.usgs.gov/drg/) For North Carolina stations: LIDAR-derived DEM at 3-m resolution (http://ncfloodmaps.com/lidar.htm)
Main channel length	Miles	Length of the longest flow path in a drainage area based on steepest descent as defined by the flow direction grid	DEM data used to create the watershed boundaries as defined in the drainage area source data section of this table
Basin perimeter	Miles	Length of watershed boundary perimeter	Watershed boundaries as defined in the drainage area method section of this table
Main channel slope	Feet per mile	Difference in the DEM elevation at points corresponding to 10% and 85% of the main channel divided by the main channel length between those two points	DEM data used to create the watershed boundaries as defined in the drainage area source data section of this table Main channel length as defined above in the main channel length method section of this table
Mean basin slope	Percent	Mean of the DEM percent slope grid values within the watershed boundary	DEM data used to create the watershed boundaries as defined in the drainage area source data section of this table

Table 2. Basin characteristics considered for use in the regional regression analysis.—Continued

[DEM, digital elevation model; DRG, digital raster graphic; USGS, U.S. Geological Survey; NED, National Elevation Dataset; m, meter; LIDAR, Light Detection and Ranging; %, percent; STATSGO, State Soil Geographic]

Name	Units	Method	Source data
Basin shape factor	Dimensionless	Main channel length squared divided by drainage area	Drainage area as defined in the drainage area method section of this table Main channel length as defined in the main channel length method section of this table
Mean basin elevation	Feet	Area-weighted average	DEM data used to create the watershed boundaries as defined in the drainage area source data section of this table
Maximum basin elevation	Feet	Maximum elevation value of the DEM within the watershed boundary	DEM data used to create the watershed boundaries as defined in the drainage area source data section of this table
Minimum basin elevation	Feet	Minimum elevation value of the DEM within the watershed boundary	DEM data used to create the watershed boundaries as defined in the drainage area source data section of this table
Percent impervious	Percent	(Impervious surface area/drainage area)*100	National Land-Cover Dataset 2001 Impervious Surface, 30-m resolution (http://www.mrlc.gov/nlcd.php)
Percent forested	Percent	(Forested area/drainage area)*100	National Land-Cover Dataset 2001, 30-m resolution (http://www.mrlc.gov/nlcd.php)
Mean annual precipitation	Inches	Area-weighted average	PRISM (http://prism.oregonstate.edu)
24 hour, 2-, 10-, 25-, 50-, and 100-year maximum precipitation	Inches	Area-weighted average	For Georgia, Alabama, and Florida stations: Derived from Hershfield (1961) For North Carolina, South Carolina, Tennessee, and Virginia stations: National Oceanic and Atmospheric Administration Atlas 14, Volume 2 (http://hdsc.nws.noaa.gov/hdsc/pfds/index.html
Soil drainage index	Dimensionless	Area-weighted average	STATSGO data (http://www.ncgc.nrcs.usda.gov/products/datasets/statsgo/)
Hydrologic soil index	Dimensionless	Area-weighted average	STATSGO data (http://www.ncgc.nrcs.usda.gov/products/datasets/statsgo/)
Drainage density	Miles per square mile	Total length of all streams divided by drainage area	National Hydrography Dataset, 1:24,000 scale (http://nhd.usgs.gov)

older topographic maps with 10-foot (ft) contour intervals. Boundaries determined by the two methods were compared, and those computed using GIS were considered superior in accuracy to manual delineations, so the gaged stations with differences greater than 5 percent were revised using the GIS-measured values.

Estimation of Flood Magnitude and Frequency at Gaged Stations

A frequency analysis of water-year peak-flow data at a gaged station provides an estimate of the flood magnitude and frequency at that specific site. Flood-frequency flows in previous USGS reports were expressed as T-year floods based on the *recurrence interval* for that flood quantile (for example, the “100-year flood”). Some individuals in the water-resources science community now discourage the use of recurrence-interval terminology because it sometimes causes confusion in the general public. The term is sometimes interpreted to imply that there is a set time interval between floods of a particular magnitude, when in fact floods are random processes that are best understood using probabilistic terms. Misunderstandings with the T-year recurrence-interval terminology primarily have to do with the number of times that a peak flow of certain magnitude could occur (and has been equaled or exceeded) during the T-year period. While the T-year recurrence-interval flood is statistically expected to occur, *on average*, once during the T-year period, it may occur multiple times during the period or not at all. For example, historical streamflow records in South Carolina show that within a 3-year period during the late 1920s, the Broad River (station 02161500) experienced two major floods that both exceeded the current 100-year flood flow. In the nearly 80 years following those major floods, however, the largest measured peak flow had a recurrence interval of between 25 and 50 years.

In an attempt to clarify the issue of flood recurrence, the terminology associated with flood-frequency characterization is undergoing a transition away from referring to flood probabilities in terms of the *T-year recurrence-interval flood* and instead referring to the *P-percent chance exceedance flow* (or flood). The use of percent chance exceedance flow is now recommended because it conveys the probability, or odds, of a flood of a given magnitude being equaled or exceeded in any given year. For example, a 1-percent chance exceedance flow (formerly referred to as the “100-year flood”) corresponds to the flow magnitude that has a probability of 0.01 of being equaled or exceeded in any given year (table 3). That is, a flow with an exceedance probability of 0.01 has a 1 percent chance of being equaled or exceeded in any given year. Recurrence interval and exceedance probability are the mathematical inverses of one another; therefore, a flood with an exceedance probability of 0.01 (1-percent chance exceedance) has a recurrence interval of 1/0.01 or 100 years. Thus, the P-percent chance exceedance is computed as the inverse of the T-year recurrence interval multiplied by 100. For example, a 100-year recurrence interval is equivalent to a 1-percent chance exceedance (1/100-year recurrence interval x 100 = 1-percent chance exceedance), and a 25-year recurrence interval is equivalent to a 4-percent chance exceedance (1/25-year recurrence interval x 100 = 4-percent chance exceedance).

Table 3. T-year recurrence interval with corresponding annual exceedance probability and P-percent chance exceedance for flood-frequency flow estimates.

T-year recurrence interval	Annual exceedance probability	P-percent chance exceedance
2	0.5	50
5	0.2	20
10	0.10	10
25	0.04	4
50	0.02	2
100	0.01	1
200	0.005	0.5
500	0.002	0.2

Flood Frequency

Flood-frequency estimates for gaged stations are computed by fitting the series of annual peak flows to some known statistical distribution. Flood-frequency estimates for the current study were computed by fitting logarithms (base 10) of the annual peak flows to a Pearson Type III distribution. This follows the guidelines and computational methods described in Bulletin 17B of the Hydrology Subcommittee of the Interagency Advisory Committee on Water Data (1982). Fitting the distribution to a series of annual peak flows requires calculating the mean, standard deviation, and skew coefficient of the logarithms of the annual peak flows. Estimates of the P-percent chance exceedance flows are computed by using the following equation:

$$\log Q_P = \overline{X} + KS, \tag{1}$$

where

Q_P is the P-percent chance exceedance flow, in cubic feet per second;

$\overline{X}$ is the mean of the logarithms of the annual peak flows;

K is a factor based on the skew coefficient and the given percent chance exceedance, which can be obtained from appendix 3 in Bulletin 17B; and

S is the standard deviation of the logarithms of the annual peak flows, which is a measure of the degree of variation of the annual values about the mean value.

A series of annual peak flows at a station may include outliers, or annual peak flows that are substantially lower or higher than other peak flows in the series. The station record also may include information about peak flows that occurred outside of the period of regularly collected, or systematic, record. These peak flows are known as historic peaks and are often the peak flows known to have occurred during an extended period of time, longer than the period of collected record. Bulletin 17B (Interagency Advisory Committee on Water Data , 1982) provides guidelines for detecting and interpreting outliers and historic data points and provides computational methods for making appropriate corrections to the distribution to account for the presence of such outliers. In some cases, outliers may be excluded from the record; as a result, the number of systematic peaks may not be equal to the number of years in the period of record.

In terms of annual peak flows, the period of collected record can be thought of as a sample, or small portion, of the entire record, or population. Statistical measures, such as mean, standard deviation, or skew coefficient, can be described in terms of the sample or computed measure and the population or true measure. Statistical measures computed from the sample record are estimates of what the measure would be if the entire population were known and used to compute the given measure. The accuracy of these estimates depends on the specific statistic and the given sample of the population.

The USGS computer program PEAKFQWin version 5.2.0 was used to compute the flood-frequency estimates for the 943 streamgaging stations considered for the current study. PEAKFQWin automates many of the analysis procedures recommended in Bulletin 17B (Interagency Advisory Committee on Water Data, 1982), including identifying and adjusting for outliers and historical periods, weighting of station skews with a generalized skew, and fitting a log-Pearson Type III distribution to the annual peak-flow data. The PEAKFQWin program and associated documentation can be downloaded from the Internet at http://water.usgs.gov/software/peakfq.html. The station skew coefficients were weighted with a new generalized skew coefficient developed for the current study. Station skew coefficients and the generalized skew coefficient used for the current study are explained in the following sections. The final flood-frequency estimates from the Bulletin 17B analysis for the 82 rural, gaged stations in South Carolina are given in table 4 (p. 74).

Skew Coefficient

The skew coefficient measures the asymmetry of the probability distribution of a set of annual peak flows. The skew coefficient is zero when the mean of the annual series equals the median (defined as the 50th percentile value in a sample) and the mode (defined as the most common value in a sample), positive when the mode and median are less than the mean, and negative when the median and mode exceed the mean (fig. 3). The skew coefficient is strongly influenced by the presence of outliers. Large positive skews typically are the result of high outliers, and large negative skews typically are the result of low outliers. The station skew coefficient, calculated using the annual peak-flow record for a gaged station, is sensitive to extreme events; therefore, the station skew coefficient for short records may not provide an accurate estimate of the population or true skew coefficient. Bulletin 17B (Interagency Advisory Committee on Water Data, 1982) recommends using a weighted average of the station skew coefficient with a generalized or regional skew coefficient. The generalized skew coefficient is the skew coefficient associated with a defined region and is calculated by using the station skew coefficients for stations with longer annual peak-flow record within the region. The weighted skew coefficient for a given station is computed as the weighted average of the generalized skew coefficient and the station skew coefficient, with weights assigned according to the mean square error of each component skew value. Flood-frequency estimates for all stations with unregulated flow records were computed by using the weighted skew method.

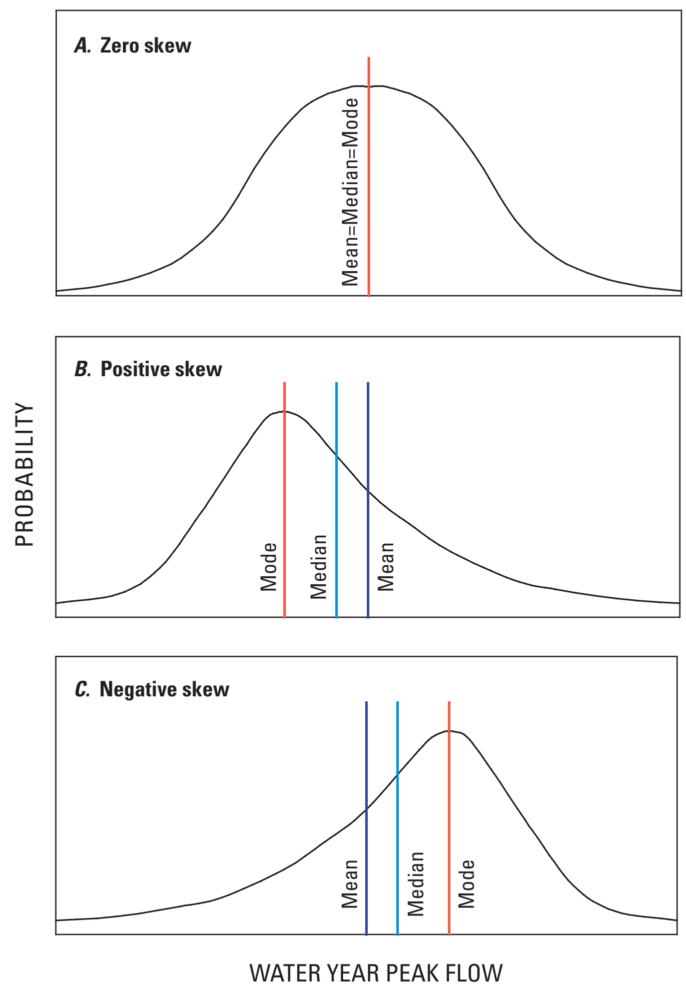


Figure 3. Examples of distributions with *(A)* zero skew, *(B)* positive skew, and *(C)* negative skew (modified from Feaster and Tasker, 2002).

Generalized Skew Analysis

During the development of flood-frequency techniques in the late 1970s and early 1980s, a nationwide generalized skew study was conducted and documented in Bulletin 17B (Interagency Advisory Committee on Water Data, 1982). Station skew coefficients for long-term gaged stations throughout the Nation were computed and used to produce a map of isolines of generalized skew; however, the map was prepared at a national scale using data and methods that are now more than 30 years old. In order to generate more accurate generalized skew coefficients, three methods are described in Bulletin 17B (Interagency Advisory Committee on Water Data, 1982) for developing generalized skews using skew coefficients computed from gaged stations with long-term peak-flow record (25 or more years of record): (1) plot station skew coefficients on a map and construct skew isolines, (2) use regression techniques to develop a skew prediction equation relating station skew coefficients to some set of basin characteristics, or (3) use the arithmetic mean of station skew coefficients from long-term gaged stations in the area.

A generalized skew coefficient analysis using methods 1 and 2 was performed as part of this investigation (appendix B). The initial dataset for the generalized skew coefficient analysis included 489 gaged stations with 25 or more years of annual peak-flow record located in the study area. The station skew coefficients for these 489 gaged stations were plotted at the centroid of the watershed for each station in order to develop a skew isoline map. The map was then reviewed to determine if any geographic or topographic trends were visually apparent. No clearly definable patterns were found, so regression techniques were then used to develop a skew prediction equation using station skew as the response variable. A Bayesian GLS regression model was used for the generalized skew coefficient regression analysis as suggested by Reis and others (2005) and Gruber and others (2007), both of which made use of the methods proposed by Martins and Stedinger (2002). The current study also uses the methods from Martins and Stedinger (2002) except that the current study used the distance between basin centroids instead of the distance between gaging stations.

Annual peak flows of basins are cross correlated because a single large storm may cause the annual peak in several nearby basins. One advantage of GLS is that it takes this cross correlation among the basins into account. The GLS statistical analysis depends on the estimated cross correlations of the peak flows at different pairs of stations. The cross correlation generally is estimated as a function of distances between gaging stations, or in the case of the current study, distances between centroids of the gaged basins.

If the watersheds of two stations are nested so that one is contained within another, then the cross correlation between the concurrent peak flows would be larger than if the basins were not nested. This leads to errors in the estimation of cross correlations for non-nested basins, which leads to incorrect model errors. A screening metric was developed to determine the redundant station pairs that represent the same watershed. Details on the screening metrics used are found in appendix B of this report.

After applying the screening metric on all 489 stations, a total of 92 stations were removed from the generalized skew coefficient regression analysis because of redundancy. An additional 55 stations were removed because of censored peak-flow data, which are peak flows that are less than the minimum recordable peak flow at a station. A total of 342 stations was used for the final Bayesian GLS regression analysis of skew. A map of the 342 stations can be found in appendix B.

Based on the Bayesian GLS regression analysis, a constant generalized skew value of –0.019 was determined to be the most reasonable approach to predicting the generalized skew in the study area. More complicated Bayesian GLS models with additional explanatory variables were evaluated but resulted in very modest improvements in accuracy. A detailed description of the accuracy of these models is available in appendix B. The modest improvements in the more complicated models were not justified because of the increased complexity associated with the addition of explanatory variables. The mean square error (MSE) associated with the constant generalized skew model is 0.143. This MSE is equivalent to 39 years of record length. This is a substantial improvement over the Bulletin 17B skew map MSE value of 0.302, which is equivalent to 17 years of record. The generalized skew value of –0.019 with an associated MSE of 0.143 was used to compute the flood-frequency estimates for the 943 gaged stations according to methods recommended in Bulletin 17B (Interagency Advisory Committee on Water Data, 1982).

Estimation of Flood Magnitude and Frequency at Ungaged Sites

A regional regression analysis was used to develop a set of equations for use in estimating the magnitude and frequency of floods for rural, ungaged sites in South Carolina, Georgia, and North Carolina. These equations relate the 50-, 20-, 10-, 4-, 2-, 1-, 0.5-, and 0.2-percent chance exceedance flows computed from available records for gaged stations to measured physical and climatic basin characteristics of the drainage basins for the gaged stations. All 943 rural, gaged stations used in the flood-frequency analysis at streamgaging stations were considered for use in the regional regression analysis (fig. 2, p. 49; table 1, p. 55).

Regression Analysis

Ordinary least-squares (OLS) regression techniques were used in the exploratory analysis to determine the best regression models for all combinations of basin characteristics and the development of hydrologic regions that define the study area. In OLS regression, linear relations between the explanatory (basin characteristics) and response variables (P-percent chance exceedance flows) are necessary; thus, sometimes variables must be transformed in order to create linear relations. For example, the relation between arithmetic values of basin drainage area and P-percent chance exceedance flow is typically curvilinear. However, the relation between the logarithms of basin drainage area and the logarithms of P-percent chance exceedance flow is normally linear. Homoscedasticity (a constant variance in the response variable over the range of the explanatory variables) about the regression line and normality of the residuals also are requirements for OLS regression. Transformation of the P-percent chance exceedance flow and some of the explanatory variables to logarithms sometimes enhances the homoscedasticity of the data about the regression line. Homoscedasticity and normality of residuals were examined in residual plots.

Selection of the explanatory variables for each hydrologic region was based on all-possible-subsets (APS) regression methods (Neter and others, 1985). The final explanatory variables for each hydrologic region were selected on the basis of several factors, including standard error of the estimate, Mallow's *Cp* statistic, statistical significance of the explanatory variables, coefficient of determination (r^2), and ease of measurement of explanatory variables. Multicollinearity, a situation in which two or more explanatory variables in a multiple regression model are highly correlated, in the candidate exploratory variables also was assessed by the variance inflation factor (VIF) and the correlation between explanatory variables.

Generalized least-squares regression methods, as described by Stedinger and Tasker (1985), were used to determine the final regional P-percent chance exceedance flow regression equations, using the USGS computer program GLSNET (Tasker and Stedinger, 1989; G.D. Tasker, K.M. Flynn, A.M. Lumb, and W.O. Thomas, Jr., U.S. Geological Survey, written commun., 1995). In order to remove the redundancy associated with gaged stations that represent the same watershed for the regional GLS regression analysis, two stations on the same stream where the percentage change in drainage area from one station to the second was within 50 percent were flagged as redundant pair stations. If the peak-flow record of the station with the shorter period of record from the redundant pair was within the period of record of the station with the longer peak-flow record, the station with the shorter peak-flow record was omitted from the analysis. However, if the peak-flow record of the station with the shorter record was outside of the period of record of the longer record station, then both stations were included in the analysis. Finally, if only a portion of the period of record for both stations had a substantial overlap (10 or more years), then the record for the station with the longer period of record was extended using the Maintenance of Variance Extension (MOVE.1) method of correlation analysis (Hirsch, 1982), and the station with the shorter record was removed from the analysis. Table 1 (p. 55) shows the eight stations that the MOVE.1 method was used to extend the record. A total of 52 stations was omitted from the regional regression analysis because of redundant record, leaving a total of 891 stations.

Regionalization of Flood-Frequency Estimates

An OLS regression analysis was performed on the 891 remaining rural, gaged stations in order to determine the need for separate hydrologic regions within the study area. All response (P-percent chance exceedance flows) and explanatory variables (basin characteristics) were transformed to logarithms (base 10) prior to the regression analyses (1) to obtain linear relations between the response variables and the explanatory variables and (2) to achieve equal variance about the regression line. A value of 1.0 was added to percentage of forested and impervious area basin characteristics to prevent zero values and facilitate transformation to logarithms. The standard errors of estimate using varying combinations of explanatory variables ranged from 60 to 69 percent for the 1-percent chance exceedance flow estimate when using only one hydrologic region for the entire study area. Regression residuals for the 1-percent chance exceedance flows were plotted at the centroid of the respective drainage area in order to determine geographical patterns of bias. The large errors of estimate as well as a geographic bias of the regression residuals indicated that the study area needed to be subdivided into hydrologic regions. The seven USEPA level III ecoregions (fig. 2) were used as the initial hydrologic regions for the regression analysis. For each ecoregion, watersheds with 75 percent or more of their drainage area in one ecoregion were grouped together.

The APS regression methods were conducted on each of the seven groups of stations to determine the candidate explanatory variables for each ecoregion. APS analysis indicated that the addition of variables other than drainage area did not reduce the standard error of estimate by more than 3 percent. This small reduction did not warrant the use of additional explanatory variables in the model, so drainage area was selected as the only basin characteristic used for further analysis.

An OLS regression analysis was run for each group of stations using the following regression model:

$$Q_P = a_0 (DA)^{b_0}, \tag{2}$$

where

Q_P is the P-percent chance exceedance flow, in cubic feet per second;

DA is the drainage area, in square miles; and

a_0 and b_0 are the regression coefficients.

The regression model was logarithmically transformed to the following linear form:

$$\log Q_P = \log a_0 + b_0 (\log DA). \tag{3}$$

The residuals from the OLS analysis were plotted for each USEPA level III ecoregion in order to determine the need for dividing the ecoregions into subregions and(or) for the possibility of combining ecoregions to form a hydrologic region. There was an apparent narrow region of negatively biased residuals at the northern edge of the Southeastern Plains ecoregion. This narrow region of negative residuals coincides with the USEPA level IV Sand Hills ecoregion, so the Sand Hills ecoregion (hydrologic region [HR] 3) was added to the group of existing level III ecoregions to help define this area. Additionally, there was an area with positively biased residuals in the southwestern corner of the Georgia Southeastern Plains. This area was documented in previous Georgia flood-frequency reports (Price, 1978; Stamey and Hess, 1993) and corresponds to the lower portion of the USEPA level IV Tifton Uplands ecoregion; therefore, a separate hydrologic region (5) was established for this area of positive residuals. Finally, the residuals plot indicated positively biased residuals in the Alabama portion of the Southeastern Plains ecoregion. Because the Alabama stations in the Southeastern Plains were not representative of the stations in the Southeastern Plains of Georgia, South Carolina, and North Carolina; the 15 Alabama stations in the Southeastern Plains were omitted from the regression analysis. The Chattahoochee River separates the Alabama Southeastern Plains ecoregion from the Georgia Southeastern Plains ecoregion; therefore, this hydrologic divide justifies separating these areas into different hydrologic regions.

The regression coefficients, a_0 and b_0, from the OLS analysis for the Southwestern Appalachians, Ridge and Valley, and Piedmont ecoregions were not significantly different at the 95-percent probability level, so these three ecoregions were combined to form HR1. Similarly, the regression coefficients for the remainder of the Southeastern Plains, the entire Southern Coastal Plain, and the entire Middle Atlantic Coastal Plain ecoregions were not significantly different at the 95-percent probability level, and these three ecoregions likewise were combined to form HR4. Part of the residuals from the Blue Ridge region tended to be slightly higher than those in the Southwestern Appalachians, Ridge and Valley, and Piedmont ecoregions. Additional analysis, which is discussed in more detail in a following section, also indicated that there was a statistically significant difference in the slope of the regression for the Blue Ridge ecoregion as compared to HR1. Therefore, it was concluded that the Blue Ridge ecoregion should be maintained as a separate hydrologic region. The OLS regression analysis was repeated for each of the five proposed hydrologic regions for the study area. The residuals from the analyses were plotted on a map of the five hydrologic regions and showed no geographical bias. Therefore, the five hydrologic regions were used for the final GLS analysis (fig. 4, p. 51). Only HRs 1 through 4 are in South Carolina and, in this report, may be referred to by the reference names given in table 5.

Considerable variability in the predicted P-percent chance exceedance flow for stations with drainage areas less than 1 mi^2 was observed in the OLS regression analyses for each of the five hydrologic regions. This variability can be attributed, in part, to the difficulty in measuring peak flows for stations with small drainage basins. For small drainage basins, streamflow changes rapidly over time. These rapidly changing flow conditions make it difficult to measure streamflow accurately, thus increasing the uncertainty in the documented flood peaks. In addition to measurement errors, runoff hydrology and hydraulics likely are different for small watersheds, which typically are sensitive to land use and high-intensity rainfalls of short duration (usually not occurring over large basins). For larger watersheds, such sensitivities are suppressed, and floods are influenced to a larger degree by channel and basin storage effects. Because of the lack of sufficient data in some regions and the variability and uncertainty of data for small watersheds, the 44 stations with drainage areas less than 1 mi^2 were omitted from the final regional regression analysis. Additionally, there was only one gaged station with a drainage area greater than 9,000 mi^2 available for use in the regional regression analysis. This station has a drainage area of 13,600 mi^2 (map identification number (MID) 548, table 1, p. 55) and was omitted from the final regional regression analysis because of the lack of data points needed to develop the regression analysis model for a drainage area greater than 8,930 mi^2 (MID 886, table 1, p. 55).

Table 5. Hydrologic region number and reference name for hydrologic regions in South Carolina.

Hydrologic region number	Hydrologic region reference name
1	Piedmont
2	Blue Ridge
3	Sand Hills
4	Coastal Plain

Two undefined regions are in the study area (fig. 4, p. 51). The first undefined area is the Upper Three Runs River basin near the mid-western boundary of South Carolina. Large sand deposits at the upper end of the basin affect runoff. The Upper Three Runs gaged stations (MID 428, 429, and 430, table 1) have smaller magnitude peaks when compared to other surrounding basins, which is thought to be associated with the substantial amounts of rainfall runoff that are detained in the sand deposits (Guimaraes and Bohman, 1991). The second undefined area is composed of basins within the Okefenokee Swamp in southeastern Georgia. No gaged stations are in this area to define the magnitude and frequency of floods for the basins that drain into the swamp. After the stations discussed above were eliminated from further consideration, a total of 828 stations were available for use in developing the rural flood-frequency relations for South Carolina, Georgia, and North Carolina (943 initial stations minus 52 stations for redundancy, 44 stations with drainage areas less than 1 mi^2, 15 stations in coastal Alabama region, 3 stations in Upper Three Runs basin in South Carolina, and 1 station in Georgia with drainage area at 13,600 mi^2; table 6).

The distribution of systematic peak-flow record lengths for the 828 stations used in the regional regression analyses is shown in figure 5. Drainage areas and percentage of basin in the various hydrologic regions for the 64 stations in South Carolina included in the regression database are listed in table 7.

Table 6. Distribution by State of 828 streamgaging stations used in the regional regression.

State	Alabama	Florida	Georgia	North Carolina	South Carolina	Tennessee	Virginia
Number of stations included in regression	20	23	310	303	64	40	68

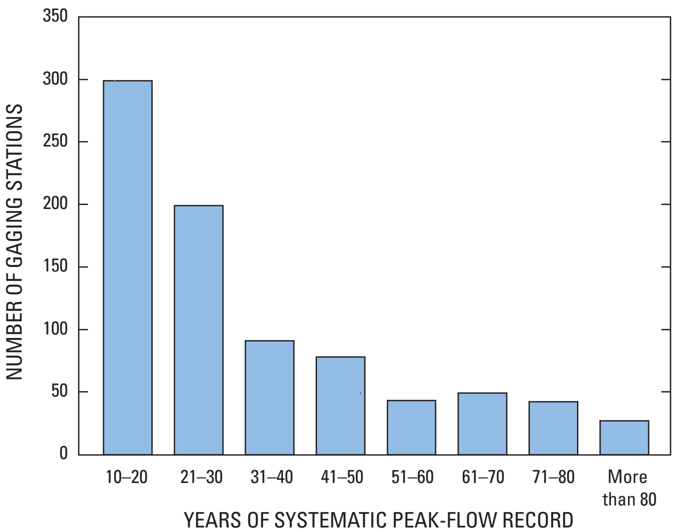


Figure 5. Distribution of systematic peak-flow record lengths for rural streamgaging stations used in the regional regression analysis.

Previous Issues Regarding the South Carolina Piedmont Region

In the previous two USGS flood-frequency reports for rural watersheds in South Carolina (Guimaraes and Bohman, 1991; Feaster and Tasker, 2002), a region was defined in the northeast part of the Piedmont region for which gage data were insufficient to describe the high-flow stream characteristics. Based on limited anecdotal information and limited streamflow gage data, it was thought that flows in this region potentially were much higher than those obtained from the South Carolina rural regional regression equations (C.L. Sanders, Jr., U.S. Geological Survey, written commun., November 1993). The current investigation includes four stations in the northeast part of the Piedmont region for which peak-flow data were not available in the previous investigations (stations 02153780, 02153800, 02153840, and 021563931, fig. 1; MID 337, 338, 339, and 342, table 1, respectively). A plot of the current 1-percent chance exceedance flows for the South Carolina Piedmont stations, which includes these four new stations, for the current investigation shows no exceptionally distinct high-flow bias with respect to the rest of the South Carolina Piedmont data (fig. 6) indicating that the previous perceptions about this region having considerably different flow characteristics from the rest of the Piedmont may be incorrect.

A second issue related to the flood-frequency assessment of stations in the Piedmont of South Carolina documented in the previous two South Carolina rural flood-frequency investigations was the assumption that flood flows in the Piedmont region in South Carolina tended to be lower than those in North Carolina and Georgia. For the regional regression analysis documented in Guimaraes and Bohman (1991) and Feaster and Tasker (2002), only streamflow gaging stations in North Carolina and Georgia that were near the border with South Carolina were used. In Guimaraes and Bohman (1991), a total of 77 stations was included in the Piedmont region regression: 25 in South Carolina, 25 in North Carolina, and 27 in Georgia. In Feaster and Tasker (2002), a total of 84 stations was included in the Piedmont region regression: 27 in South Carolina, 29 in North Carolina, and 28 in Georgia. Based on that limited dataset, the 1-percent chance exceedance flow was regressed against the explanatory variables and a qualitative variable that denoted location by State. The regression analysis that included the qualitative variable for State indicated that the Georgia and North Carolina data were similar but there was a statistically significant difference in the South Carolina data. Because of the sparseness of the South Carolina data, the qualitative variable was included, which allowed the data from

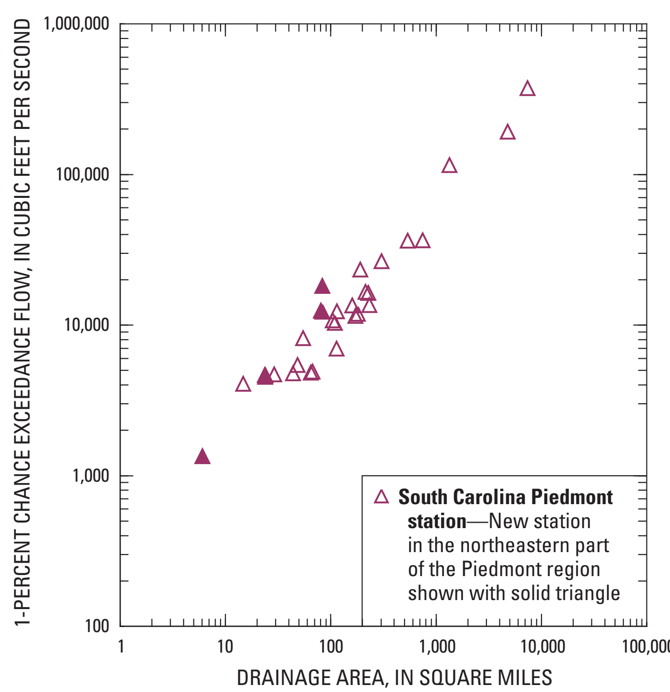


Figure 6. One-percent chance exceedance flow for South Carolina Piedmont stations.

Table 7. Explanatory variables that are used in the regional regression equations for stations in South Carolina.

[USGS, U.S. Geological Survey; mi², square miles; *, indicates the drainage area has been revised as a result of this study]

Map identification number (figs. 2, 4)	USGS station number	Drainage area (mi²)	Percentage of drainage basin in hydrologic region				
			Hydrologic region 1	Hydrologic region 2	Hydrologic region 3	Hydrologic region 4	Hydrologic region 5
282	02130900	108	0	0	100	0	0
283	02131110	46.6	0	0	0	100	0
284	02131309	24.3	100	0	0	0	0
285	02131320	15	100	0	0	0	0
286	02131472	23.9	99	0	1	0	0
288	02132000	1,030	22.2	0	38.3	39.5	0
289	02132100	18.89	0	0	0	100	0
292	02132500	524	0	0	20.7	79.3	0
300	02135000	2,790	0	0	15.4	84.6	0
301	02135300	96	0	0	83.4	16.6	0
302	02135500	401	0	0	25.5	74.5	0
303	02136000	1,252	0	0	8	92	0
325	02147500	194	100	0	0	0	0
326	02148090	4.9	0	0	100	0	0
327	02148300	40.2*	0	0	100	0	0
337	02153780	24.1	100	0	0	0	0
338	02153800	84.3	100	0	0	0	0
339	02153840	6.12	100	0	0	0	0
340	02154500	116	75.4	24.6	0	0	0
341	02154790	55.53	83	17	0	0	0
342	021563931	81.51	100	0	0	0	0
344	02157000	44.4	100	0	0	0	0
345	02157500	68.3	93.5	6.5	0	0	0
346	02158000	162	97.2	2.8	0	0	0
348	02159000	174	97.9	2.1	0	0	0
350	02160000	183	100	0	0	0	0
351	02160105	759	98.9	1.1	0	0	0
352	02160326	84.2	100	0	0	0	0
354	02160500	307	100	0	0	0	0
357	02161500	4,850	90.6	9.4	0	0	0
358	02162010	48.9	99.1	0	0.9	0	0
359	02162350	21	0	100	0	0	0
360	02162500	295	44.1	55.9	0	0	0
362	02163500	580	71.6	28.4	0	0	0
364	02165000	236	100	0	0	0	0
365	02165200	29.5	100	0	0	0	0
367	02167000	1,360	88	12	0	0	0
368	02167450	230	100	0	0	0	0
369	02167582	115	100	0	0	0	0
370	02169550	122	0	0	100	0	0
371	02169630	10	0	0	84.7	15.3	0
372	02169960	1.21*	0	0	0	100	0
373	02172500	198	0	0	100	0	0
374	02173000	720	0	0	70.9	29.1	0
377	02173500	683	0	0	46.8	53.2	0
379	02174250	23.4	0	0	0	100	0
380	02175000	2,730	0	0	30.9	69.1	0

Table 7. Explanatory variables that are used in the regional regression equations for stations in South Carolina.—Continued

[USGS, U.S. Geological Survey; mi², square miles; *, indicates the drainage area has been revised as a result of this study]

Map identification number (figs. 2, 4)	USGS station number	Drainage area (mi²)	Percentage of drainage basin in hydrologic region				
			Hydrologic region 1	Hydrologic region 2	Hydrologic region 3	Hydrologic region 4	Hydrologic region 5
381	02175500	341	0	0	8.2	91.8	0
382	02176000	1,100	0	0	3	97	0
383	02176500	203	0	0	0	100	0
388	02184500	47.3	0	100	0	0	0
389	02185000	148	0	100	0	0	0
390	02185200	72	64.8	35.2	0	0	0
391	02185500	455	47	53	0	0	0
392	02186000	106	94.2	5.8	0	0	0
393	02186645	65.4	95	5	0	0	0
394	02187910	111	100	0	0	0	0
397	02189000	2,876	71	29	0	0	0
418	02192500	217	100	0	0	0	0
424	02196000	545	97.2	0	2.8	0	0
425	02196250	13.9	67	0	33	0	0
426	02196689	26.6	0	0	100	0	0
427	02197000	7,510	84.9	11.1	3.8	0.2	0
431	02197410	7.82	0	0	0	100	0

all three States to influence the slope of the overall regression relation yet permitted a unique intercept value for the South Carolina relation (fig. 7). However, the current analysis, which uses a much larger dataset, suggests that the sparseness of the South Carolina data along with only including a small subset of the available data from North Carolina and Georgia led to an unwarranted conclusion with respect to the differences in streamflow characteristics between the three States.

For a comparison of the density of coverage of gaged stations available for inclusion in the rural flood-frequency analysis, the land areas for South Carolina, Georgia, and North Carolina were divided by the number of gages included in the regression analysis (table 6). The results are 470 mi² per gage for South Carolina, 187 mi² per gage for Georgia, and 161 mi² per gage for North Carolina. The average coverage for Georgia and North Carolina is 174 mi² per gage. For South Carolina to have the same density of gages in the current regression analysis, the number of South Carolina gages would need to be 173 as opposed to the 64 that actually were available. In the current investigation, the stations included in HR1, which contains the Piedmont region, for which at least 75 percent of the drainage area resides are as follows: 31 in South Carolina, 118 in North Carolina, and 111 in Georgia (fig. 8). Additional stations are included from the surrounding States of Alabama, Tennessee, and Virginia.

As seen in figure 8, the South Carolina stations included in HR1 are well within the scatter of the data from the other States. The similarity in the relation between the 1-percent chance exceedance flow and drainage area in the Piedmont region from Alabama to Virginia indicates that the runoff characteristics are indeed more similar than they are different. Figure 8 also shows the natural variability that is inherent in such data. For the South Carolina data, the greatest cluster of stations occurs in the basins with drainage areas ranging from approximately 50 to 300 mi². In that region, the range of the 1-percent chance exceedance flows tends to be most similar to the Georgia and North Carolina data. Thus, it is not unreasonable to conclude that the relatively small datasets used in previous studies of flood-frequency characteristics in South Carolina have falsely led to the conclusion that the flood flows in the Piedmont of South Carolina were significantly different than those in the neighboring States. In addition, figure 8 shows how increasing the size of the database, and the length of records in that database, should provide a better regional estimate of the magnitude and frequency of floods at ungaged locations.

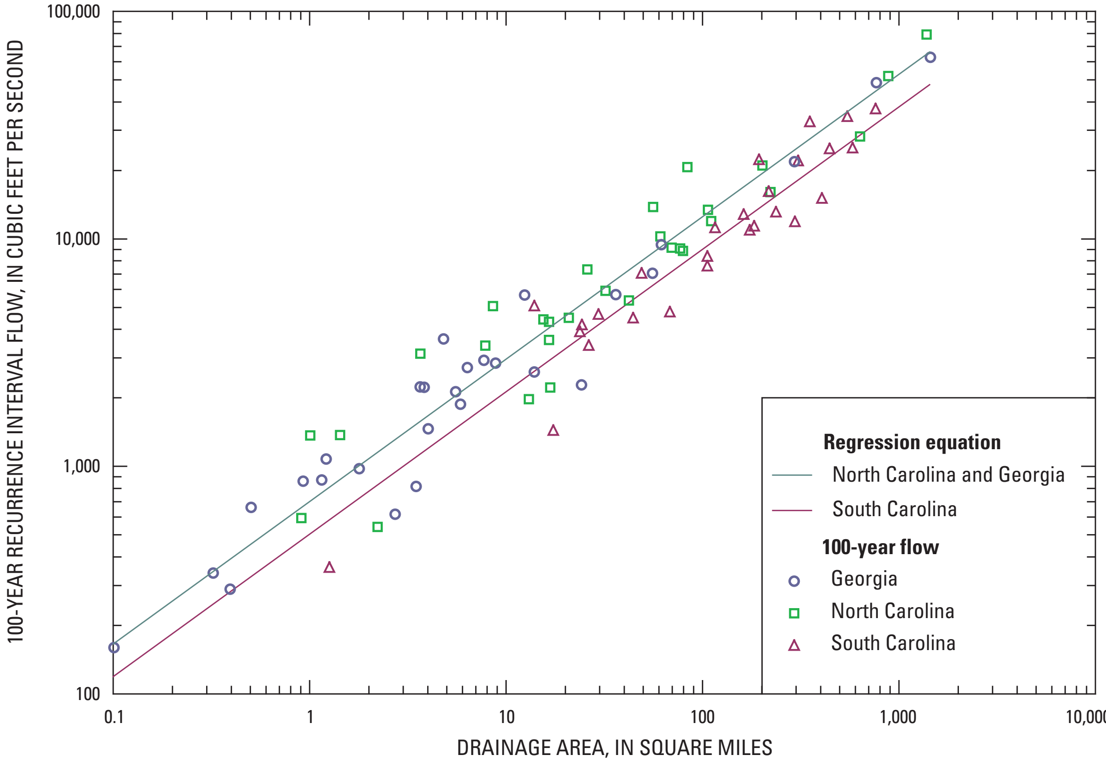


Figure 7. Relation between drainage area and 100-year recurrence-interval flow for stations on streams draining from the Piedmont Physiographic Province in South Carolina, North Carolina, and Georgia (from Feaster and Tasker, 2002, fig. 4).

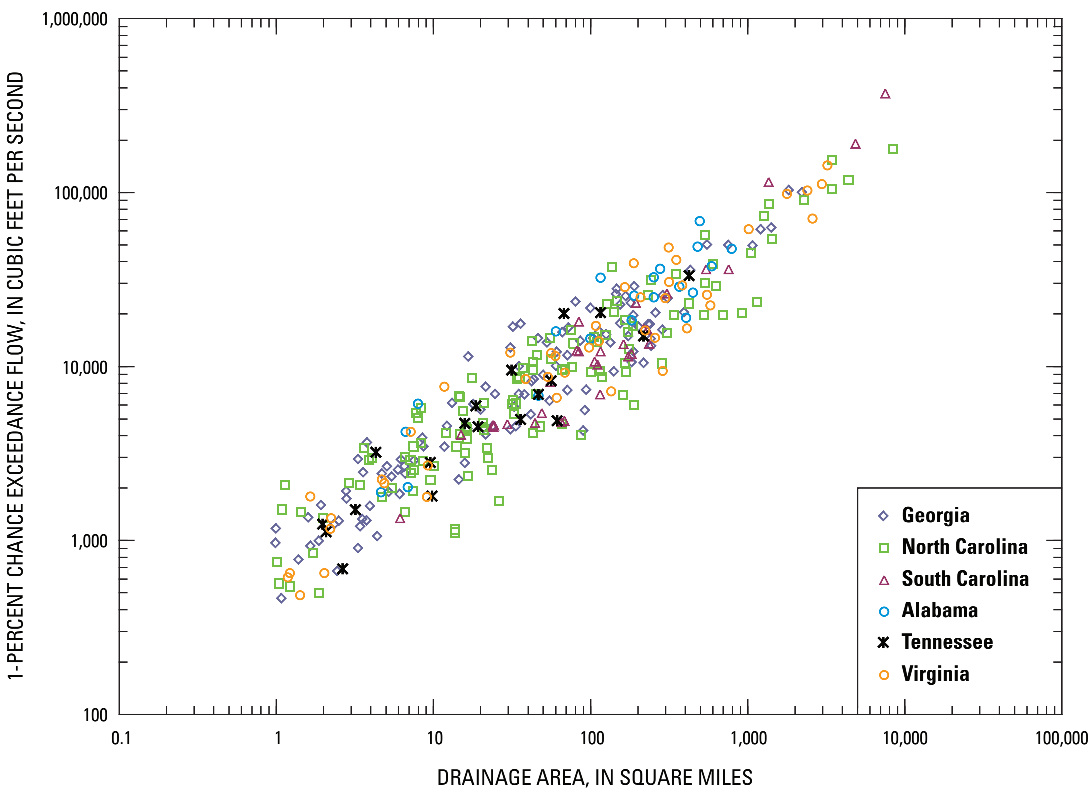


Figure 8. Stations with 75 percent or more of the watershed contained in hydrologic region 1.

Regional Regression Equations

Traditionally in regional flood-frequency regression analyses, stations with similar hydrologic characteristics are grouped together by hydrologic region and analyzed independent of the surrounding hydrologic regions. Consequently, many studies omit stations that have a "substantial" part of the drainage basin located in more than one hydrologic region. For this investigation, 83 of the 828 gaged stations have substantial drainage from more than one hydrologic region, where substantial is defined as being more than 25 percent. Griffis and Stedinger (2007b) showed that a pooled regression model approach combining data across hydrologic regions increases the number of stations and information available for model estimation. They used qualitative indicator variables of "1" or "0" for each hydrologic region as explanatory variables in the regional regression equation. A similar approach was used by Feaster and Tasker (2002) to distinguish between States for two of the hydrologic regions included in their investigation. A linear regression model that incorporates the regional indicator variables is as follows:

$$\log Q_P = a_1(d_1) + a_2(d_2) + \ldots + a_n(d_n) + b_0 \log DA, \qquad (4)$$

where

$d_1, d_2, \ldots,$ and d_n are the indicator variables for hydrologic regions 1, 2,…., and n; and

$a_1, a_2, \ldots a_n,$ and b_0 are regression coefficients.

If the drainage basin of a station is within a given hydrologic region, then a value of "1" is used for the qualitative variable for that hydrologic region, otherwise, a "0" is used to indicate the basin is not within that hydrologic region. Although this approach is useful for hydrologic regions with a small sample of stations, the approach still does not incorporate stations with drainage basins that are within multiple hydrologic regions. In order to incorporate these stations in the regional regression analysis, a modified version of the Griffis and Stedinger (2007b) pooled regional regression approach was used for the current study. This modified approach uses the percentage of the basin within the hydrologic regions as explanatory variables instead of the "1" or "0" qualitative indicator variables. With this approach, all the stations in the study region are pooled in the regional regression analysis, and no stations are omitted because of multiple hydrologic regions within a basin. The regression model for this modified approach has the following linear form for n number of hydrologic regions:

$$\log Q_P = a_1(PCT_1) + a_2(PCT_2) + \ldots + a_n(PCT_n) + b_0 \log DA, \qquad (5)$$

where

$PCT_1, PCT_2, \ldots,$ and PCT_n are the basin percentages in hydrologic regions 1, 2,…, and n, in percent.

Using this model assumes that the slope or b_0 coefficient is constant for every hydrologic region. In order to test the significance of the differences in b_0 coefficients for each hydrologic region, cross products of the explanatory variables were added to the equation. For n number of hydrologic regions, the hydrologic model has the following linear form:

$$\log Q_P = a_1(PCT_1) + a_2(PCT_2) + \ldots a_n(PCT_n) + b_0 \log DA + b_1[(\log DA)(PCT_1)] + b_2[(\log DA)(PCT_2)] + \ldots b_n[(\log DA)(PCT_n)], \qquad (6)$$

where

$b_1, b_2, \ldots b_n$ are regression coefficients.

To test the significance of the slope difference for each hydrologic region, the coefficient of one of the cross products is set to zero, and the significance of the differences in slopes ($b_1, b_2, \ldots b_n$ coefficients) is tested at the 95-percent probability level.

A GLS analysis was run on the final 828 rural, gaged stations considered for the regional regression analysis using equation 6. The slope of the relation for HRs 2 and 3 was found to be significantly different at the 95-percent probability level for the 50- through 0.2-percent chance exceedance flows ($Q_{50\%}$ and $Q_{0.2\%}$, respectively). Additionally, the slope for HR1 was found to be significantly different at the 95-percent probability level for only the $Q_{50\%}$ flow. A slope adjustment factor was included in the final regression equations for HRs 2 and 3. However, no slope adjustment factor for HR1 was included in the $Q_{50\%}$ equation because the inclusion of the slope adjustment factor for HR1 did not reduce the standard error of estimate significantly, and the exclusion of the slope adjustment factor for HR1 maintained consistency in the final regression equations. The results of the analyses are a single P-percent chance exceedance flow estimate equation for the entire study area, which is composed of five hydrologic regions (fig. 5). South Carolina is within four of the five hydrologic regions (fig. 9). The final regional regression equations for the 50- through 0.2-percent chance exceedance flows are as follows:

$$Q_{50\%} = 10^{[0.0220(PCT_1)+0.0204(PCT_2)+0.0141(PCT_3)+0.0178(PCT_4)+0.0196(PCT_5)]} DA^{[0.649+0.00130(PCT_2)+0.00109(PCT_3)]} \quad (7)$$

$$Q_{20\%} = 10^{[0.0247(PCT_1)+0.0232(PCT_2)+0.0165(PCT_3)+0.0209(PCT_4)+0.0230(PCT_5)]} DA^{[0.627+0.00122(PCT_2)+0.00117(PCT_3)]} \quad (8)$$

$$Q_{10\%} = 10^{[0.0260(PCT_1)+0.0246(PCT_2)+0.0177(PCT_3)+0.0224(PCT_4)+0.0247(PCT_5)]} DA^{[0.617+0.00119(PCT_2)+0.00123(PCT_3)]} \quad (9)$$

$$Q_{4\%} = 10^{[0.0273(PCT_1)+0.0260(PCT_2)+0.0189(PCT_3)+0.0239(PCT_4)+0.0265(PCT_5)]} DA^{[0.606+0.00118(PCT_2)+0.00130(PCT_3)]} \quad (10)$$

$$Q_{2\%} = 10^{[0.0282(PCT_1)+0.0268(PCT_2)+0.0196(PCT_3)+0.0249(PCT_4)+0.0276(PCT_5)]} DA^{[0.600+0.00118(PCT_2)+0.00135(PCT_3)]} \quad (11)$$

$$Q_{1\%} = 10^{[0.0289(PCT_1)+0.0276(PCT_2)+0.0202(PCT_3)+0.0258(PCT_4)+0.0286(PCT_5)]} DA^{[0.594+0.00119(PCT_2)+0.00139(PCT_3)]} \quad (12)$$

$$Q_{0.5\%} = 10^{[0.0295(PCT_1)+0.0282(PCT_2)+0.0208(PCT_3)+0.0265(PCT_4)+0.0295(PCT_5)]} DA^{[0.589+0.00120(PCT_2)+0.00144(PCT_3)]} \quad (13)$$

$$Q_{0.2\%} = 10^{[0.0303(PCT_1)+0.0290(PCT_2)+0.0214(PCT_3)+0.0274(PCT_4)+0.0306(PCT_5)]} DA^{[0.583+0.00121(PCT_2)+0.00149(PCT_3)]} \quad (14)$$

where

$Q_{50\%}$, $Q_{20\%}$,…, $Q_{0.2\%}$ are the flows for floods with percent chance exceedance of 50 percent, 20 percent,…, and 0.2 percent, in cubic feet per second;

PCT_1, PCT_2, PCT_3, PCT_4, and PCT_5 are the basin percentages in hydrologic regions 1, 2, 3, 4, and 5, in percent; and

DA is the drainage area, in square miles.

These equations allow for the computation of P-percent chance exceedance flows for ungaged, rural sites that drain one or more hydrologic region. It is important to note that the sum of the basin percentages in the five hydrologic regions must equal 100 percent when using equations 7–14. For ungaged sites that are entirely within one hydrologic region, equations 7–14 can be reduced to the simpler form shown in table 8. Figure 10 provides a visual comparison of 1-percent chance exceedance peak-flow regression lines for basins located wholly within a hydrologic region and for a basin transitioning from the Piedmont to the Blue Ridge hydrologic region. The regression constant and the coefficient for drainage area represent the intercept and slope, respectively, of the relation between drainage area and flow for each percent chance exceedance. The use of basin percentages in the regression coefficients allows for a smooth transition for drainage basins that do not lie wholly within one hydrologic region. For example, the slopes for the Blue Ridge and Sand Hills hydrologic regions regression lines are visibly different from the slopes for the regression lines for the three remaining hydrologic regions (fig. 10*A*). As a result, the final equations include a "slope adjustment factor" for HRs 2 and 3. The transition from a site located wholly in HR1, represented by the "base" slope (for example, 0.594 for the 1-percent chance exceedance flow in equation 12), to a site located wholly in HR2 is depicted in figure 10*B*. Note that the slope of the regression line becomes visibly steeper as a basin goes from 100 percent in the Piedmont–Ridge and Valley region to a basin that is 100 percent in the Blue Ridge region.

Accuracy and Limitations

When applying regression equations, users should not interpret the empirical results as exact. Regression equations are statistical models that should be interpreted and applied within the limits of the data and with the understanding that the results are best-fit estimates with an associated scatter or variance. The development and use of a regression equation raises questions about how well the predicted values are representative of true values. Errors in the model (that is, differences between the predicted and observed values) can be examined to determine parameters that describe the accuracy of a regression equation, which depends on both the model error and the sampling error. Model error measures the ability of a set of explanatory variables to estimate the values of peak-flow characteristics calculated from the station records that were used to develop the equation. The model error depends on the number and predictive power of the explanatory variables in a regression equation. Sampling error measures the ability of a finite number of stations with a finite number of recorded annual peak flows to describe the true characteristics of the entire peak-flow record for a station. The

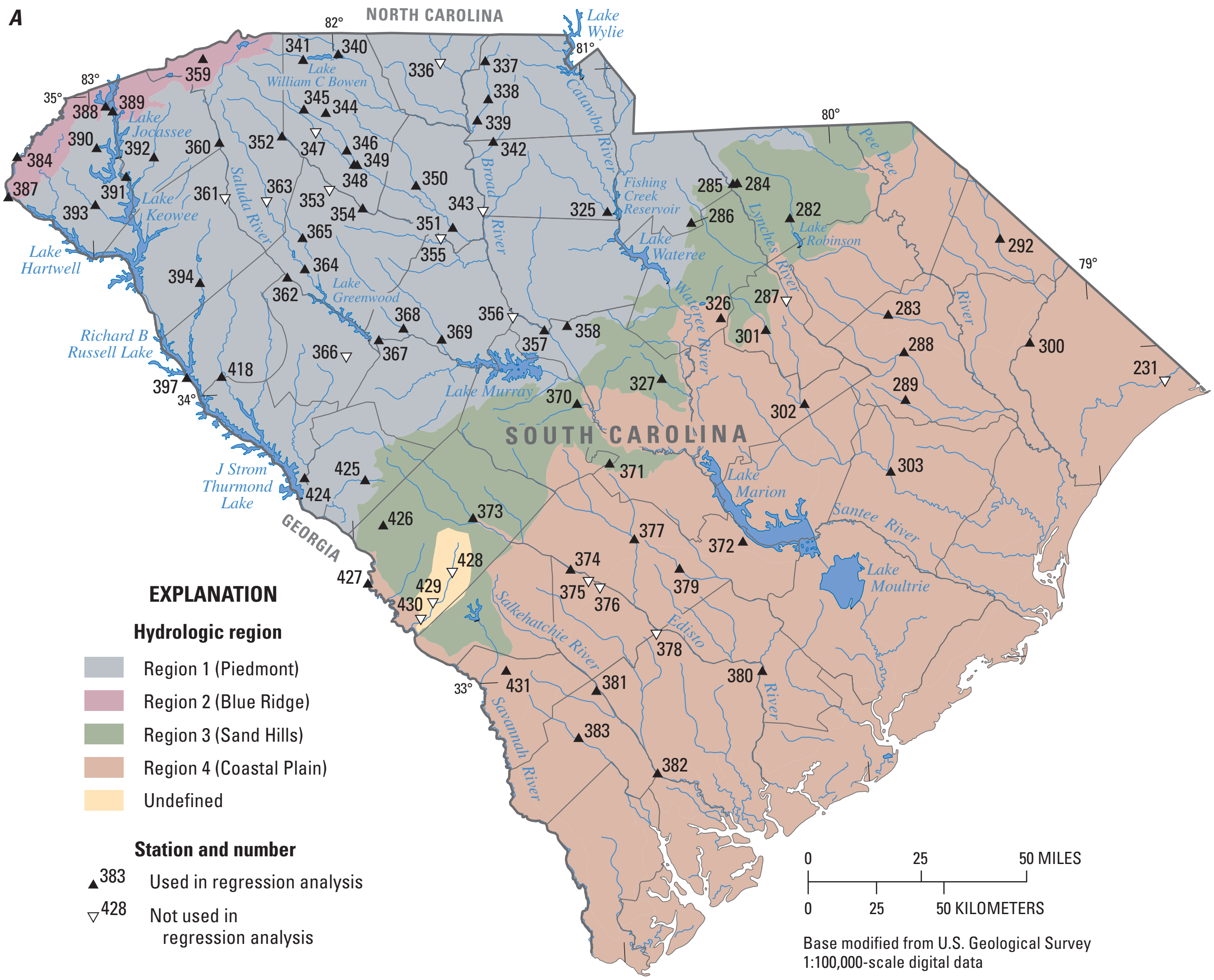


Figure 9*A*. Hydrologic regions in South Carolina with locations of the rural streamgaging stations used in the regional regression analysis.

sampling error depends on the number and record length of stations used in the analysis, and decreases as the number of stations and record lengths increase.

A measure of the uncertainty in a regression equation estimate for a site, *i*, is the variance of prediction, $V_{p,i}$. The $V_{p,i}$ is the sum of the model error variance and sampling error variance and is computed using the following equation:

$$V_{p,i} = \gamma^2 + MSE_{s,i}, \qquad (15)$$

where

γ^2 is the model error variance, in log units; and

$MSE_{s,i}$ is the sampling mean square error for site *i*, in log units.

Assuming that the explanatory variables for the gaged stations in a regression analysis are representative of all stations in the region, the average accuracy of prediction for a regression equation can be determined by computing the average variance of prediction, *AVP*, for *n* number of stations:

$$AVP = \gamma^2 + \left(\frac{1}{n}\right)\sum_{i=1}^{n} MSE_{s,i} \qquad (16)$$

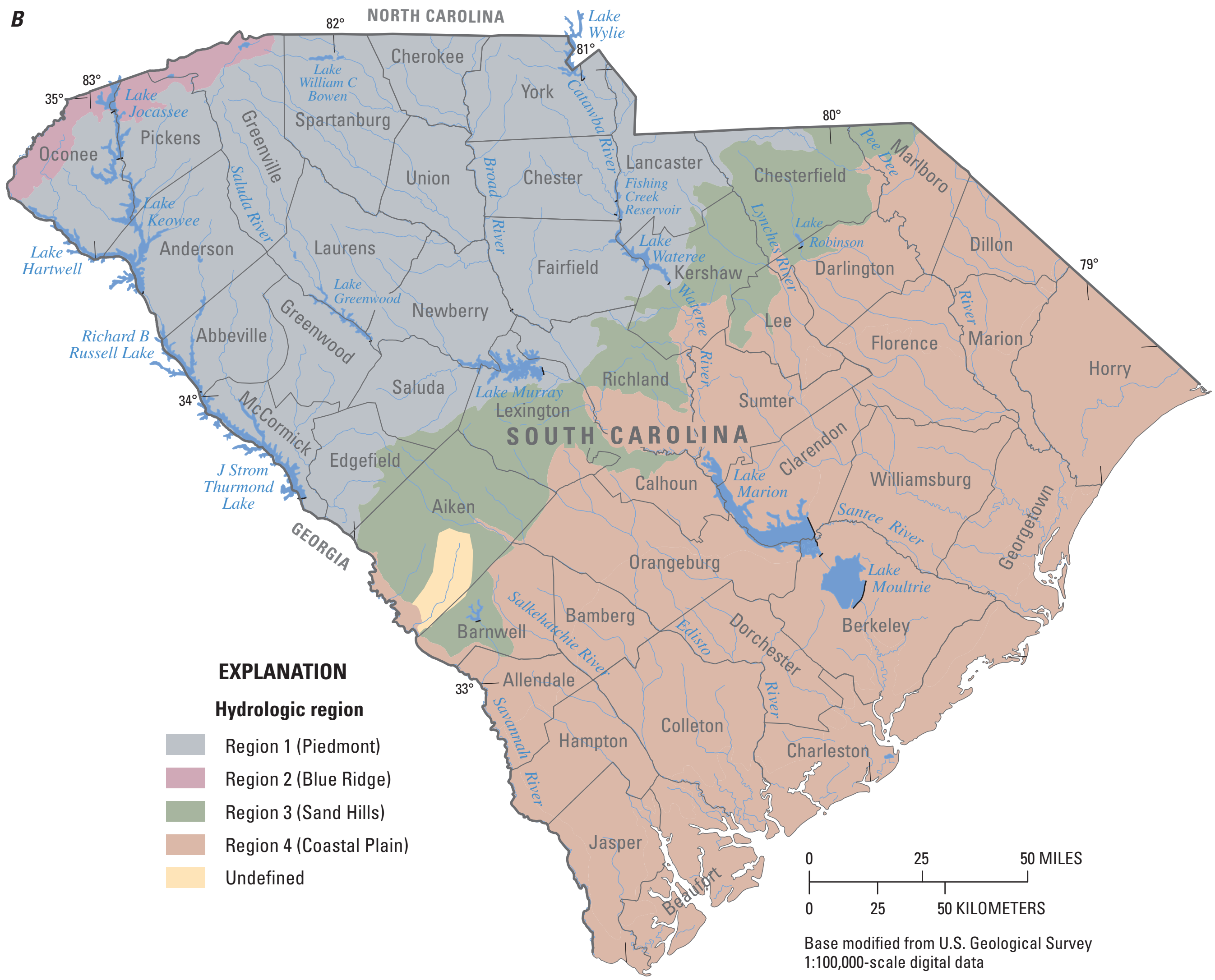


Figure 9*B*. Counties in South Carolina.

Table 8. Regional flood-frequency equations for rural streams in South Carolina with drainage basins that are within one hydrologic region.

[DA, the drainage area in square miles]

Percent chance exceedance	Recurrence interval (years)	Hydrologic region (reference name) (shown in figs. 4, 9)			
		1 (Piedmont)	2 (Blue Ridge)	3 (Sand Hills)	4 (Coastal)
50	2	$158(DA)^{0.649}$	$110(DA)^{0.779}$	$25.7(DA)^{0.758}$	$60.3(DA)^{0.649}$
20	5	$295(DA)^{0.627}$	$209(DA)^{0.749}$	$44.7(DA)^{0.744}$	$123(DA)^{0.627}$
10	10	$398(DA)^{0.617}$	$288(DA)^{0.736}$	$58.9(DA)^{0.740}$	$174(DA)^{0.617}$
4	25	$537(DA)^{0.606}$	$398(DA)^{0.724}$	$77.6(DA)^{0.736}$	$245(DA)^{0.606}$
2	50	$661(DA)^{0.600}$	$479(DA)^{0.718}$	$91.2(DA)^{0.735}$	$309(DA)^{0.600}$
1	100	$776(DA)^{0.594}$	$575(DA)^{0.713}$	$105(DA)^{0.733}$	$380(DA)^{0.594}$
0.5	200	$891(DA)^{0.589}$	$661(DA)^{0.709}$	$120(DA)^{0.733}$	$447(DA)^{0.589}$
0.2	500	$1,072(DA)^{0.583}$	$794(DA)^{0.704}$	$138(DA)^{0.732}$	$550(DA)^{0.583}$

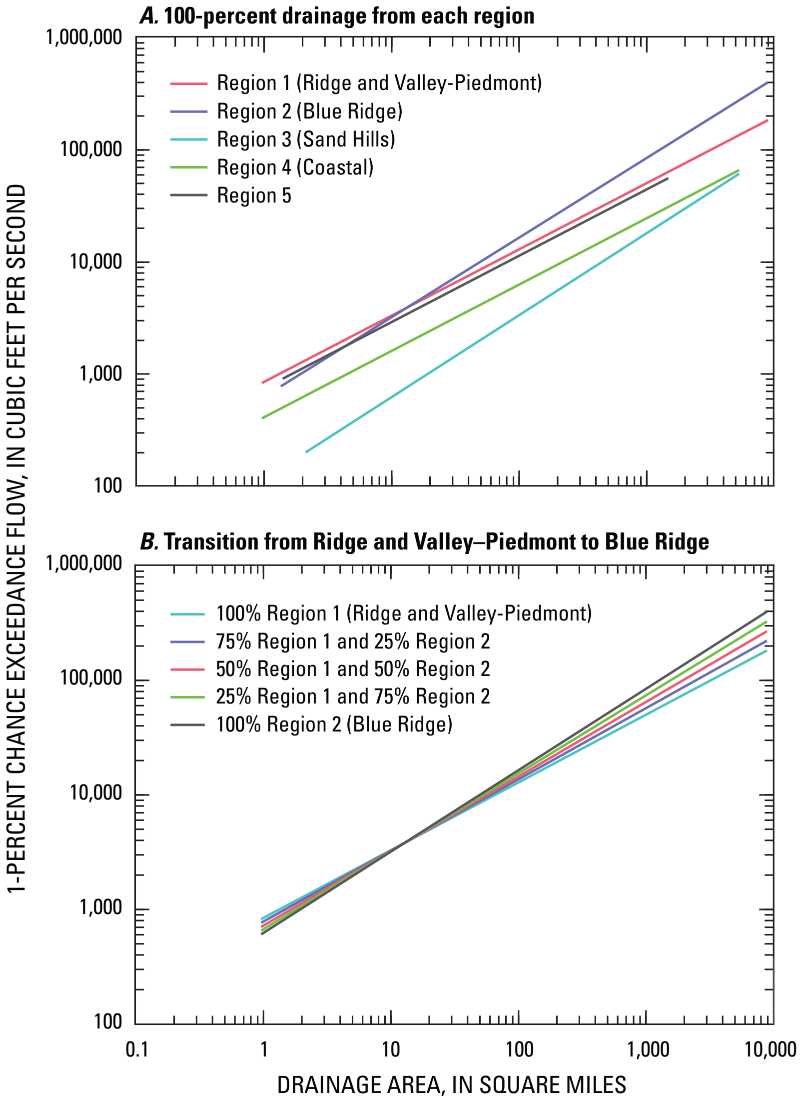


Figure 10. Rural flood-frequency relations by region for basins located wholly within one hydrologic region and for a basin transition from the Piedmont to the Blue Ridge hydrologic region.

A more traditional measure of the accuracy of P-percent chance exceedance flow regression equations is the standard error of prediction, S_p, which is simply the square root of the variance of prediction. The average standard error of prediction for a regression equation can be computed in percent error using *AVP* and the following transformation formula:

$$S_{p,ave} = 100\left[10^{2.3026(AVP)} - 1\right]^{0.5}, \qquad (17)$$

where

$S_{p,ave}$ is the average standard error of prediction, in percent.

Approximately two-thirds of the estimates obtained from a regression equation for ungaged sites will have errors less than the standard error of prediction. The average variance of prediction and standard error of prediction for the final set of regional regression equations are shown in table 9.

Previous USGS flood-frequency reports also have expressed the accuracy of regional regression equations in terms of equivalent years of record, which is an estimate of the number of years of station record that would be needed at an ungaged site to produce peak-flow estimates with accuracy equal to that of the associated regression equation. The equivalent years of record concept, while relatively easy to grasp, can sometimes misconstrue the relation between flood-frequency estimates and associated variances. Using variances provides a more accurate characterization of the underlying uncertainty of the various flow estimates.

Users of the regression models may be interested in a measure of uncertainty at a particular site as opposed to the uncertainty statistics based on station data used to generate the regression models. One such measure of uncertainty at a particular ungaged site is the confidence interval of a prediction, or prediction interval. Prediction interval is the minimum and maximum value between which is a stated probability that the true value of the response variable exists. Tasker and Driver (1988) determined that a 100 (1–α) prediction interval for the true value of a streamflow statistic for an ungaged site from the regression equation can be computed as follows:

$$Q / C < Q < Q \times C, \qquad (18)$$

where

Q is the streamflow characteristic for the ungaged site, and

C is confidence or prediction interval computed as:

$$C = 10^{Z_{(a/2)} S_{p,i}}, \qquad (19)$$

where

$Z_{(\alpha/2)}$ is the normal critical value at a particular alpha-level α, which equals 0.05 for a 95-percent prediction interval, divided by 2 and is equal to 1.96 for an α of 0.05; and

$S_{p,i}$ is the standard error of prediction and is computed as:

$$S_{p,i} = \left[\gamma^2 + x_i U x_i'\right]^{0.5}, \qquad (20)$$

Table 9. Average variance of prediction and standard error of prediction for the regional regression equations.

Percent chance exceedance	Recurrence interval (years)	Average variance of prediction (log units)	Average standard error of prediction (in percent)
50	2	0.0212	34.5
20	5	0.0206	34.0
10	10	0.0219	35.1
4	25	0.0248	37.5
2	50	0.0275	39.6
1	100	0.0305	41.9
0.5	200	0.0338	44.3
0.2	500	0.0387	47.7

where γ^2 is the model error variance;

x_i is a row vector of variables log*DA*, PCT_1, PCT_2, PCT_3, PCT_5, log$DA*PCT_2$, and log$DA*PCT_3$ for site *i*, augmented by a 1 as the first element;

U is the covariance matrix for the regression coefficients; and

x_i' is the transpose of x_i (Ludwig and Tasker, 1993).

The values for γ^2 and *U* are presented in table 10.

The procedure necessary to obtain the prediction intervals for P-percent chance exceedance peak-flow estimates is explained in the following example computation of the 1-percent chance exceedance peak flow for a hypothetical ungaged site on the North Fork Edisto River, South Carolina. It should be noted that computation of x_iUx_i' from equation 20 requires matrix algebra, which may be unfamiliar to the reader. To aid users who wish to compute the 95-percent prediction intervals at an ungaged site, a spreadsheet program has been developed and posted at http://pubs.usgs.gov/sir/2009/5156/. Instructions for proper application of the program are self explanatory and are included with the spreadsheet.

1. Obtain the drainage area and hydrologic region percentages for the ungaged site (DA = 450 mi², $PCT_1 = 0.0$, $PCT_2 = 0.0$, $PCT_3 = 71.0$, $PCT_4 = 29.0$, $PCT_5 = 0.0$).

2. Compute $Q_{1\%(g)r}$ using equation 12
$Q_{1\%(g)r} = 10^{[0.0289(0.0)+0.0276(0.0)+0.0202(71.0)+0.0258(29.0)+0.0286(0)]}450^{[0.594+0.00119(0.0)+0.00139(71.0)]} = 10{,}500$ ft³/s.

3. Determine the x_i vector ($x_i = \{1, \log_{10}(450), 0.0, 0.0, 71.0, 0.0, 0.0, (\log_{10}(450)(71.0))\}$).

4. Compute the standard error of prediction using equation 20 with γ^2 and *U* for the 1-percent chance exceedance flow from table 10; $S_{p,i} = (0.0294+0.002276)^{0.5} = 0.1780$.

5. Compute *C* using equation 19 ; $C = 10^{(1.96 * 0.1780)} = 2.233$.

6. Compute the 95-percent prediction interval using equation 18
$(10{,}500 / 2.233) < Q_{1\%(u)r} < (10{,}500 \times 2.233)$ or 4,700 ft³/s $< Q_{1\%(u)r} <$ 23,400 ft³/s.

The following limitations should be recognized when using the final regional regression equations:

1. The ranges of explanatory variables used to develop the regional regression equations are shown in figure 11. For all sites with drainage basins that are within one hydrologic region, accuracy estimates and use of the relations is considered appropriate for drainage areas that range in size from 1 mi² to 9,000 mi². The relations also appear to be valid from 1 mi² to 9,000 mi² for most percentages within each hydrologic region (based on fig. 11) even though some gaps (blank areas in the graphs) occur where the accuracy and applicability of the relations have not been verified with observed data.

2. The methods are not appropriate (or applicable) for sites where the watershed is affected substantially by regulation from impoundments, channelization, levees, or other manmade structures.

3. The methods are not appropriate (or applicable) for sites on streams in urban areas (impervious area greater than 10 percent) unless the effects of urbanization are insignificant.

4. The methods do not apply where flooding is influenced by extreme ocean storm surge or tidal conditions.

5. The methods should be used with caution in the Upper Three Runs basin in Aiken and Barnwell Counties in the western part of the Sand Hills ecoregion (HR3). The regional equations tend to produce flows that may be considerably higher than those obtained using observed flow

Table 10. Values needed to determine prediction intervals for the regression equations.

[γ^2, the regression model error variance used in equation 20; *U*, the covariance matrix used in equation 20]

Percent chance exceedance	γ^2	*U*							
50	0.0206	8.13E–04	–1.74E–04	–2.13E–06	–4.53E–06	–3.22E–06	–1.45E–06	1.05E–06	9.32E–07
		–1.74E–04	7.43E–05	–7.87E–08	1.05E–06	1.32E–06	4.09E–08	–6.20E–07	–8.26E–07
		–2.13E–06	–7.87E–08	3.77E–08	3.61E–08	1.65E–08	1.05E–08	–2.78E–09	4.12E–09
		–4.53E–06	1.05E–06	3.61E–08	2.07E–07	3.85E–08	1.09E–08	–7.82E–08	–9.11E–09
		–3.22E–06	1.32E–06	1.65E–08	3.85E–08	6.75E–07	3.55E–09	–1.62E–08	–3.26E–07
		–1.45E–06	4.09E–08	1.05E–08	1.09E–08	3.55E–09	1.34E–07	3.56E–10	4.36E–09
		1.05E–06	–6.20E–07	–2.78E–09	–7.82E–08	–1.62E–08	3.56E–10	4.31E–08	9.36E–09
		9.32E–07	–8.26E–07	4.12E–09	–9.11E–09	–3.26E–07	4.36E–09	9.36E–09	1.87E–07
20	0.0200	8.86E–04	–1.83E–04	–2.42E–06	–4.93E–06	–3.32E–06	–1.47E–06	1.14E–06	9.59E–07
		–1.83E–04	7.68E–05	–9.06E–08	1.07E–06	1.32E–06	3.69E–08	–6.43E–07	–8.35E–07
		–2.42E–06	–9.06E–08	4.27E–08	4.13E–08	1.93E–08	1.07E–08	–2.90E–09	4.07E–09
		–4.93E–06	1.07E–06	4.13E–08	2.24E–07	4.09E–08	1.11E–08	–8.14E–08	–9.06E–09
		–3.32E–06	1.32E–06	1.93E–08	4.09E–08	6.98E–07	3.32E–09	–1.65E–08	–3.33E–07
		–1.47E–06	3.69E–08	1.07E–08	1.11E–08	3.32E–09	1.47E–07	3.53E–10	4.35E–09
		1.14E–06	–6.43E–07	–2.90E–09	–8.14E–08	–1.65E–08	3.53E–10	4.44E–08	9.40E–09
		9.59E–07	–8.35E–07	4.07E–09	–9.06E–09	–3.33E–07	4.35E–09	9.40E–09	1.90E–07
10	0.0212	9.97E–04	–2.04E–04	–2.87E–06	–5.70E–06	–3.78E–06	–1.64E–06	1.31E–06	1.07E–06
		–2.04E–04	8.52E–05	–1.12E–07	1.18E–06	1.45E–06	3.97E–08	–7.21E–07	–9.20E–07
		–2.87E–06	–1.12E–07	5.07E–08	4.90E–08	2.35E–08	1.20E–08	–3.26E–09	4.29E–09
		–5.70E–06	1.18E–06	4.90E–08	2.59E–07	4.70E–08	1.25E–08	–9.16E–08	–1.00E–08
		–3.78E–06	1.45E–06	2.35E–08	4.70E–08	7.82E–07	3.60E–09	–1.82E–08	–3.70E–07
		–1.64E–06	3.97E–08	1.20E–08	1.25E–08	3.60E–09	1.72E–07	3.60E–10	4.67E–09
		1.31E–06	–7.21E–07	–3.26E–09	–9.16E–08	–1.82E–08	3.60E–10	4.94E–08	1.03E–08
		1.07E–06	–9.20E–07	4.29E–09	–1.00E–08	–3.70E–07	4.67E–09	1.03E–08	2.10E–07
4	0.0239	1.18E–03	–2.38E–04	–3.58E–06	–6.97E–06	–4.58E–06	–1.94E–06	1.59E–06	1.28E–06
		–2.38E–04	1.00E–04	–1.45E–07	1.38E–06	1.69E–06	4.60E–08	–8.57E–07	–1.08E–06
		–3.58E–06	–1.45E–07	6.33E–08	6.10E–08	3.02E–08	1.43E–08	–3.86E–09	4.74E–09
		–6.97E–06	1.38E–06	6.10E–08	3.17E–07	5.72E–08	1.49E–08	–1.09E–07	–1.19E–08
		–4.58E–06	1.69E–06	3.02E–08	5.72E–08	9.31E–07	4.21E–09	–2.13E–08	–4.37E–07
		–1.94E–06	4.60E–08	1.43E–08	1.49E–08	4.21E–09	2.13E–07	3.91E–10	5.32E–09
		1.59E–06	–8.57E–07	–3.86E–09	–1.09E–07	–2.13E–08	3.91E–10	5.85E–08	1.21E–08
		1.28E–06	–1.08E–06	4.74E–09	–1.19E–08	–4.37E–07	5.32E–09	1.21E–08	2.47E–07
2	0.0265	1.33E–03	–2.69E–04	–4.17E–06	–8.04E–06	–5.29E–06	–2.21E–06	1.84E–06	1.46E–06
		–2.69E–04	1.13E–04	–1.72E–07	1.56E–06	1.92E–06	5.16E–08	–9.77E–07	–1.22E–06
		–4.17E–06	–1.72E–07	7.38E–08	7.11E–08	3.56E–08	1.64E–08	–4.39E–09	5.16E–09
		–8.04E–06	1.56E–06	7.11E–08	3.66E–07	6.59E–08	1.71E–08	–1.25E–07	–1.37E–08
		–5.29E–06	1.92E–06	3.56E–08	6.59E–08	1.06E–06	4.77E–09	–2.42E–08	–4.97E–07
		–2.21E–06	5.16E–08	1.64E–08	1.71E–08	4.77E–09	2.48E–07	4.26E–10	5.94E–09
		1.84E–06	–9.77E–07	–4.39E–09	–1.25E–07	–2.42E–08	4.26E–10	6.65E–08	1.36E–08
		1.46E–06	–1.22E–06	5.16E–09	–1.37E–08	–4.97E–07	5.94E–09	1.36E–08	2.80E–07

Table 10. Values needed to determine prediction intervals for the regression equations.—Continued

[γ^2, the regression model error variance used in equation 20; *U*, the covariance matrix used in equation 20]

Percent chance exceedance	γ^2	*U*							
1	0.0294	1.50E–03	–3.01E–04	–4.79E–06	–9.19E–06	–6.05E–06	–2.51E–06	2.10E–06	1.66E–06
		–3.01E–04	1.28E–04	–2.00E–07	1.76E–06	2.16E–06	5.74E–08	–1.11E–06	–1.37E–06
		–4.79E–06	–2.00E–07	8.49E–08	8.16E–08	4.14E–08	1.86E–08	–4.95E–09	5.64E–09
		–9.19E–06	1.76E–06	8.16E–08	4.18E–07	7.54E–08	1.95E–08	–1.42E–07	–1.56E–08
		–6.05E–06	2.16E–06	4.14E–08	7.54E–08	1.21E–06	5.40E–09	–2.73E–08	–5.62E–07
		–2.51E–06	5.74E–08	1.86E–08	1.95E–08	5.40E–09	2.85E–07	4.71E–10	6.63E–09
		2.10E–06	–1.11E–06	–4.95E–09	–1.42E–07	–2.73E–08	4.71E–10	7.52E–08	1.54E–08
		1.66E–06	–1.37E–06	5.64E–09	–1.56E–08	–5.62E–07	6.63E–09	1.54E–08	3.16E–07
0.5	0.0326	1.67E–03	–3.36E–04	–5.44E–06	–1.04E–05	–6.86E–06	–2.83E–06	2.38E–06	1.87E–06
		–3.36E–04	1.43E–04	–2.30E–07	1.98E–06	2.43E–06	6.33E–08	–1.25E–06	–1.54E–06
		–5.44E–06	–2.30E–07	9.65E–08	9.26E–08	4.74E–08	2.10E–08	–5.55E–09	6.17E–09
		–1.04E–05	1.98E–06	9.26E–08	4.74E–07	8.54E–08	2.20E–08	–1.60E–07	–1.76E–08
		–6.86E–06	2.43E–06	4.74E–08	8.54E–08	1.36E–06	6.07E–09	–3.07E–08	–6.33E–07
		–2.83E–06	6.33E–08	2.10E–08	2.20E–08	6.07E–09	3.24E–07	5.23E–10	7.40E–09
		2.38E–06	–1.25E–06	–5.55E–09	–1.60E–07	–3.07E–08	5.23E–10	8.46E–08	1.72E–08
		1.87E–06	–1.54E–06	6.17E–09	–1.76E–08	–6.33E–07	7.40E–09	1.72E–08	3.55E–07
0.2	0.0373	1.91E–03	–3.85E–04	–6.33E–06	–1.21E–05	–8.00E–06	–3.27E–06	2.78E–06	2.18E–06
		–3.85E–04	1.65E–04	–2.69E–07	2.29E–06	2.81E–06	7.08E–08	–1.45E–06	–1.78E–06
		–6.33E–06	–2.69E–07	1.12E–07	1.08E–07	5.56E–08	2.45E–08	–6.39E–09	6.94E–09
		–1.21E–05	2.29E–06	1.08E–07	5.52E–07	9.93E–08	2.57E–08	–1.85E–07	–2.05E–08
		–8.00E–06	2.81E–06	5.56E–08	9.93E–08	1.58E–06	7.02E–09	–3.54E–08	–7.33E–07
		–3.27E–06	7.08E–08	2.45E–08	2.57E–08	7.02E–09	3.79E–07	6.04E–10	8.52E–09
		2.78E–06	–1.45E–06	–6.39E–09	–1.85E–07	–3.54E–08	6.04E–10	9.80E–08	1.99E–08
		2.18E–06	–1.78E–06	6.94E–09	–2.05E–08	–7.33E–07	8.52E–09	1.99E–08	4.11E–07

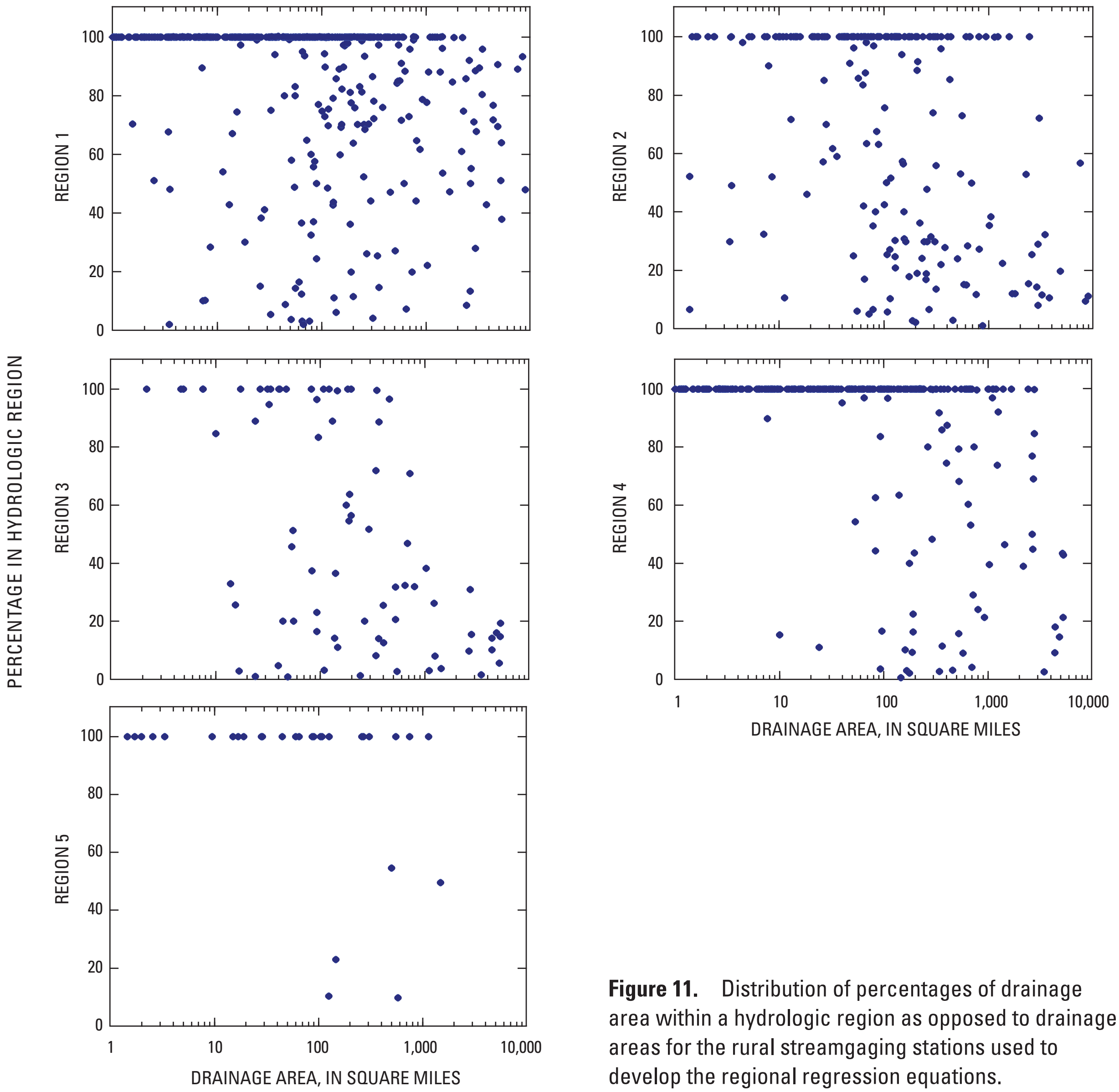


Figure 11. Distribution of percentages of drainage area within a hydrologic region as opposed to drainage areas for the rural streamgaging stations used to develop the regional regression equations.

records for the Upper Three Runs basin. To obtain flows for the Upper Three Runs basin, either the station percent-chance exceedance flow can be used (table 4) or the flow at an ungaged site can be adjusted by using the drainage area at an appropriate Upper Three Runs gaging station as an index station. In addition, the methods are not valid for basins in the Okefenokee Swamp in southeastern Georgia where the magnitude and frequency relations are undefined.

Analysis of Gaged Basins within Multiple Hydrologic Regions

A comparison of the computed P-percent chance exceedance flows and the predicted P-percent chance exceedance flows was made for all 828 gaged stations used in the regression analysis. The computed P-percent chance exceedance flows are the peak-flow statistics that are determined using the log-Pearson Type III analysis of the systematic annual peaks, and the predicted P-percent chance exceedance flows are the estimates from the regression equations. The purpose of the comparison is to analyze how well the final regional regression equations predict the P-percent chance exceedance flows for stations with drainage basins that are within multiple hydrologic regions. The computed and predicted 1-percent chance exceedance flow for gaged stations with a portion of the drainage basin within HR1 is shown in figure 12. The stations are grouped in 25-percent increments from 1 to 100 percent of the drainage basin within HR1. The points appear to be equally scattered around the one-to-one line for all the percentage ranges. Thus, there does not appear

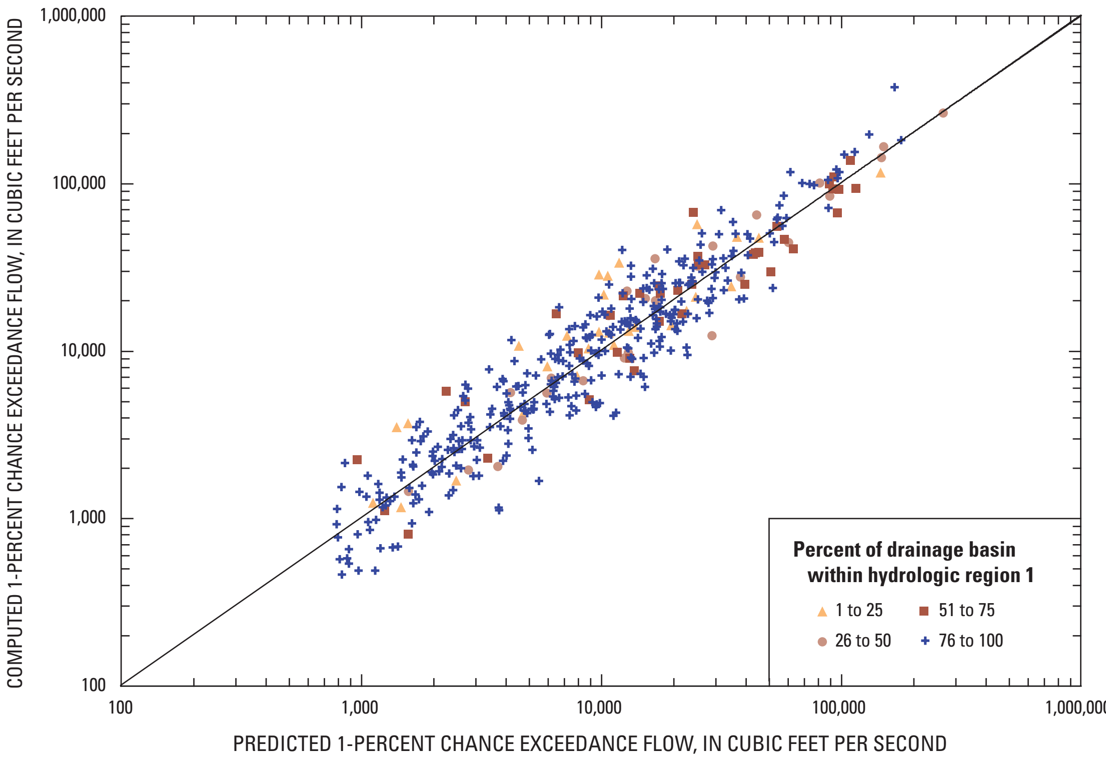


Figure 12. Computed and predicted 1-percent chance exceedance flows for rural streamgaging stations with a portion of the drainage basin within hydrologic region 1.

to be any over- or under-prediction of the P-percent chance exceedance flows for stations having at least some of the basin in HR1. The plots for all five hydrologic regions exhibited similar scatter around the one-to-one line for the $Q_{50\%}$ through $Q_{0.2\%}$ equations, indicating the model works well for stations with drainage basins that are within multiple regions.

Maximum Floods

The realization is inherent in a flood-frequency analysis that for floods with a specified probability of recurrence, such as the 1-percent chance exceedance flow, the regression curve is a best-fit line for linear regression, or a best-fit plane for multiple regression, through a series of statistically specified percent chance exceedance flows from some number of gaged locations in a given region. The regression curve is fit so that the variance about the curve is minimized; therefore, roughly half of the data points will be above the regression line and half below. For many applications, this level of uncertainty is acceptable and often is compensated for by including a factor of safety in the design process. Assessments of maximum measured floods are another tool that can be used to evaluate the reasonableness of a flood-frequency estimate.

Crippen and Bue (1977) developed envelope curves from maximum flood data for 17 regions in the conterminous United States (fig. 13). Crippen (1982) later provided equations that described the envelope curves. The curves were not associated with specific probabilities or frequencies, but were provided as a tool to help assess the maximum flood that might be expected in the regions for a given drainage area size. Costa (1987) developed an envelope curve of the maximum rainfall-runoff floods in the United States, but his dataset did not include any stations in the Southeast.

Using data from the stations included in the current study, the maximum peak flows were plotted against drainage area, and an envelope curve was drawn to represent the most extreme floods (figs. 14 and 15). The stations were grouped on the basis of having at least 75 percent of the basin draining either above or below the Fall Line, which allows for comparisons with the Crippen (1982) curves. Consequently, the stations above the Fall Line include data from the Ridge and Valley, Blue Ridge, and Piedmont ecoregions, and the stations below the Fall Line include data from the Coastal Plain ecoregions. In addition, a few stations that currently are regulated but had large floods recorded prior to regulation also were included. Like the Crippen (1982) curves, the envelope curves generated from the maximum flow data included in the current study indicate maximum flood-flow potential for a range of drainage areas for the given regions.

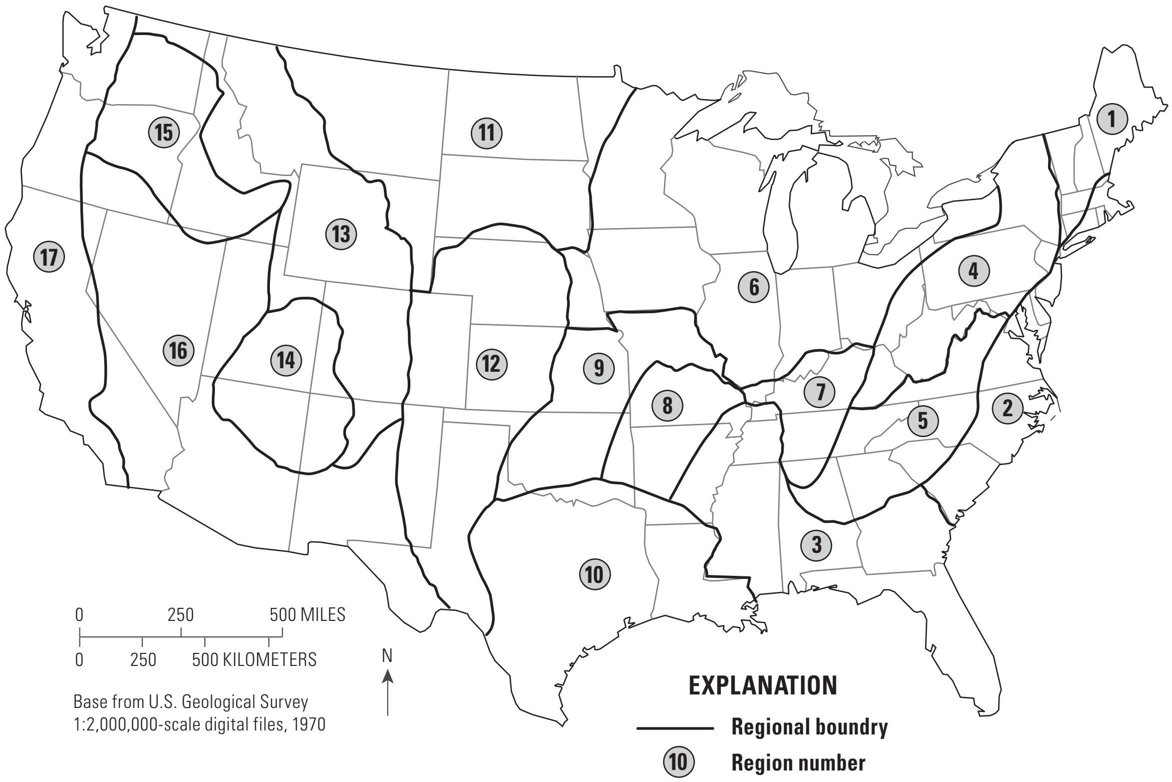


Figure 13. Flood-region boundaries within the conterminous United States (modified from Crippen and Bue [1977] as published by Kenney and others [2007]).

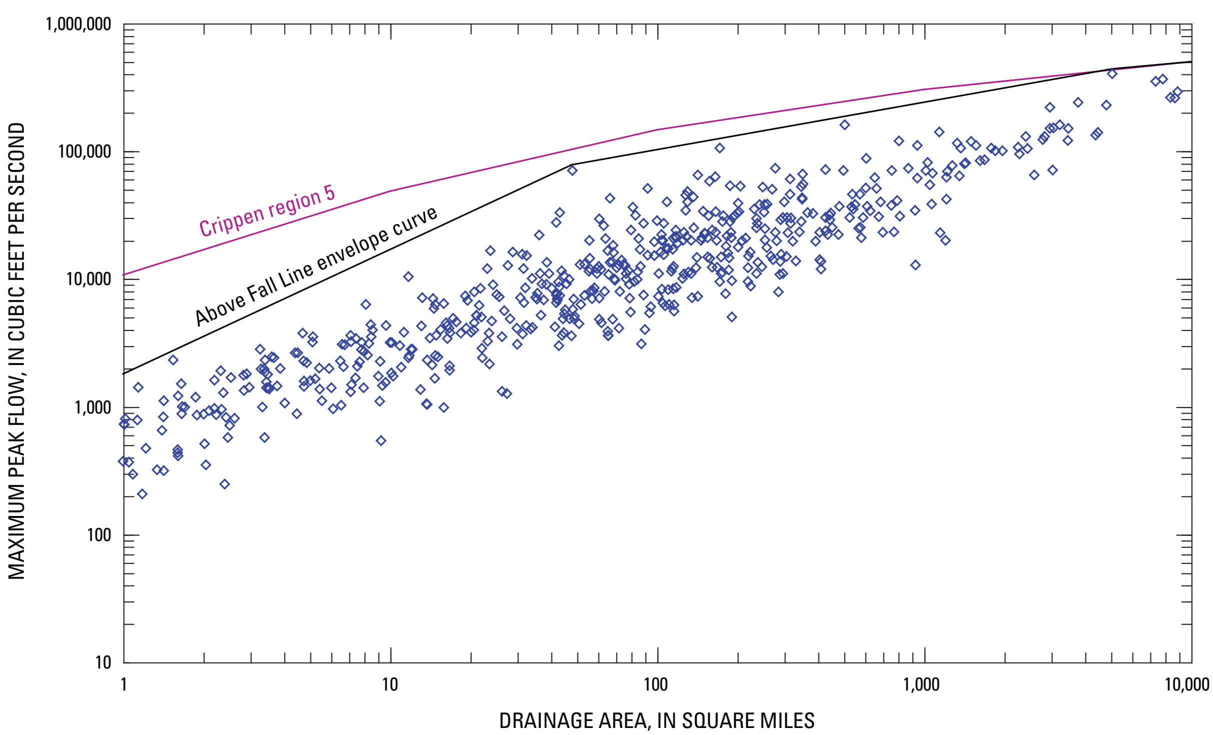


Figure 14. Maximum flood flow and drainage area for streams located above the Fall Line in South Carolina, Georgia, and North Carolina.

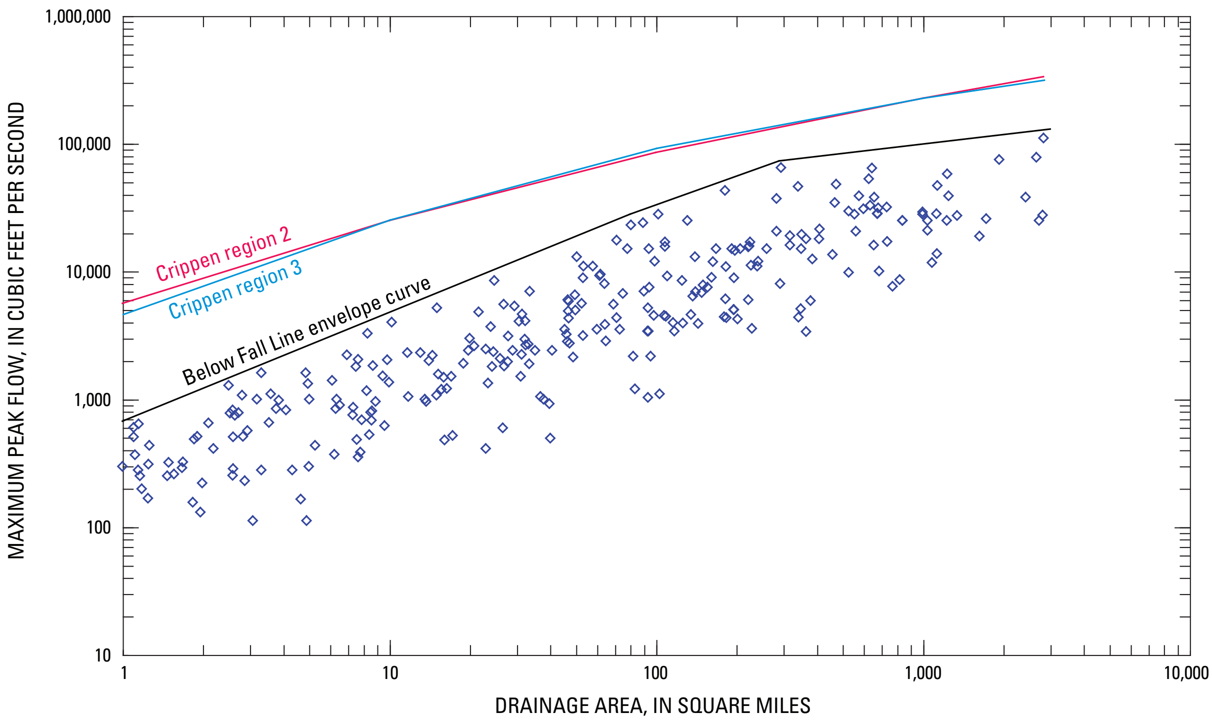


Figure 15. Maximum flood flow and drainage area for streams located below the Fall Line in South Carolina, Georgia, and North Carolina.

Comparison of Results with Previous South Carolina Study

Flood-frequency estimates made at gaged stations and regional flood-frequency equations developed from the gaged-station estimates contain varying degrees of uncertainty based on numerous factors such as length of record, number of stations available for regionalization, and range of basin characteristics. Longer records have been shown to result in lower standard errors depending on the variability of the annual events that occurred during the period of record (Benson and Carter, 1973). Streamgaging flood-frequency estimates also are influenced by regional skew information. Feaster and Tasker (2002) found that using an arithmetic mean skew based on a regional analysis using stations with 25 or more years of record resulted in an improved mean square error in the generalized skew as compared to that provided in Bulletin 17B (Interagency Advisory Committee on Water Data, 1982). As previously discussed, a generalized skew analysis was completed as part of this investigation using a larger dataset that covered a broader geographical region than was included in Feaster and Tasker (2002). The actual generalized skew values between the previous investigation and the current investigation, however, are relatively similar. Feaster and Tasker (2002) suggested a skew of –0.19 be used for the Piedmont region and a skew of 0.08 be used for the rest of South Carolina. The current investigation suggests a skew of –0.019 be used for the entire study area. All three values are relatively close to zero and, thus, the differences in the streamgaging flood-frequency estimates based on just the different generalized skew would tend to be rather small. For example, the 1-percent chance exceedance flow for station 02165000, Reedy River near Ware Shoals, SC, which is located in the Piedmont region, using the current generalized skew is 13,400 ft^3/s and using the generalized skew from the previous investigation is 13,000 ft^3/s, a difference of about 3 percent. At station 02176500, Coosawhatchie River near Hampton, SC, which is located in the Coastal Plain region, the 1-percent chance exceedance flow using the generalized skew for the current investigation is 7,840 ft^3/s and using the generalized skew from the previous investigation is 7,980 ft^3/s, a difference of about 2 percent. In addition, a larger dataset with improved geographical coverage and improved coverage in the range of basin characteristics is desired for developing equations for making flood-frequency estimates at ungaged sites. These factors are part of the differences in the flood-frequency estimates from the previous South Carolina regional regression equations and the regional regression equations provided in the current investigation.

The 10- and 1-percent chance exceedance flow regression curves from this investigation were compared with those from the previous rural flood-frequency investigation for South Carolina (Feaster and Tasker, 2002). Percentage differences were computed for the minimum and maximum drainage area limits that were applicable for both investigations. As discussed earlier, the previous investigation included a qualitative variable State to distinguish between South Carolina, North Carolina, and Georgia for the Piedmont region (HR1) and the upper Coastal Plain (HR3). Consequently, this resulted in two regression curves for each T-year recurrence interval (P-percent chance exceedance): one curve for South Carolina sites and another curve for North Carolina and Georgia sites. Because the previous report was only applicable for South Carolina, the curves relevant to a site in the other States were not published. However, as already stated, the findings from this investigation indicate that the regression curves are more appropriately defined in the context of the larger datasets used in the current investigation. Therefore, the 10- and 1-percent chance exceedance flows from the previous investigation for the Piedmont and upper Coastal Plain regions from both curves generated using the qualitative variable are compared (tables 11, 12; figs. 16, 17). For the Blue Ridge (HR2) and lower Coastal Plain (HR4), the percentage differences (–3.4 to 14.8 percent and 21.4 to –6.4 percent, respectively) are well within the uncertainty of the analyses (average standard error of prediction of 35.1 and 41.9 percent for the 10- percent and

Table 11. Ten- and 1-percent chance exceedance flows from the previous South Carolina flood-frequency investigation and from the current flood-frequency investigation.

[HR, hydrologic region; mi², square miles; ft³/s, cubic feet per second]

Region as defined in previous study (current)	Drainage area, mi²	10-percent chance exceedance flow, ft³/s (previous)	10-percent chance exceedance flow, ft³/s (current)	Percent difference from previous study estimate	1-percent chance exceedance flow, ft³/s (previous)	1-percent chance exceedance flow, ft³/s (current)	Percent difference from previous study estimate
Piedmont (HR1)	1.00	262	398	51.9	503	776	54.3
Piedmont (HR1)	1,430	28,800	35,200	22.2	47,500	58,100	22.3
Blue Ridge (HR2)	1.00	281	288	2.5	595	575	–3.4
Blue Ridge (HR2)	945	39,000	44,600	14.4	66,300	76,100	14.8
Upper Coastal Plain (HR3)	4.70	130	185	42.2	223	326	46.4
Upper Coastal Plain (HR3)	1,720	11,100	14,600	31.5	19,400	24,700	27.3
Lower Coastal Plain (HR4)	1.10	145	185	27.6	331	402	21.4
Lower Coastal Plain (HR4)	1,250	13,600	14,200	4.4	28,100	26,300	–6.4

Table 12. Ten- and 1-percent chance exceedance flows from the previous South Carolina flood-frequency investigation for regression curves relevant to sites in North Carolina and Georgia and from the current flood-frequency investigation.

[mi², square miles; ft³/s, cubic feet per second]

Region (previous; current)	Drainage area, mi²	10-percent chance exceedance flow, ft³/s (previous for North Carolina and Georgia sites)	10-percent chance exceedance flow, ft³/s (current)	Percent difference from previous study estimate	1-percent chance exceedance flow, ft³/s (previous)	1-percent chance exceedance flow, ft³/s (current)	Percent difference from previous study estimate
Piedmont (HR1)	1.00	374	398	6.4	703	776	10.4
Piedmont (HR1)	1,430	41,200	35,200	–14.6	66,400	58,100	–12.5
Upper Coastal Plain (HR3)	4.70	176	185	5.0	312	326	4.7
Upper Coastal Plain (HR3)	1,720	15,000	14,600	–2.7	27,200	24,700	–9.2

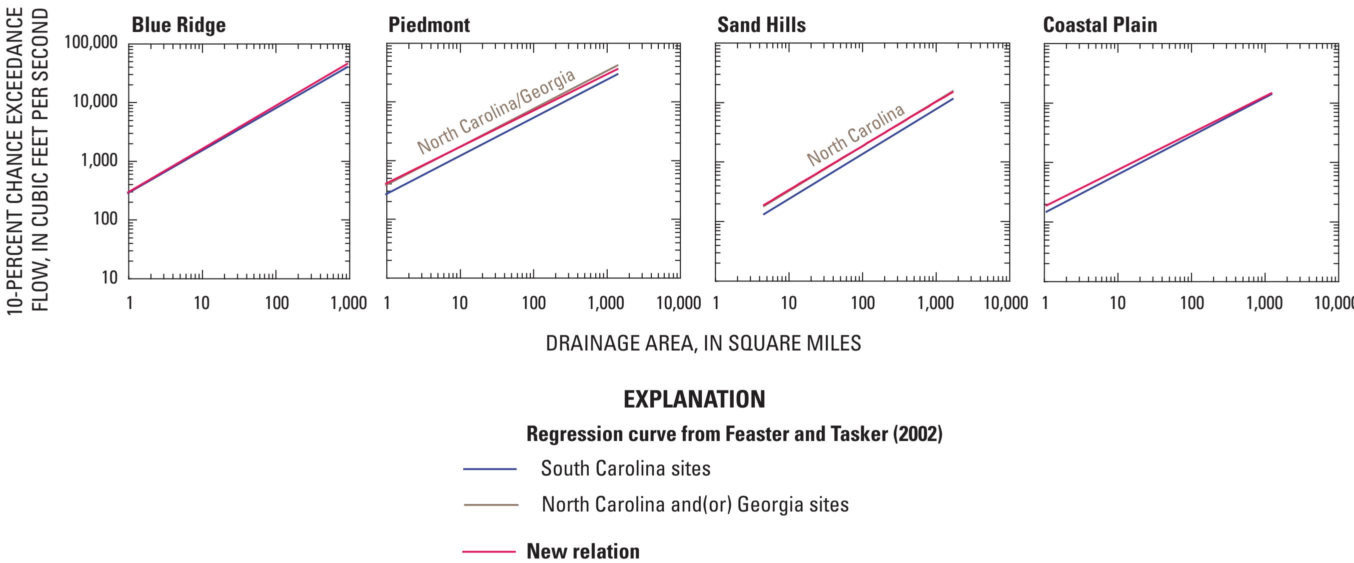


Figure 16. Drainage area and predicted 10-percent chance exceedance flow in the Blue Ridge, Piedmont, Sand Hills, and Coastal Plain regions in the current study and corresponding regions in Feaster and Tasker (2002).

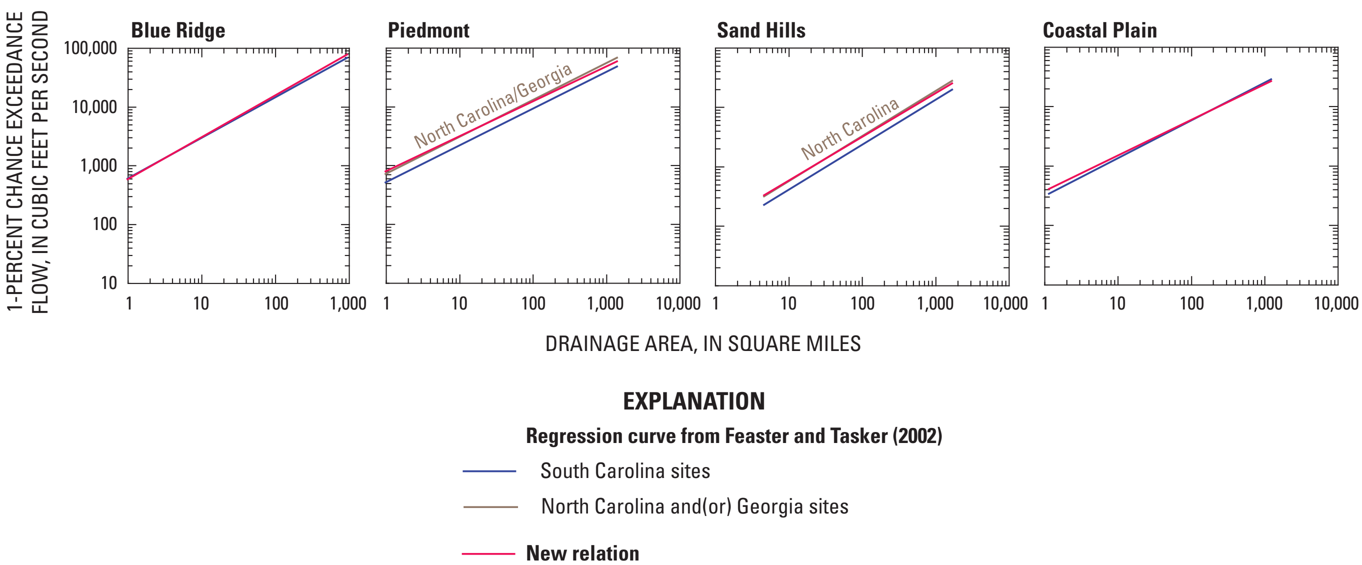


Figure 17. Drainage area and predicted 1-percent chance exceedance flow in the Blue Ridge, Piedmont, Sand Hills, and Coastal Plain regions in the current study and corresponding regions in Feaster and Tasker (2002).

1-percent chance exceedance flows, respectively) and show no drastic deviations (table 11). For the Piedmont (HR1) and the upper Coastal Plain (HR3), the analysis shows that if the qualitative variable had not been included in the previous investigations, the percentage differences (10.4 to –12.5 percent and 4.7 to –9.2 percent, respectively) also would be well within the uncertainty of the analyses (as shown above). Although the statistical methods used in the previous investigation were appropriate given the dataset used at that time, the current results, which are based on a larger dataset, should provide improved regional estimates at ungaged locations in South Carolina.

Application of Methods

The best estimates of flood frequencies for a site typically are obtained through a weighted combination of estimates produced from more than one method. Tasker (1975) demonstrated that if two independent estimates of a streamflow statistic are available, a properly weighted average of the independent estimates will provide an estimate that is more accurate than either of the independent estimates. Improved flood-frequency estimates can be determined for South Carolina gaged stations by weighting estimates determined from the Bulletin 17B analysis with estimates obtained from the regression equations provided in this report. Improved estimates also can be determined for ungaged sites on the same stream in South Carolina by weighting the estimates obtained from the regression equations with estimates that were determined based on the flow of an upstream or downstream gaged station. The following sections describe the weighting process for gaged stations and ungaged sites in more detail and provide example calculations. The results are rounded to three significant figures.

Estimation for a Gaged Station

The Interagency Advisory Committee on Water Data (1982) recommends that better estimates of flood-frequency statistics for a gaged station can be obtained by combining (weighting) the streamgaging flow estimate determined from the log-Pearson Type III analysis of the annual peaks with the flow estimate obtained for the station from regression equations. Optimal weighted flow estimates can be obtained if the variance of prediction for each of the two estimates is known or can be estimated accurately. The variance of prediction can be thought of as a measure of the uncertainty in either the gaged-station flow estimate or the regional regression results. If the two estimates can be assumed to be independent and are weighted in inverse proportion to the associated variances, the variance of the weighted estimate will be less than the variance of either of the independent estimates.

The variance of prediction corresponding to the gaged-station flow estimate from the log-Pearson Type III analysis is computed using the asymptotic formula given in Cohn and others (2001) with the addition of the mean-squared error of generalized skew (Griffis and others, 2004). This variance varies as a function of the length of record, the fitted log-Pearson Type III distribution parameters (mean, standard deviation, and weighted skew), and the accuracy of the method used to determine the generalized-skew component of the weighted skew. The variance of prediction for the gaged-station estimate generally decreases with length of record and the quality of the log-Pearson Type III distribution fit. The variance of prediction values for the gaged-station flow estimates for the 82 gaged stations located in South Carolina are shown in table 13 (p. 79). The variance of prediction from the regional regression equations is a function of the regression equations and the values of the independent variables used to develop the flow estimate from the regression equations. This variance generally increases as the values of the independent variables move further from the mean values of the independent variables. The average variance of prediction values for the regional regression equations used in the current study are shown in table 9.

Once the variances have been computed, the two independent flow estimates can be weighted using the following equation:

$$\log Q_{P(g)w} = \frac{V_{p,P(g)r} \log Q_{P(g)s} + V_{p,P(g)s} \log Q_{P(g)r}}{V_{p,P(g)s} + V_{p,P(g)r}}, \quad (21)$$

where

$Q_{P(g)w}$ is the weighted estimate of peak flow for any P-percent chance exceedance for a gaged station, in cubic feet per second;

$V_{p,P(g)r}$ is the variance of prediction at the gaged station derived from the applicable regional regression equations for the selected P-percent chance exceedance (from table 9), in log units;

$Q_{P(g)s}$ is the estimate of peak flow at the gaged station from the log-Pearson Type III analysis for the selected P-percent chance exceedance, in cubic feet per second;

$V_{p,P(g)s}$ is the variance of prediction at the gaged station from the log-Pearson Type III analysis for the selected P-percent chance exceedance (from table 13, p. 79), in log units; and

$Q_{P(g)r}$ is the peak-flow estimate for the P-percent chance exceedance at the gaged station derived from the applicable regional regression equations 7–14, in cubic feet per second.

The weighted (best) flow estimates were computed using equation 21 along with the variance of prediction values from tables 9 and 13 for the 82 gaged stations in South Carolina. The weighted flow estimates for the 82 gaged stations are given in table 4 (p. 74).

When the variance of prediction corresponding to one of the estimates is high, the uncertainty is also high, and so the weight for that estimate is relatively small. Conversely, when the variance of prediction is low, the uncertainty is also low and so the weight is correspondingly large. The variance of prediction associated with the weighted estimate, $V_{p,P(g)w}$, is computed using the following equation:

$$V_{p,P(g)w} = \frac{V_{p,P(g)s} V_{p,P(g)r}}{V_{p,P(g)s} + V_{p,P(g)r}}. \quad (22)$$

The variance of prediction values associated with the weighted estimates are given in table 13 (p. 79).

An example of the application of the procedure described above is the following computation of the weighted 1-percent chance exceedance flow for the station on North Pacolet River at Fingerville, SC (station number 02154500):

1. Obtain the gaged-station estimate of the 1-percent chance exceedance flow at the station based on the Bulletin 17B analysis from table 4 ($Q_{1\%(g)s}$ = 11,900 ft^3/s);

2. Obtain drainage area and hydrologic region percentages from table 7 for the gaged station (DA = 116 mi^2, PCT_1 = 75.4, PCT_2 = 24.6, PCT_3 = 0.0, PCT_4 = 0.0, and PCT_5 = 0.0);

3. Compute $Q_{1\%(g)r}$ using equation 12 ($Q_{1\%(g)r} = 10^{[0.0289(75.4)+0.0276(24.6)+0.0202(0)+0.0258(0)+0.0286(0)]} 116^{[0.594+0.00119(24.6)+0.00139(0)]} = 14{,}000$ ft^3/s);

4. Obtain the variance of prediction for the gaged-station estimate for the 1-percent chance exceedance flow from table 13 ($V_{p,1\%\,(g)s}$ = 0.0050) ;

5. Obtain the variance of prediction for the 1-percent chance exceedance flow regression equation from table 9 ($V_{p,1\%\,(g)r}$ = 0.0305); and

6. Compute the weighted 1-percent chance exceedance flow for the station using equation 21 (log $Q_{1\%(g)w}$ = ((0.0305)(log11,900)+(0.0050)(log14,000))/(0.0305+0.0050) = 4.085 and $Q_{1\%(g)\,w}$ = 12,200 ft^3/s).

7. Compute the weighted variance for the station using equation 22 ($V_{p,1\%(g)w}$ = ((0.0050)(0.0305))/(0.0050+0.0305) = 0.0043).

Previous USGS flood-frequency reports used the equivalent years of record associated with the regression equations along with the length of record at the gaged station to weight the flow estimates obtained from the regional regression equation and the log-Pearson Type III analysis. The length of record, however, often fails to account for the true variance of log-Pearson Type III flood-frequency estimates. For example, although longer record lengths generally result in decreased variance, record length fails to account for the improvement in information content provided by the generalized skew or the addition of historic peaks. Furthermore, flood-frequency distributions computed from two different gaged-station records of the same length may not be of equal reliability owing to differences in underlying variances of the peak-flow records. For example, smaller drainage areas may have flashier, more highly varied records, or may be more difficult to accurately gage than a large basin, hence the log-Pearson Type III distributions could be expected to have larger variances. More importantly, the equivalent year of record concept, while relatively easy to grasp, can sometimes misconstrue the relation between flood-frequency estimates and associated variances. Using variances provides a more accurate characterization of the underlying uncertainty of the various flow estimates.

Estimation for an Ungaged Site near a Gaged Location

Sauer (1974) presented the following method to improve flood-frequency estimates for an ungaged site near a gaged station, on the same stream, that has 10 or more years of peak-flow record. To obtain a weighted peak-flow estimate ($Q_{P(u)w}$) for P-percent chance exceedance at the ungaged site, the weighted flow estimate for an upstream or downstream gaged station ($Q_{P\,(g)w}$) must first be determined by using the equation provided in the previous section. The weighted estimate for the ungaged site ($Q_{P(u)w}$) is then computed using the following equation:

$$Q_{P(u)w} = \left[\left(\frac{2\Delta A}{A_{(g)}}\right) + \left(1 - \frac{2\Delta A}{A_{(g)}}\right)\left(\frac{Q_{P(g)w}}{Q_{P(g)r}}\right)\right] Q_{P(u)r}, \qquad (23)$$

where

$Q_{P(u)w}$ is the weighted estimate of peak flow for the selected P-percent chance exceedance at the ungaged site, in cubic feet per second;

ΔA is the absolute value of the difference between the drainage areas of the gaged station and the ungaged site, in square miles;

$A_{(g)}$ is the drainage area for the gaged station, in square miles;

$Q_{P(u)r}$ is the peak-flow estimate derived from the applicable regional equations 7–14 for the selected P-percent chance exceedance at the ungaged site, in cubic feet per second;

$Q_{P(g)w}$ and $Q_{P(g)r}$ are previously defined in equation 21.

Use of equation 23 above gives full weight to the regression estimates when the drainage area for the ungaged site is equal to 0.5 or 1.5 times the drainage area for the gaged station, and increasing weight to the gaged station estimates as the drainage area ratio approaches 1. The weighting procedure should not be applied when the drainage area ratio for the ungaged site and gaged station is less than 0.5 or greater than 1.5.

An example of the application of the procedure described above is the computation of the weighted 1-percent chance exceedance flow, and its associated equivalent years of record, for a hypothetical ungaged site on the North Pacolet River located above the USGS station near Fingerville, SC (station number 02154500) cited in the previous section:

1. Calculate the value of $Q_{1\%(g)w}$ (see example in previous section using equation 21; value can also be found in table 4, p. 74); $Q_{1\%\,(g)w}$ = 12,200 ft^3/s;

2. Obtain the drainage areas for both the gaged and ungaged sites; A_g = 116 mi^2, and A_u = 93.0 mi^2;

3. Obtain the hydrologic region percentages for the ungaged site; PCT_1 = 94.1, PCT_2 = 5.9, PCT_3 = 0.0, PCT_4 = 0.0, PCT_5 = 0.0;

4. Compute $Q_{1\%(u)r}$ for the ungaged site using equation 12 $Q_{1\%\,(u)r} = 10^{[0.0289(94.1)+0.0276(5.9)+0.0202(0)+0.0258(0)+0.0286(0)]} 93.0^{[0.594+0.00119(5.9)+0.00139(0)]}$ = 11,600 ft^3/s;

5. Compute $Q_{1\%\,(g)r}$ for the gaged station using equation 12 (see example in previous section); $Q_{1\%\,(g)r}$ = 14,000 ft^3/s;

6. Compute ΔA, where ΔA = 116 – 93.0 = 23 mi^2;

7. Compute the weighted estimate for the ungaged site, $Q_{P(u)w}$ using equation 23 $Q_{1\%\,(u)w}$ = [((2*23)/116)+((1– ((2*23)/116))*(12,200/14,000))]*11,600 = 10,700 ft^3/s.

For an ungaged site that is located between two gaged stations on the same stream, two flow estimates can be made using the methods and criteria outlined above. Besides evaluating any differences in the hydrologic regions of the two gaged stations in comparison to the ungaged site, additional hydrologic judgment may be necessary to determine which of the two estimates (or some interpolation thereof) is most appropriate. Other factors that might be considered when evaluating the two estimates include differences in the length of record at the two gaged stations and the hydrologic conditions that existed during the data-collection period at each gaged station (that is, does the time series represent a climatic period that was predominately wet or dry?).

Flood Frequency at Gaged Stations on Regulated Streams

Bulletin 17B procedures were developed using data from natural streams. The procedures, however, can be used to estimate the magnitude and frequency of floods at streamgages on regulated streams under certain conditions (W. Kirby, U.S. Geological Survey, written commun., 2002). A major consideration is that the logarithms of the regulated peak flows are reasonably consistent with a Pearson Type III distribution. For reservoirs that have substantial storage capacity, floods in the upper middle range of peak-flow magnitudes will be lower relative to the unregulated condition, whereas extreme floods that would overtop the reservoir will tend to be closer to the same magnitude as the unregulated floods. For such cases, the frequency curve would have a shape such as shown in figure 18 and, therefore, would not be considered consistent with the Pearson Type III distribution.

Many of the regulated streams in South Carolina have stations for which peak-flow records are a combination of unregulated and regulated periods. In such cases, it is important to remember that Bulletin 17B procedures are for homogenous datasets. Consequently, under most conditions at such stations, the two periods should not be combined for the flood-frequency analysis. For the regulated period, trend assessments can be made to determine if regulation patterns have been consistent throughout the period of regulated flows. If no trends are present and the data are consistent with the Pearson Type III distribution, the flood-frequency analysis can be made with the understanding that using the flood-frequency estimates assumes that similar regulation patterns will continue in the future. For this investigation, trends were assessed using the Kendall tau statistic and cumulative plots (single mass curve) of various statistics, such as the ratio of the 90th percentile to 50th percentile daily mean flows by water year (Searcy and Hardison, 1960). The slope of the mass curve represents a constant of proportionality of the chosen statistic over time. For a regulated stream, a major change in the slope of the curve would indicate a substantial change in regulation patterns.

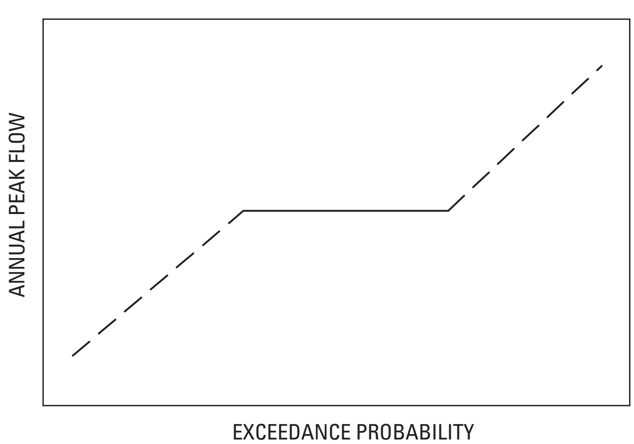


Figure 18. Example of regulated peak-flow data that are not consistent with a log-Pearson Type III frequency distribution.

Conrads and others (2008) have shown that for stations with both regulated and unregulated periods of record, it is important to be mindful of the hydrologic regime under which the data were collected. Their study showed for the long-term gaging station Congaree River at Columbia, SC, a flood-frequency analysis of the peaks measured prior to construction of the Saluda Dam that was compared to a flood-frequency analysis of the peaks after the construction of the Saluda Dam resulted in a false conclusion about the effect that regulation on the Saluda River had on peak flows on the Congaree River (fig. 19). Conrads and others (2008) concluded that the major reduction of large peak floods in the regulated period of record was mainly due to differences in the hydrologic regimes under which data were collected during the two periods and not due to the regulation of flows after 1930. Therefore, another consideration in conducting a flood-frequency analysis of the regulated peak flows on a stream that has both regulated and unregulated periods of record should be the differences in the hydrologic regimes under which the two records are collected. Otherwise, the flood-frequency estimates from the regulated data may grossly underestimate the potential magnitude of extreme rare floods. However, if data are available to conclude that the regulated period includes extreme flood magnitudes, then greater confidence can be had that the flood-frequency estimates reflect the effect of reservoir storage on the regulated stream. In cases were it is clear that the regulated data do not reflect extreme flood events that are known to have occurred on the stream during unregulated conditions, additional analytical steps, such as flood routing and correlation with peaks on unregulated streams, should be taken to include such data. Such additional steps are beyond the scope of the current investigation and, therefore, for regulated stations that have such known conditions, a flood-frequency analysis was not made.

For informational purposes, water-year peak-flow data for stations on regulated streams in South Carolina are provided in appendix C of this report. The regulated stations considered for a flood-frequency analysis are listed in table 14, and the locations of these regulated stations are shown in figure 20.

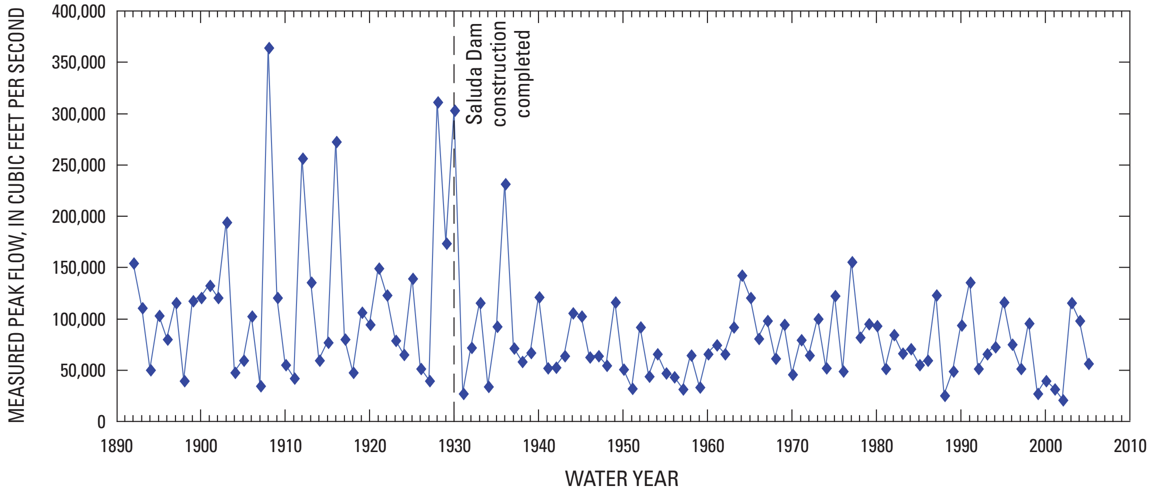


Figure 19. Peak flows at U.S. Geological Survey streamgaging station 02169500, Congaree River at Columbia, SC.

Table 14. Description of regulated streamgaging stations in South Carolina (SC) for which a flood-frequency analysis was considered.

Map identification number (fig. 20)	USGS station number	Station name	Drainage area (square mile)	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)	Period of record
1r	02130500	Juniper Creek near Cheraw, SC	64.0	34 38 38	79 53 43	1941–58
2r	02130561	Pee Dee River near Bennettsville, SC	7,600	34 36 22	79 47 19	1992–2006
3r	02130910	Black Creek near Hartsville, SC	173	34 23 50	80 09 00	1961–2006
4r	02131000	Pee Dee River at Peedee, SC	8,830	34 12 15	79 32 55	1939–2006
5r	02146000	Catawba River near Rock Hill, SC	3,050	34 59 05	80 58 27	1896–1903, 1942–2006
6r	02147000	Catawba River near Catawba, SC	3,530	34 51 09	80 52 06	1904–48, 1968–91
7r	02147020	Catawba River below Catawba, SC	3,540	34 50 10	80 52 47	1993–2006
8r	02148000	Wateree River near Camden, SC	5,070	34 14 40	80 39 15	1886–2006
9r	02148315	Wateree River below Eastover, SC	5,590	33 49 42	80 37 14	1979–2006
10r	02155500	Pacolet River near Fingerville, SC	212	35 06 35	81 57 35	1903, 1931–2006
11r	021556525	Pacolet River below Lake Blalock, SC	273	35 02 51	81 51 21	1995–2006
12r	02156000	Pacolet River near Clifton, SC	320	34 58 10	81 48 05	1940–78
13r	02167000	Saluda River at Chappells, SC	1,360	34 10 28	81 51 51	1888, 1907–2006
14r	02167500	Saluda River near Silverstreet, SC	1,630	34 10 58	81 43 37	1928–65
15r	02169000	Saluda River near Columbia, SC	2,520	34 00 50	81 05 17	1926–2006
16r	02169500	Congaree River at Columbia, SC	7,850	33 59 35	81 03 00	1852, 1892–2006
17r	02170000	Santee River at Ferguson, SC	14,600	33 26 15	80 16 20	1908–41
18r	02171500	Santee River near Pineville, SC	indeterminate	33 27 15	80 08 30	1943–2006
19r	02171650	Santee River below St. Stephens, SC	14,900	33 24 05	79 51 18	1971–81
20r	02187500	Savannah River near Iva, SC	2,231	34 15 20	82 44 42	1950–81
21r	02188000	Rocky River near Calhoun Falls, SC	267	34 07 40	82 37 56	1950–82
22r	02189000	Savannah River near Calhoun Falls, SC	2,876	34 04 15	82 38 30	1897–1980
23r	02197000	Savannah River at Augusta, GA	7,510	33 22 25	81 56 35	1796, 1840, 1852, 1864–65, 1876–2006
24r	02917500	Savannah River at Burtons Ferry Bridge near Millhaven, GA	8,650	32 56 20	81 30 10	1930, 1940–2006
25r	02198500	Savannah River near Clyo, GA	9,850	32 31 41	81 16 08	1925–2006

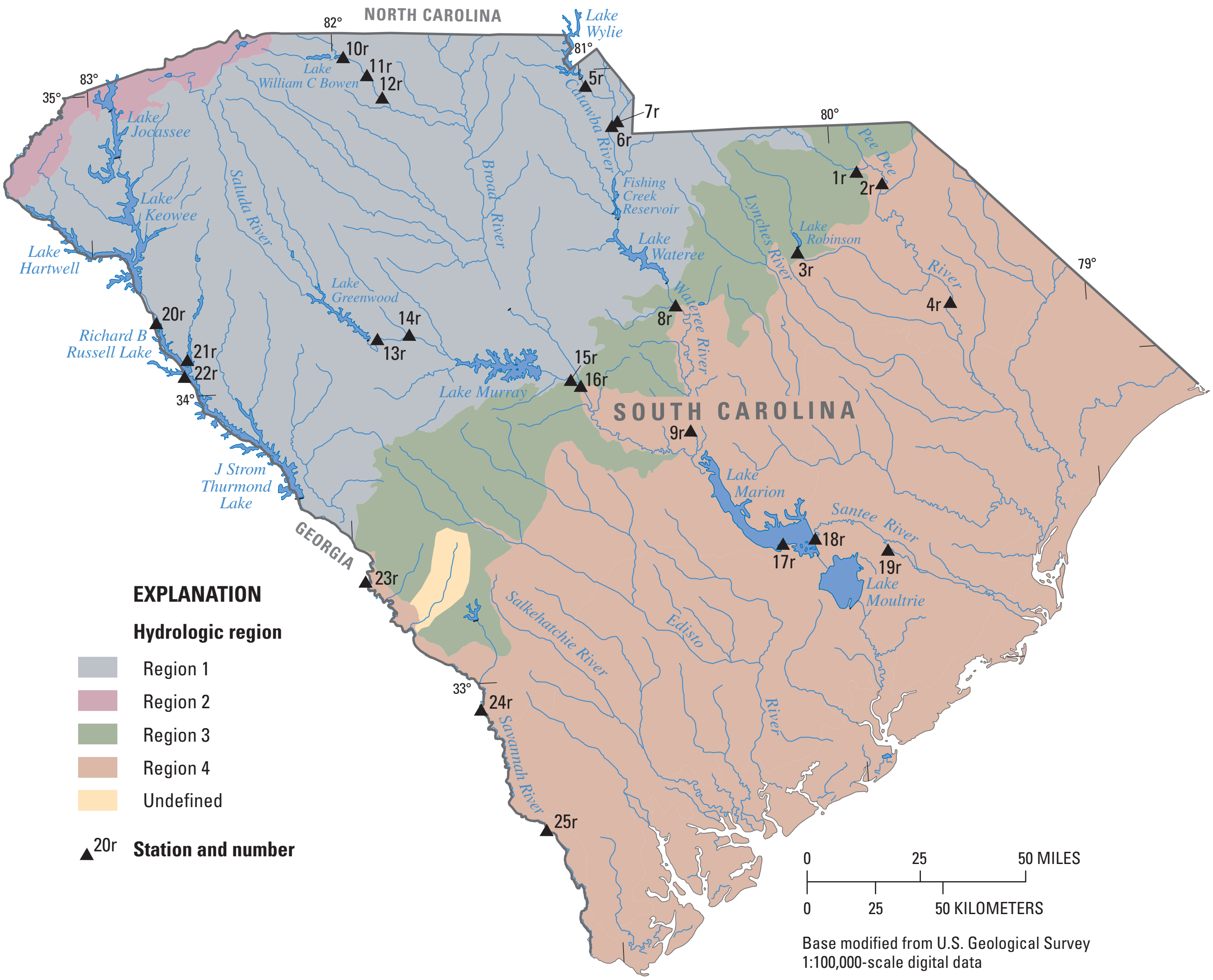


Figure 20. Locations of regulated streamgaging stations in South Carolina.

Pee Dee River

The Pee Dee River originates in the Blue Ridge region of North Carolina and flows through the Piedmont and Coastal Plain regions (fig. 20). Through most of North Carolina, the Pee Dee River is known as the Yadkin River.

Three reservoirs on the Yadkin River and two reservoirs on the Pee Dee River are used for hydroelectric-power generation. A sixth reservoir (W. Kerr Scott Reservoir), located on the Yadkin River, is used for flood control and water supply. These reservoirs are located in North Carolina and are not shown in figure 20. Selected data for these large reservoirs are listed below (Ruddy and Hitt, 1990). A small, seventh reservoir on the Yadkin River (Falls Lake), not shown in the table below, has a surface area of 204 acres and has no flood-storage capacity, which is the difference in the maximum capacity and the normal capacity of the reservoir (U.S. Army Corps of Engineers, 2007).

Name of reservoir	Date of completion	Name of stream	Drainage area (square miles)	Flood-storage capacity (acre-feet)
W. Kerr Scott	1963	Yadkin	350	112,000
High Rock Lake	1927	Yadkin	4,000	64,400
Tuckertown	1962	Yadkin	4,120	0
Badin Lake	1917	Yadkin	4,180	75,800
Lake Tillery	1928	Pee Dee	4,600	29,500
Blewett Falls Lake	1912	Pee Dee	6,830	7,000

Water-year peak-flow data are available for one long-term gaging station on the Pee Dee River downstream from the lakes: station 02131000, Pee Dee River at Peedee, SC (appendix C). An assessment of the peak-flow data indicated no long-term trends in the data, suggesting relatively consistent regulation patterns over time. The complete period of record at 02131000 is regulated. A comparison with station 02129000, Pee Dee River near Rockingham, NC, was made. The peak-flow record at station 02129000 has a short period of unregulated peak flows from water years 1907–11 and regulated peak flows from 1928–2006. The peak of record at 02129000 occurred on August 27, 1908, and had a magnitude of 276,000 ft^3/s. The peak of record during the regulated period was 270,000 ft^3/s and occurred on September 18, 1945. The regulated period included several other large peaks that occurred in the 1920s and 1930s (fig. 21). Because the regulated peak of 1945 was similar in magnitude to the unregulated peak of 1908 and given there were several other substantial peaks measured during the regulated period (1928, 1930, and 1936), it is reasonable to assume that the hydrologic experience during the regulated period of record covers a broad range of events and, therefore, a flood-frequency analysis is reasonable.

The peak flows for station 02131000 are shown in figure 22. The peak of 1945 is the peak of record. A correlation analysis between the regulated peaks at stations 02129000 and 02131000 resulted in a correlation coefficient of 0.90, indicating a strong relation between the peak flows at the two stations. An approximately 29 percent increase exists in the drainage basin size between the two stations: 6,860 and 8,830 mi^2, respectively. Analysis of the peak-flow data at 02131000 indicated no trends. In order to include the large floods from 1928, 1930, and 1936 in the analysis, a record-extension method known as the Maintenance of Variance, Type 1 (MOVE.1) method was used to estimate the peak flows for water years 1928–38 at station 02131000 based on the correlation with station 02129000 for the period 1939–2006 (fig. 23; Hirsch, 1982).

The log-Pearson Type III analysis indicated that the distribution was a reasonable fit for the regulated peak flows at station 02131000 (fig. 24); therefore, the percent chance exceedance flows for station 02131000 are provided in the table below. The percent chance exceedance flows for station

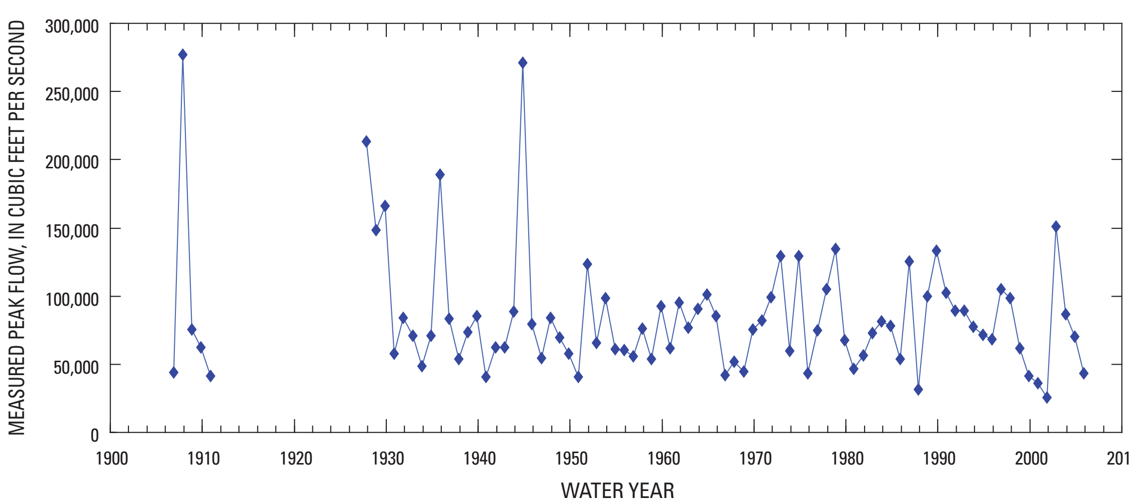


Figure 21. Peak flows at U.S. Geological Survey streamgaging station 02129000, Pee Dee River near Rockingham, NC.

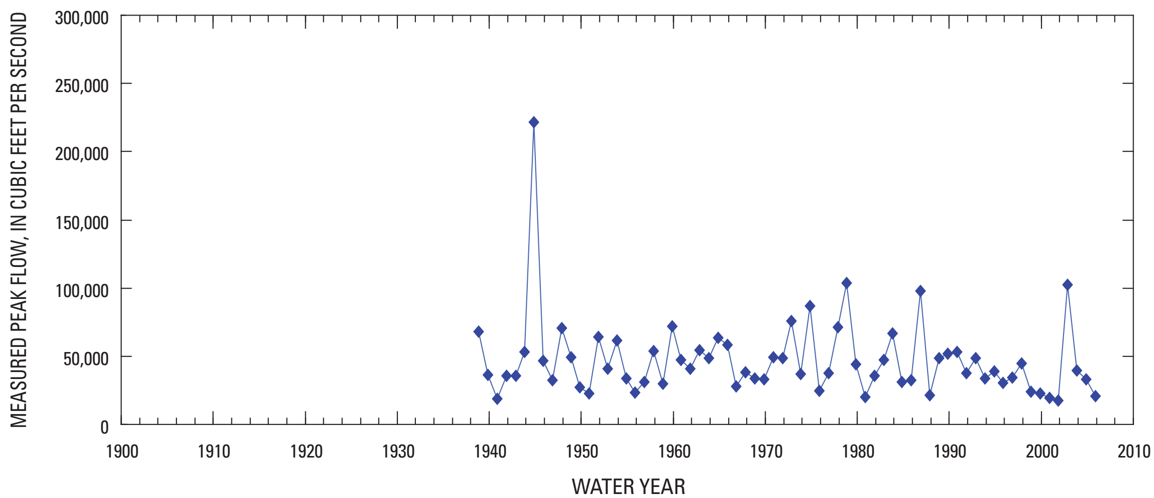


Figure 22. Peak flows at U.S. Geological Survey streamgaging station 02131000, Pee Dee River at Peedee, SC.

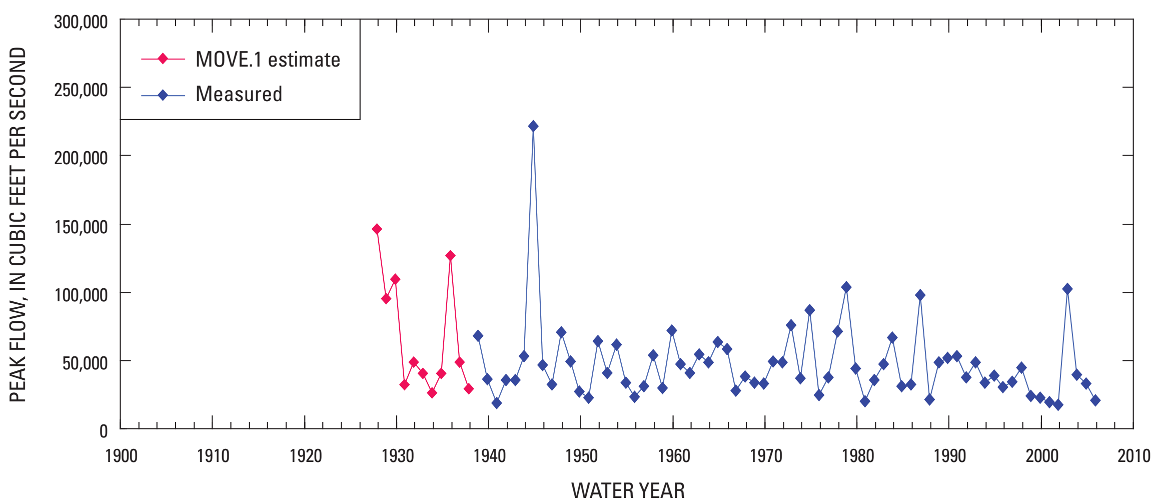


Figure 23. Measured and MOVE.1 peak flows at U.S. Geological Survey streamgaging station 02131000, Pee Dee River at Peedee, SC.

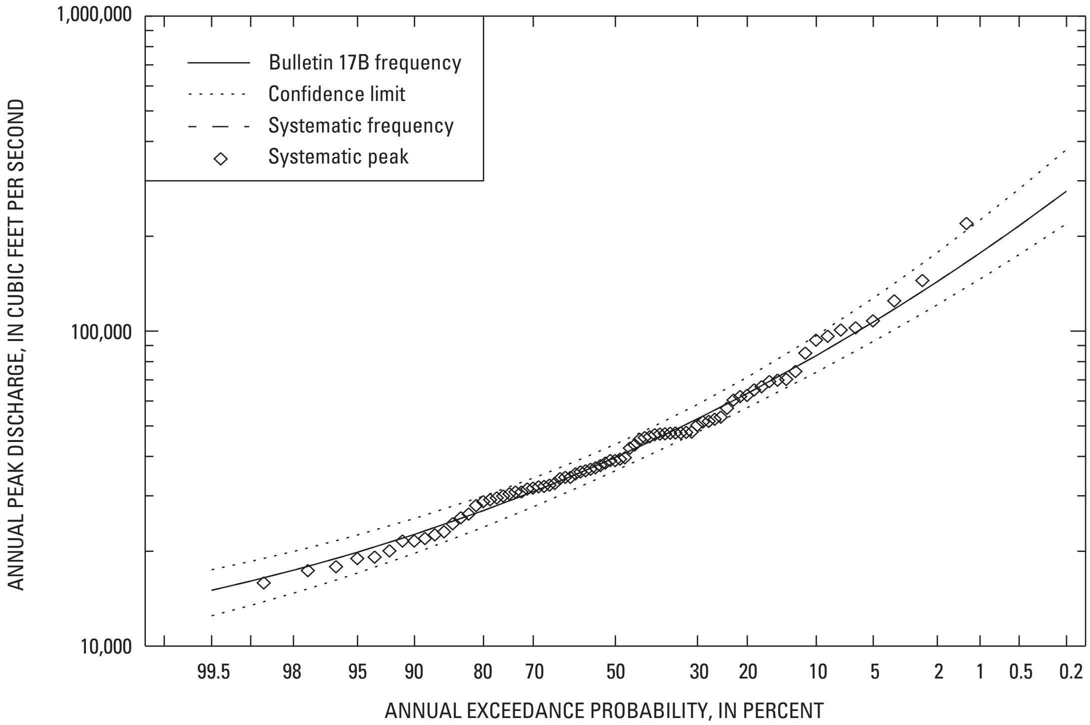


Figure 24. Pearson Type III distribution of the logarithms of peak flows at U.S. Geological Survey streamgaging station 02131000, Pee Dee River at Peedee, SC.

02129000 for the regulated period (1928–2006) shown in figure 21 are published in Weaver and others (in press).

An additional station on the Pee Dee River is located between stations 02129000 and 02131000 for which shorter term records are available: station 02130561, Pee Dee River near Bennettsville, SC (MID 2r). However, because the drainage area between stations 02129000 and 02131000 only increases by approximately 29 percent and because the records at these two stations incorporate a much longer period, a log-Pearson analysis was not completed for station 02130561, but the peak flows are provided in appendix C.

Station 02131000, Pee Dee River at Peedee, SC	
Percent chance exceedance	**Flow, in cubic feet per second**
50	39,700
20	63,400
10	83,600
4	115,000
2	144,000
1	177,000
0.5	216,000
0.2	278,000

Catawba River

The Catawba River originates in the Blue Ridge region of North Carolina, flows through the Piedmont of South Carolina, and becomes the Wateree River below Lake Wateree (fig. 20). Ten reservoirs, six in North Carolina (not shown in fig. 20) and four in South Carolina (fig. 20), are located on the Catawba River and are storage facilities for hydroelectric-power generation. Selected data for nine of these reservoirs are presented below (Ruddy and Hitt, 1990).

Water-year peak-flow data are available for station 02146000, Catawba River near Rock Hill, SC; station 02147000, Catawba River near Catawba, SC; and station 02147020, Catawba River below Catawba, SC (MID 5r, 6r, and 7r, respectively; table 14; appendix C). The regulated peak flows for station 02146000 began in 1942. Station 02147000 has peak gage heights available for 1904–48. From a comparison of those peak gage heights with peak flows at station 02148000, Wateree River near Camden, SC (MID 8r), it was determined that major floods occurred on the Catawba River in water years 1908, 1916, 1930, and 1936. In order to assess the effect that storage in the basin would have on the magnitude of those large floods at stations 02146000 and 02147000, additional assessments and analysis would need to be done to estimate the magnitudes of those floods under regulated conditions. Such analysis is beyond the scope

Name of reservoir	Date of completion	Drainage area (square miles)	Flood-storage capacity (acre-feet)
Lake James	1919	380	67,900
Rhodhiss Lake	1925	1,090	50,200
Lake Hickory	1928	1,310	61,140
Lookout Shoals Lake	1915	1,450	6,240
Lake Norman	1963	1,790	182,000
Mountain Island	1923	1,860	23,300
Lake Wylie	1925	3,020	33,000
Fishing Creek	1916	3,810	0
Lake Wateree	1919	4,750	45,100

of the current investigation. Consequently, a flood-frequency analysis was not conducted for stations 02146000, 02147000, or 02147020.

Wateree River

The Wateree River originates at the outflow of Lake Wateree (fig. 20). The Wateree River flows southeastward through the Sand Hills region where it merges with the Congaree River to form the Santee River (fig. 20).

Peak-flow data are available for station 02148000, Wateree River near Camden, SC, for water years 1905–10, 1916, and 1930–2006 (MID 8r; table 14; appendix C). The peak flow of record occurred on July 18, 1916, and had a magnitude of 400,000 ft^3/s. The second largest record peak occurred on August 26, 1908, and had a magnitude of 366,000 ft^3/s. Both of these peaks occurred prior to the construction of Lake Wylie (1925) and Lake Wateree (1919). The largest peak recorded after construction of these reservoirs occurred on April 7, 1936, and had a magnitude of 168,000 ft^3/s, less than half the magnitude of the 1916 and 1908 peak flows. In order to assess the effect that storage in the basin would have on the magnitude of those large floods at stations 02148000, additional assessments and analysis would need to be done to estimate the magnitudes of unregulated conditions. Such analyses are beyond the scope of the current investigation, and a flood-frequency analysis was not done for station 02148000.

In addition to station 02148000, streamflow also is monitored farther downstream at station 02148315, Wateree River below Eastover, SC (MID 9r,). The flows at station 02148315, however, only represent the portion of flow that is confined to the main channel. Consequently, streamflows greater than 10,000 ft^3/s are not reported, and therefore, the peak-flow record is incomplete. No flood-frequency analysis was done for station 02148315, and no peak flows are provided in appendix C.

Saluda River

The Saluda River originates in the Blue Ridge region and flows southeastward through the Piedmont region of South Carolina where it merges with the Broad River near Columbia, SC, to form the Congaree River (fig. 20). Two reservoirs, Lake Greenwood and Lake Murray, are located on the Saluda River. Selected data for these reservoirs are presented below (Ruddy and Hitt, 1990).

The Saluda River above Lake Greenwood is not significantly affected by regulation. Flows for sites along the Saluda River above Lake Greenwood can be determined by using methods described in previous sections of this report, by estimating flow at an ungaged site, or by estimating flow at or near a gaged site. The gaged stations on the Saluda River upstream from Lake Greenwood (fig. 20) are station 02162500, Saluda River near Greenville, SC (MID 360); station 02163000, Saluda River near Pelzer, SC (MID 361); station 02163001, Saluda River near Williamston, SC (not shown in fig. 2 or included in table 1); and station 02163500, Saluda River near Ware Shoals, SC (MID 362). The difference in the drainage areas for stations 02163000 and 02163001 is approximately 2 percent; therefore, the records for those two stations were combined for the gaged-station flood-frequency analysis. Records also are available for three stations downstream from Lake Greenwood as shown in figure 20. These are station 02167000, Saluda River at Chappells, SC (MID 13r); station 02167500, Saluda River near Silverstreet, SC (MID 14r); and station 02169000, Saluda River near Columbia, SC (MID 15r) (appendix C). As noted in the table above, the Lake Greenwood Dam (Buzzards Roost) was completed in 1940. For station 02167000, peak-flow data are available for the unregulated period from 1927 to 1939, and peak gage-height data are available for 1888 and 1906–26. Based on the comparison of the peak gage heights, the 1930 flood was the largest since at least 1888. Consequently, a historic period of 52 years was used in the flood-frequency analysis for the unregulated period. Because of the uncertainty of how regulation from Lake Greenwood has altered the magnitude of peak flows at station 02167000, no flood-frequency analysis was made for the regulated period from 1940 to 2006.

Name of reservoir	Date of completion	Drainage area (square miles)	Flood-storage capacity (acre-feet)
Lake Greenwood	1940	1,150	147,000
Lake Murray	1930	2,420	125,000

Congaree River

The Congaree River is formed by the convergence of the Broad and Saluda Rivers at Columbia, SC. The Congaree River flows southeastward and joins the Wateree River to form the Santee River (fig. 20). The Broad River basin makes up about two-thirds of the drainage area of the Congaree River. Flow on the Saluda River is regulated by the Saluda Dam, which was completed about 1930 forming Lake Murray. Water-year peak-flow data are available for the station 02169500, Congaree River at Columbia, SC (MID 16r) (appendix C).

A previous investigation compared the magnitude and frequency of floods at station 02169500 for two different periods: (1) 1892–1929, representing the period prior to regulation by the Saluda Dam, and (2) 1930–78, representing the period after construction of the Saluda Dam (Whetstone, 1982a). The analyses showed a substantial difference in the magnitude and frequency of floods on the Congaree River, and the implication was that regulation on the Saluda River had significantly altered floods on the Congaree River.

Conrads and others (2008) revisited this issue and concluded that regulation by the Saluda River had reduced the magnitude of floods on the Congaree River but to a much lesser degree than had been suggested previously. Their report concluded that the substantial differences in the magnitude and frequency of floods between the pre- and post-regulation periods on the Congaree River were more related to climatic variability between the monitoring periods than to regulation on the Saluda River.

In August 2001, the Federal Emergency Management Agency (FEMA) issued letters of final determination for the Congaree River flood hazard study (Federal Emergency Management Agency, 2001). For that study, recurrence-interval flood estimates were determined using data through 1998. Statistical techniques were used to estimate “regulated” peak flows for the unregulated period on the Congaree River. Those estimated “regulated” peaks were combined with the measured regulated peaks to form a regulated period of record for 1892–1998. No momentous floods have occurred during the intervening years. Given that such a detailed statistical analysis would be needed to update the flood-frequency estimates at station 02169500, which is beyond the scope of the current investigation, and given that no momentous floods have occurred that would significantly affect the flood-frequency estimates from the 100 years of record used in the FEMA analysis, the flood-frequency estimates from the FEMA study are being provided here.

Station 02169500, Congaree River at Columbia, SC	
Percent chance exceedance	**Flow, in cubic feet per second**
50	71,700
20	114,000
10	148,000
4	198,000
2	242,000
1	292,000
0.5	349,000
0.2	434,000

Santee River

Formed at the confluence of the Congaree and Wateree Rivers, the Santee River flows directly into Lake Marion—the largest reservoir by surface area in South Carolina (Ruddy and Hitt, 1990).

Name of reservoir	Date of completion	Drainage area (square miles)	Flood-storage capacity (acre-feet)
Lake Marion	1941	14,680	255,000

From 1941 to 1986, most of the flow from Lake Marion was diverted to the Cooper River through a diversion canal to Lake Moultrie (fig. 20). A rediversion canal, completed in 1986, restored approximately 80 percent of the previously diverted flow back to the Santee River. Due to the extensive hydrologic modification that has occurred in this basin, frequency computations were not made for stations along the Santee River. However, water-year peak flows for the three stations on the Santee River with 10 or more years of record are listed in appendix C: station 02170000, Santee River at Ferguson, SC (MID 17r); station 02171500, Santee River near Pineville, SC (MID 18r); and station 02171650, Santee River below St. Stephens, SC (MID 19r).

Pacolet River

The Pacolet River originates in the Blue Ridge region and flows southeastward to the Piedmont where it merges with the Broad River (fig. 20). The South Pacolet River is regulated by Lake William C. Bowen, the North Pacolet River is unregulated, and the Pacolet River is regulated by Lake H. Taylor Blalock. Selected data for the reservoirs are presented below (Ruddy and Hitt, 1990; U.S. Army Corps of Engineers, 2007; Spartanburg Water, 2009).

Water-year peak-flow data are available for station 02155500, Pacolet River near Fingerville, SC (MID 10r); station 021556525, Pacolet River below Lake H. Taylor Blalock (MID 11r); and station 02156000, Pacolet River near Clifton, SC (MID 12r) (appendix C). The drainage areas for these stations are 212, 273, and 320 mi^2, respectively. The QA/QC assessment of stations 02155500 and 02156000 indicated no trends in the peak-flow data. The Lake William C. Bowen drainage area encompasses approximately 37 percent of the total drainage basin at station 02155500 and approximately 25 percent of the total drainage basin at

Name of reservoir	Date of completion	Drainage area (square miles)	Flood-storage capacity (acre-feet)
William C. Bowen	1956	79.4	9,600
H. Taylor Blalock	1983 (2006)	276	9,600 (16,900)

station 02156000. The single mass curve assessment of flows at stations 02155500 and 02156000 indicated no long-term alteration of the flow patterns for the high flows after construction of Lake Bowen. In addition, the peak flows appeared to be consistent with the log-Pearson Type III distribution. However, the peak-flow file for station 02155500 includes a peak gage height of 46 ft that occurred in June of 1903 for which no peak flow is available. This peak gage height is substantially higher than any of the gage heights recorded in the continuous record, of which the highest was 22.4 ft and occurred in August of 1940. From historical documents, the June 1903 flood was an extremely rare event caused by heavy rainfall in the extreme northwestern part of South Carolina (American Meteorological Society, 2009). These documents noted that conservative estimates of total losses were $4,500,000 (in 1903 dollars), 61 people dead or missing, and all crops along the Broad, Pacolet, Tiger, Enoree, Saluda, Congaree, lower Wateree, and upper Santee Rivers were lost. Because there is no peak flow available to include the 1903 flood in the log-Pearson analysis, no flood-frequency assessments were made for the Pacolet River stations.

Savannah River

The Tugaloo River and Seneca River, which was inundated by Lake Keowee and Lake Jocasse, originate in the Blue Ridge region and converge to form the Savannah River (fig. 20). The Savannah River forms the boundary between Georgia and South Carolina and is regulated by three reservoirs along its main stem. The reservoirs are operated by the U.S. Army Corps of Engineers for flood control, power generation, and navigation. Data pertaining to the reservoirs are listed below (Ruddy and Hitt, 1990; Sanders and others, 1990; U.S. Army Corps of Engineers, 2007).

Name of reservoir	Date of completion	Drainage area (square miles)	Flood-storage capacity (acre-feet)
[a]Lake Jocassee	1972	147	136,000
[a]Lake Keowee	1970	439	125,000
Lake Hartwell	1960	2,090	293,000
Richard B. Russell Lake	1984	2,900	140,000
Strom Thurmond Lake	1953	6,150	390,000

[a]These reservoirs impound tributaries to the Savannah River.

Sanders and others (1990) showed that the period after 1951 for station 02197000, Savannah River at Augusta, GA (MID 23r), was largely free of extreme floods, based on an unusually long period of flood data (1796–1985). A flood-frequency relation was established for the site using peak flows computed by the routing of synthesized inflow hydrographs through the reservoirs to the site based on operating conditions at the time of the study. Subsequent to the flood-frequency data published by Sanders and others (1990), peak flows for the 1796, 1840, 1852, 1864, and 1865 floods were revised (Cooney and others, 1994). The Federal Emergency Management Agency (1994) computed the flood frequency for the Savannah River at Fifth Street in Augusta, GA, superseding those published by Sanders and others (1990), as shown below.

Station 02197000, Savannah River at Augusta, GA

[NP, no value published]

Percent chance exceedance	Flow, in cubic feet per second
50	NP
20	NP
10	59,800
4	NP
2	103,000
1	138,000
0.5	NP
0.2	262,000

Water-year peak-flow data for four stations with 10 or more years of record on the Savannah River are listed in appendix C: station 02187500, Savannah River near Iva, SC (MID 20r); station 02189000, Savannah River near Calhoun Falls, SC (MID 22r); station 02197500, Savannah River at Burtons Ferry Bridge near Millhaven, GA (MID 24r); and station 02198500, Savannah River near Clyo, GA (MID 25r).

Miscellaneous Stations

The peak flows for three additional regulated stations are included in appendix C: station 02130500, Juniper Creek near Cheraw, SC (MID 1r); station 02130910, Black Creek near Hartsville, SC (MID 3r); and station 02188000 Rocky River near Calhoun Falls, SC (MID 21r). From a review of the log-Pearson analyses for stations 02130500 and 02130910, the curves indicate a situation where storage tends to cause the floods in the upper middle range of peak-flow magnitudes to be lower relative to the unregulated condition, whereas extreme floods that would overtop the reservoir probably tend to be closer to the same magnitude as the unregulated floods (figs. 18 and 25). As a result, no log-Pearson analyses are provided for these stations. Station 02188000 was located downstream from Lake Secession prior to being inundated by Lake Richard B. Russell around

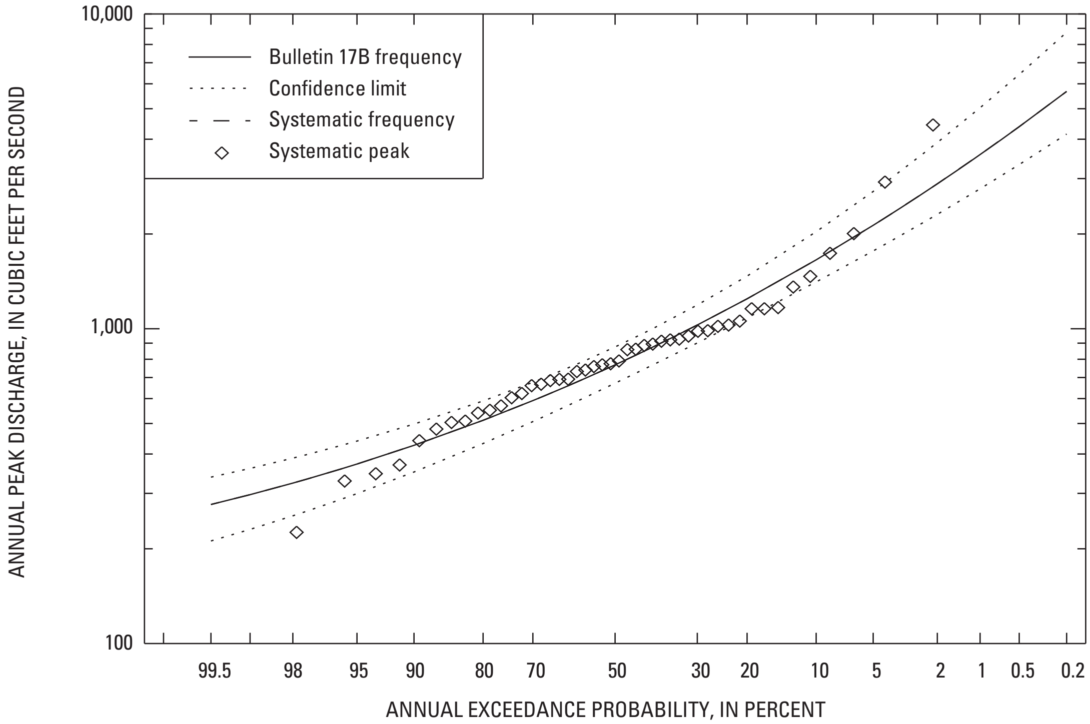


Figure 25. Pearson Type III distribution of the logarithms of peak flows at U.S. Geological Survey streamgaging station 02130910, Black Creek near Hartsville, SC.

1984. Consequently, because the storage effect from Lake Secession would cause the flood-frequency estimates from 02188000 to be inappropriate to use upstream from the lake without additional analysis to account for storage and because the area downstream of 02188000 is now inunudated by Lake Russell, no flood-frequency analysis was done for this station. The peak flows for all three of these stations are provided in appendix C.

Summary and Conclusions

This report presents methods for determining flood magnitude and frequency at rural streamgaging stations and rural, ungaged sites in South Carolina, Georgia, and North Carolina. For the current study, 828 streamgaging stations in or near these three States were used in the regional regression analysis. Stations used for the current study are rural basins having 10 years or more of peak-flow record and are not significantly affected by regulation, tidal fluctuations, or urban development. By using a multistate analysis, continuity in hydrologic regions and regression equations at State boundaries is maintained so that there is no confusion on which flood-frequency techniques and results are most appropriate for drainage basins near or crossing State boundaries.

A regional analysis of station skew coefficients resulted in one generalized skew coefficient that can be used for the entire study area. The generalized skew value of –0.019 was determined by using a Bayesian Generalized Least-Squares (GLS) regression model. The mean square error (MSE) for the new generalized skew value is 0.143, which is substantially less than the 0.302 MSE for the generalized skew map available in Bulletin 17B. A weighted skew coefficient (using the station and generalized skew values) was used with the log-Pearson Type III analysis to compute the 50-, 20-, 10-, 4-, 2-, 1-, 0.5-, and 0.2-percent chance exceedance flows at each streamgaging station.

Regional regression analysis, using GLS regression, was used to develop a set of predictive equations that can be used to estimate the 50-, 20-, 10-, 4-, 2-, 1-, 0.5-, and 0.2-percent chance exceedance flows for rural, ungaged sites in South Carolina, Georgia, and North Carolina. The predictive equations are all functions of drainage area and the percentage of drainage basin within each of the five hydrologic regions defined in the study area. Average errors of prediction for these equations ranged from 34.0 to 47.7 percent. Additional data from gaged stations draining multiple hydrologic regions were used in the development of the equations by including hydrologic region percentages in the regional regression analysis. As such, the predictive equations can be used to estimate the P-percent chance exceedance flows for ungaged sites that have a drainage basin in one or more hydrologic regions.

Assessments of annual peak flows at 25 regulated stations indicated that a flood-frequency analysis was justified at only

3 of the stations. Considerations for the assessments included determining that regulated peak flows were reasonably consistent with the log-Pearson Type III distribution, that the regulation patterns had been relatively consistent for the period of record being analyzed, and that floods that occurred during the regulated period were of sufficient magnitude so as to account for the influence of storage at those higher flows. Some of the limitations for conducting a flood-frequency analysis at a regulated station can be overcome by additional analyses, such as flood routing and correlations with peaks on unregulated streams. Such techniques, however, were beyond the scope of this investigation.

References Cited

American Meteorological Society, 2009, Monthly weather review, volume 31, issue 6, June 1903, accessed on January 10, 2009, at http://ams.allenpress.com/perlserv/?request=get-toc&issn=1520-0493&volume=31&issue=6.

Benson, M.A., and Carter, R.W., 1973, A national study of the streamflow data-collection program: U.S. Geological Survey Water-Supply Paper 2028, 44 p.

Bloxham, W.M., 1976, Low-flow characteristics of streams in the Inner Coastal Plain of South Carolina: South Carolina Water Resources Commission Report No. 5, 41 p.

Bohman, L.R., 1992, Determination of flood hydrographs for streams in South Carolina: Volume 2. Estimation of peak-discharge frequency, runoff volumes, and flood hydrographs for urban watersheds: U.S. Geological Survey Techniques of Water-Resources Investigations Report 92–4040, 79 p.

Cohn, T.A., Lane, W.L., and Stedinger, J.R., 2001, Confidence intervals for Expected Moments Algorithm flood quantile estimates: Water Resources Research, v. 37, no. 6, p. 1695–1706.

Conrads, P.A., Feaster, T.D., and Harrelson, L.G., 2008, The effects of the Saluda Dam on the surface-water and ground-water hydrology of the Congaree National Park flood plain, South Carolina: U.S. Geological Survey Scientific Investigations Report 2008–5170, 58 p. (online at http://pubs.water.usgs.gov/sir2008-5170, accessed June 8, 2009).

Cooney, T.W., Drewes, P.A., Gissendanner, J.W., and Church, B.W., 1994, Water resources data, South Carolina, water year 1994: U.S. Geological Survey Water-Data Report SC–94–1, 532 p.

Costa, J.E., 1987, A comparison of the largest rainfall-runoff floods in the United States with those of the People's Republic of China and the world: Journal of Hydrology, v. 96, p. 101–115.

Crippen, J.R., 1982, Envelop curves for extreme flood events: Journal of Hydraulic Division of American Society of Civil Engineers, v. 108, p. 1208–1212.

Crippen, J.R., and Bue, C.D., 1977, Maximum flood flows in the conterminous United States: U.S. Geological Survey Water-Supply Paper 1887, 52 p.

Dalrymple, T., 1960, Flood-frequency analyses, manual of hydrology, Part 3: U.S. Geological Survey Water-Supply Paper 1543–A, 80 p.

Doering, J.A., 1960, Quaternary surface formations of southern part of Atlantic Coastal Plain: The Journal of Geology, v. 68, no. 2, p. 182–202.

Feaster, T.D., and Guimaraes, W.B., 2004, Estimating the magnitude and frequency of floods in small urban streams in South Carolina, 2001: U.S. Geological Survey Scientific Investigations Report 2004–5030, 58 p.

Feaster, T.D., and Tasker, G.D., 2002, Techniques for estimating the magnitude and frequency of floods in rural basins of South Carolina, 1999: U.S. Geological Survey Water-Resources Investigations Report 02–4140, 34 p.

Federal Emergency Management Agency, 1994, Flood insurance study—City of North Augusta, Aiken, and Edgefield Counties, South Carolina: Washington, DC, Federal Insurance Administration, Flood Insurance Study Report, August 16, 1994, 18 p.

Federal Emergency Management Agency, 2001, Flood insurance study, Richland County, South Carolina, and incorporated areas: Washington, DC, Federal Emergency Management Agency, August 20, 2001.

Gotvald, A.J., Feaster, T.D., and Weaver, J.C., 2009, Magnitude and frequency of rural floods in the southeastern United States, 2006—Volume 1, Georgia: U.S. Geological Survey Scientific Investigations Report 2009–5043, 120 p.

Griffis, V.W., and Stedinger, J.R., 2007a, The LP3 distribution and its application in flood frequency analysis, II: Parameter estimation methods: Journal of Hydrologic Engineering, v. 12, no. 5, p. 492–500.

Griffis, V.W., and Stedinger, J.R., 2007b, The use of GLS regression in regional hydrologic analyses: Journal of Hydrology, v. 344, p. 82–95.

Griffis, V.W., Stedinger, J.R., and Cohn, T.A., 2004, Log Pearson type 3 quantile estimators with regional skew information and low outlier adjustments: Water Resources Research, v. 40, W07503.

Griffith, G.E., Omernik, J.M., Comstock, J.A., Schafale, M.P., McNab, W.H., Lenat, D.R., MacPherson, T.F., Glover, J.B., and Shelburne, V.B., 2002, Ecoregions of North Carolina and South Carolina: U.S. Geological Survey color poster with map, scale 1:1,500,00.

Gruber, A.M., Reis, D.S., and Stedinger, J.R., 2007, Models of regional skew based on Bayesian GLS Regression, in Kabbes, K.C., ed., World Environmental & Water Resources Conference—Restoring our Natural Habitat, Paper 40927–3285, May 15–18, 2007, Tampa, Florida.

Guimaraes, W.B., and Bohman, L.R., 1991, Techniques for estimating the magnitude and frequency of floods in South Carolina, 1988: U.S. Geological Survey Water-Resources Investigations Report 91–4157, 174 p.

Hardison, C.H., 1974, Generalized skew coefficients of annual floods in the United States and their application: Water Resources Research, v. 10, no. 4, p. 745–752.

Helsel, D.R., and Hirsch, R.M., 1992, Statistical methods in water resources: New York, Elsevier, p. 326.

Hershfield, D.M., 1961, Rainfall frequency atlas for the United States for durations from 30 minutes to 24 hours and return periods from 1 to 100 years: U.S. Weather Bureau Technical Paper 40, 61 p.

Hirsch, R.M., 1982, A comparison of four streamflow record extension techniques: Water Resources Research, v. 18, no. 4, p. 1081–1088.

Interagency Advisory Committee on Water Data, 1982, Guidelines for determining flood flow frequency, Bulletin 17B of the Hydrology Subcommittee: U.S. Geological Survey, Office of Water Data Coordination, 28 p., 14 app., 1 pl.

Kenney, T.A., Wilkowske, C.D., and Wright, S.J., 2007, Methods for estimating magnitude and frequency of peak flows for natural streams in Utah: U.S. Geological Survey Scientific Investigations Report 2007–5158, 28 p.

Ludwig, A.H., and Tasker, G.D., 1993, Regionalization of low-flow characteristics of Arkansas streams: U.S. Geological Survey Water-Resources Investigations Report 93–4013, 19 p.

Martins, E.S., and Stedinger, J.R., 2002, Cross-correlation among estimators of shape: Water Resources Research, v. 38, no. 11, 7 p.

National Oceanic and Atmospheric Administration, 2008, Mean annual air temperature, based on normal period 1961–1990: Southeast Climate Center, accessed April 10, 2008, at http://lwf.ncdc.noaa.gov/img/documentlibrary/clim81supp3/tempnormal_lowres.jpg.

Neter, J., Wasserman, W., and Kutner, M.H., 1985, Applied linear statistical models: Homewood, IL, Richard D. Irwin, 1127 p.

North Carolina Floodplain Mapping Program, 2003, LIDAR and digital elevation data fact sheet, accessed June 24, 2008, at http://www.ncfloodmaps.com/pubdocs/lidar_final_jan03.pdf.

Omernik, J.M., 1987, Ecoregions of the conterminous United States: Annals of the Association of American Geographers, v. 77, no. 1, p. 118–125, scale 1:7,500,000.

Pope, B.F., Tasker, G.D., and Robbins, J.C., 2001, Estimating the magnitude and frequency of floods in rural basins of North Carolina—Revised: U.S. Geological Survey Water-Resources Investigations Report 01–4207, 44 p.

Potter, W.D., 1960, Estimating flood discharges in the Piedmont Plateau: U.S. Department of Commerce, Bureau of Public Roads, Hydraulic Engineering Circular No. 2, 21 p.

Price, M., 1978, Floods in Georgia, magnitude and frequency: U.S. Geological Survey Water-Resources Investigations Report 78–137, 269 p.

Reis, D.S., Jr., Stedinger, J.R., and Martins, E.S., 2005, Bayesian generalized least squares regression with application to log Pearson type 3 regional skew estimation: Water Resources Research, v. 41, W10419.

Ries, K.G., III, and Dillow, J.J.A., 2006, Magnitude and frequency of floods on nontidal streams in Delaware: U.S. Geological Survey Scientific Investigations Report 2006–5146, 59 p.

Ruddy, B.C., and Hitt, K.J., 1990, Summary of selected characteristics of large reservoirs in the United States and Puerto Rico, 1988: U.S. Geological Survey Open-File Report 90–163, 295 p.

Sanders, C.L., Jr., Kubik, H.E., Hoke, J.T., Jr., and Kirby, W.H., 1990, Flood frequency of the Savannah River at Augusta, Georgia: U.S. Geological Survey Water-Resources Investigations Report 90–4024, 87 p.

Sauer, V.B., 1974, Flood characteristics of Oklahoma streams techniques for calculating magnitude and frequency of floods in Oklahoma, with compilations of flood data through 1971: U.S. Geological Survey Water-Resources Investigations Report 73–52, 307 p.

Sauer, V.B., Thomas, W.O., Jr., Stricker, V.A., and Wilson, K.V., 1983, Flood characteristics of urban watersheds in the United States: U.S. Geological Survey Water-Supply Paper 2207, 63 p.

Searcy, T.K., and Hardison, C.H., 1960, Double-mass curves: U.S. Geological Survey Water-Supply Paper 1541–B, 66 p.

Spartanburg Water, 2009, History, accessed April 22, 2009, at http://www.sws-sssd.org/about/history.html.

Speer, P.R., and Gamble, C.R., 1964, Magnitude and frequency of floods in the United States, Part 2A—South Atlantic slope basins, James River to Savannah River: U.S. Geological Survey Water-Supply Paper 1673, 329 p.

Stamey, T.C., and Hess, G.W., 1993, Techniques for estimating magnitude and frequency of floods in rural basins of Georgia: U.S. Geological Survey Water-Resources Investigations Report 93–4002, 75 p.

Stedinger, J.R., and Tasker, G.D., 1985, Regional hydrologic analysis, 1, ordinary, weighted and generalized least squares compared: Water Resources Research, v. 21, no. 9, p. 1421–1432 [with correction in Stedinger and Tasker, 1986, Water Resources Research, v. 22, no. 5, p. 844].

Tasker, G.D., 1975, Combining estimates of low-flow characteristics of streams in Massachusetts and Rhode Island: U.S. Geological Survey Journal of Research, v. 3, no. 1, p. 107–112.

Tasker, G.D., and Driver, N.E., 1988, Nationwide regression models for predicting urban runoff water quality at unmonitored sites: Water Resources Bulletin, v. 24, no. 5, p. 1091–1101.

Tasker, G.D., and Stedinger, J.R., 1989, An operational GLS model for hydrologic regression: Journal of Hydrology, v. 111, p. 361–375.

U.S. Army Corps of Engineers, 2007, National inventory of dams, accessed May 21, 2007, at https://nid.usace.army.mil.

U.S. Environmental Protection Agency, 2007, Level 3 ecoregions of the United States, accessed July 24, 2008, at http://www.epa.gov/bioindicators/html/lv3-eco.html.

U.S. Geological Survey, 1999a, The National Elevation Dataset: U.S. Geological Survey Fact Sheet 148–99, 2 p.; accessed June 24, 2008, at http://erg.usgs.gov/isb/pubs/factsheets/fs14899.html.

U.S. Geological Survey, 1999b, The National Hydrography Dataset: U.S. Geological Survey Fact Sheet 106–99, 2 p.; accessed June 24, 2008, at http://erg.usgs.gov/isb/pubs/factsheets/fs10699.html.

U.S. Geological Survey, 2008, Average annual precipitation, accessed April 10, 2008, at http://nationalatlas.gov/natlas/Natlasstart.asp.

U.S. Water Resources Council, 1967, A uniform technique for determining flood flow frequencies: U.S. Water Resources Council Bulletin 15, 15 p.

Weaver, J.C., Feaster, T.D., and Gotvald, A.J., in press, Magnitude and frequency of rural floods in the southeastern United States, 2006—Volume 2, North Carolina: U.S. Geological Survey Scientific Investigations Report 2009–5158.

Whetstone, B.H., 1982a, Techniques for estimating magnitude and frequency of floods in South Carolina: U.S. Geological Survey Water-Resources Investigations Report 82–1, 78 p.

Whetstone, B.H., 1982b, Estimating magnitude of peak discharges for selected flood frequencies on small streams in South Carolina (1975): U.S. Geological Survey Open-File Report 82–337, 17 p.

Figures 2 and 4

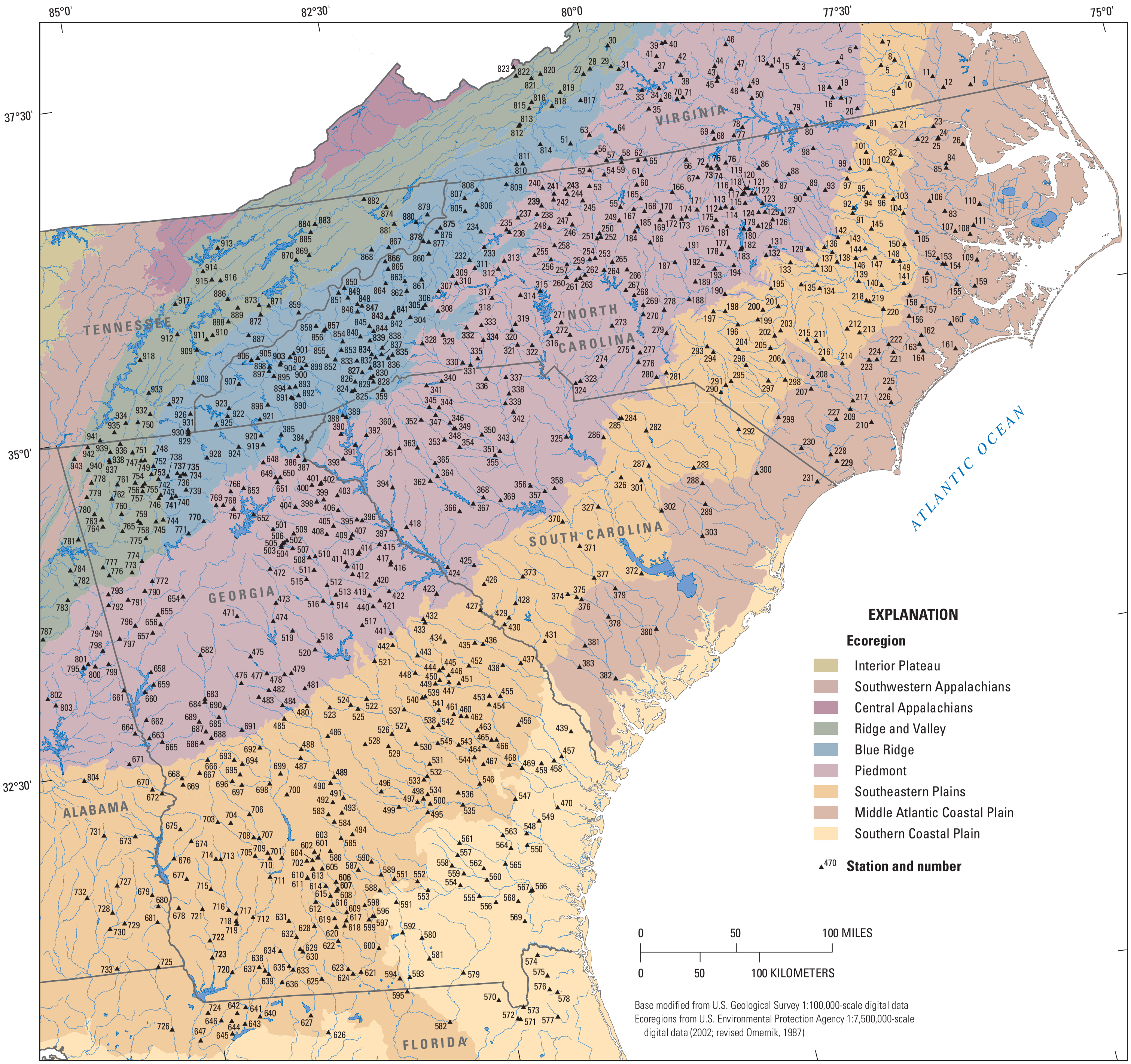


Figure 2. Locations of rural streamgaging stations in South Carolina, Georgia, North Carolina, and surrounding States that were considered for use in the regional regression analysis, 2006.

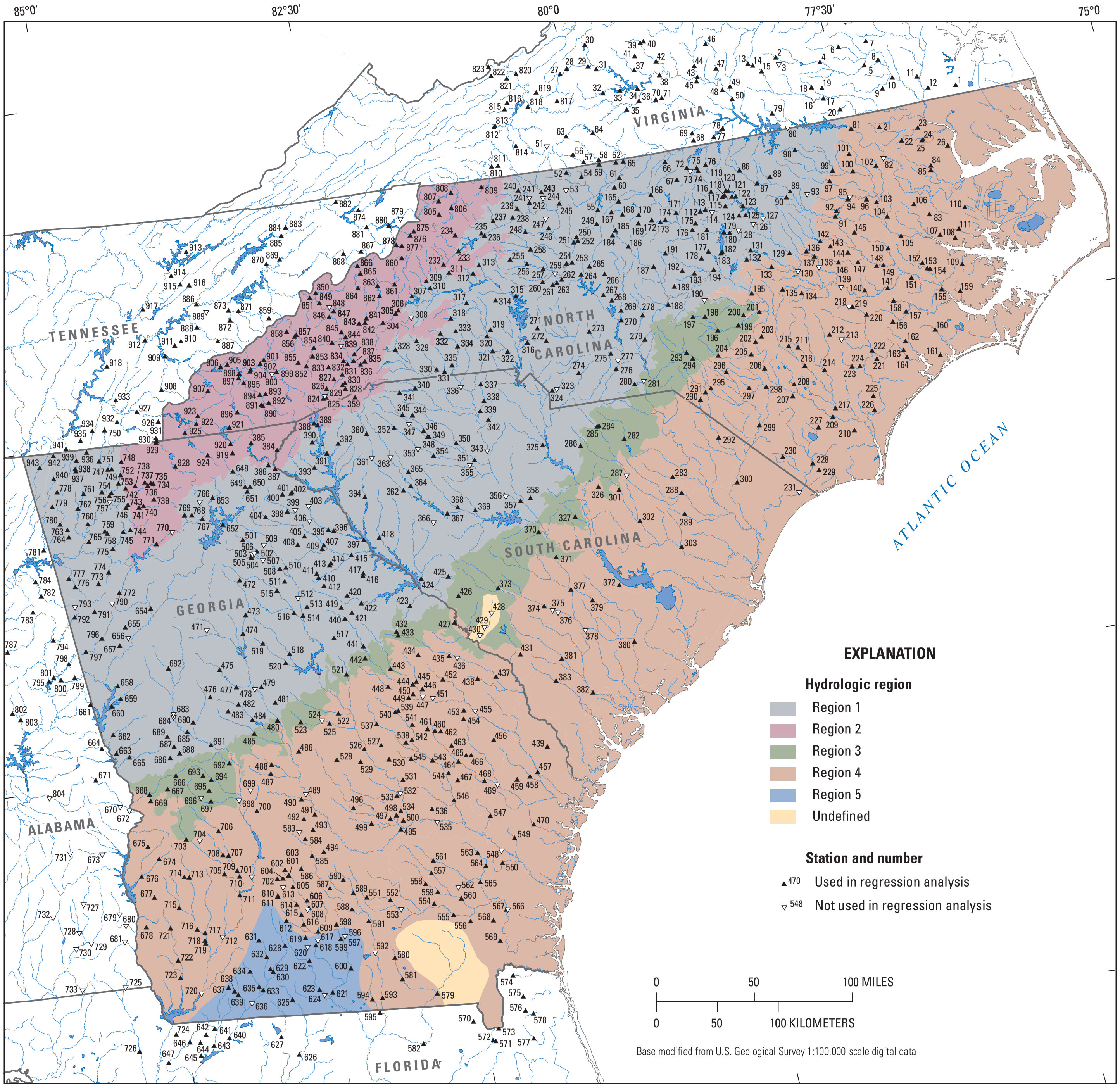


Figure 4. Hydrologic regions and locations of rural streamgaging stations in the study area used in the regional regression analysis, 2006.

Tables 1, 4, and 13

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
1	02043500	Cypress Swamp at Cypress Chapel, VA	36 37 25	76 36 06	VA	1954-1996	37
2	02044000[h]	Nottoway River near Burkeville, VA	37 04 41	78 11 49	VA	1947-1995	49
3	02044200[l]	Falls Creek tributary near Victoria, VA	37 02 05	78 10 25	VA	1968-2005	38
4	02044500[h]	Nottoway River near Rawlings, VA	36 59 01	77 47 59	VA	1951-2005	55
5	02045500	Nottoway River near Stony Creek, VA	36 54 01	77 23 59	VA	1930-2005	76
6	02046000[h]	Stony Creek near Dinwiddie, VA	37 04 02	77 36 09	VA	1947-2005	59
7	02046400	Jones Hole Swamp tributary near Carson, VA	37 04 14	77 20 29	VA	1967-1976	10
8	02046500	Anderson Branch at Sussex, VA	36 55 11	77 15 44	VA	1949-1983	26
9	02046900	Musgrave Branch near Drewryville, VA	36 42 14	77 16 28	VA	1966-1975	10
10	02047000[h]	Nottoway River near Sebrell, VA	36 46 14	77 09 58	VA	1942-2005	64
11	02049700	Cypress Swamp near Burdette, VA	36 44 30	76 56 17	VA	1950-1976	27
12	02050050	Blackwater River tributary near Holland, VA	36 38 45	76 51 28	VA	1967-2005	39
13	02050400	North Meherrin River near Briery, VA	37 04 21	78 27 44	VA	1966-1975	10
14	02050500	North Meherrin River near Keysville, VA	37 03 06	78 25 19	VA	1949-1973	21
15	02051000	North Meherrin River near Lunenburg, VA	36 59 51	78 20 59	VA	1947-2005	57
16	02051400[l]	Saddletree Creek near Lawrenceville, VA	36 43 52	77 54 38	VA	1958-1976	19
17	02051500[h]	Meherrin River near Lawrenceville, VA	36 43 01	77 49 54	VA	1928-2005	78
18	02051600	Great Creek near Cochran, VA	36 48 47	77 55 18	VA	1958-1995	38
19	02051650	Rocky Run near Dolphin, VA	36 47 36	77 49 34	VA	1966-1975	10
20	02052500[h]	Fountains Creek near Brink, VA	36 36 56	77 41 59	VA	1954-1996	43
21	02053110	Wildcat Swamp near Jackson, NC	36 25 49	77 22 23	NC	1953-1971	19
22	02053170	Cutawhiskie Creek at NC 35 near Woodland, NC	36 18 07	77 11 44	NC	1953-1971	19
23	02053200[h]	Potecasi Creek near Union, NC	36 22 15	77 01 32	NC	1958-2006	48
24	02053500[c]	Ahoskie Creek at Ahoskie, NC	36 16 49	76 59 58	NC	1951-1963	13
25	02053510	Ahoskie Creek tributary at Poortown, NC	36 16 30	77 00 37	NC	1964-1973	10
26	02053550	Chinkapin Creek near Colerain, NC	36 11 53	76 47 13	NC	1953-1971	19
27	02054500[h]	Roanoke River at Lafayette, VA	37 14 11	80 12 33	VA	1944-2005	62
28	02054530	Roanoke River at Glenvar, VA	37 16 04	80 08 22	VA	1992-2005	14
29	02055000[h]	Roanoke River at Roanoke, VA	37 15 30	79 56 19	VA	1899-2005	107
30	02055100	Tinker Creek near Daleville, VA	37 25 03	79 56 07	VA	1957-2005	49
31	02056650	Back Creek near Dundee, VA	37 13 39	79 52 05	VA	1975-2005	31
32	02056900	Blackwater River near Rocky Mount, VA	37 02 43	79 50 39	VA	1977-2005	29
33	02057000	Blackwater River near Union Hall, VA	37 02 36	79 41 06	VA	1925-1964	40
34	02057500	Roanoke River near Toshes, VA	37 02 04	79 31 17	VA	1926-1963	38
35	02058000	Snow Creek at Sago, VA	36 53 51	79 39 04	VA	1935-1944	10
36	02058400	Pigg River near Sandy Level, VA	36 56 46	79 31 29	VA	1931-2005	75
37	02059500	Goose Creek near Huddleston, VA	37 10 24	79 31 13	VA	1926-2005	78
38	02060500[r]	Roanoke River at Altavista, VA	37 06 17	79 17 43	VA	1931-1961	31
39	02061000	Big Otter River near Bedford, VA	37 21 51	79 25 09	VA	1944-1960	17
40	02061150	Chestnut Branch near Forest, VA	37 22 11	79 23 15	VA	1960-1976	17
41	02061300	Nininger Creek near Bedford, VA	37 16 27	79 29 30	VA	1949-1974	26
42	02061500	Big Otter River near Evington, VA	37 12 31	79 18 13	VA	1937-2005	69
43	02062500[h,r]	Roanoke River at Brookneal, VA	37 02 29	78 57 01	VA	1924-1962	38
44	02064000[h]	Falling River near Naruna, VA	37 07 37	78 57 35	VA	1930-2005	69
45	02065100	Snake Creek near Brookneal, VA	37 00 43	78 57 51	VA	1967-1995	25
46	02065300	Right Hand Fork near Appomattox, VA	37 16 13	78 49 13	VA	1967-1995	29
47	02065500	Cub Creek at Phenix, VA	37 04 46	78 45 49	VA	1947-2005	59
48	02066000[h,r]	Roanoke River at Randolph, VA	36 54 55	78 44 27	VA	1901-1962	61
49	02066500	Roanoke Creek at Saxe, VA	36 55 50	78 39 55	VA	1947-1972	25
50	02067000	Roanoke River near Clover, VA	36 50 18	78 40 01	VA	1930-1952	23

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
51	02067810[1]	Maple Swamp Branch near Meadows Of Dan, VA	36 44 10	80 26 27	VA	1970-1979	10
52	02068500[h,r]	Dan River near Francisco, NC	36 30 54	80 18 11	NC	1925-1938	13
53	02068610[1]	Hog Rock Creek near Moores Springs, NC	36 23 53	80 19 45	NC	1955-1971	15
54	02068660	Little Snow Creek near Lawsonville, NC	36 27 54	80 10 27	NC	1954-1971	18
55	02069030	Belews Creek near Kernersville, NC	36 12 20	80 04 24	NC	1954-1971	17
56	02069600	Anglin Branch near Stuart, VA	36 38 15	80 12 54	VA	1967-1976	10
57	02069700	South Mayo River near Nettleridge, VA	36 34 15	80 07 46	VA	1963-2005	43
58	02070000	North Mayo River near Spencer, VA	36 34 05	79 59 14	VA	1929-2005	77
59	02070500[h]	Mayo River near Price, NC	36 32 02	79 59 29	NC	1930-2006	55
60	02070810	Jacobs Creek near Wentworth, NC	36 20 54	79 53 13	NC	1954-1973	18
61	02071000[h]	Dan River near Wentworth, NC	36 24 45	79 49 34	NC	1940-2006	67
62	02071410	Matrimony Creek near Leaksville, NC	36 31 39	79 50 07	NC	1958-1973	15
63	02071530	Smith River near Woolwine, VA	36 46 42	80 14 57	VA	1995-2005	11
64	02072500[r]	Smith River at Bassett, VA	36 46 12	80 00 03	VA	1938-1949	12
65	02074000[r]	Smith River at Eden, NC	36 31 32	79 45 56	NC	1940-1949	10
66	02075160	Moon Creek near Yanceyville, NC	36 28 14	79 23 04	NC	1954-1989	21
67	02075230	South Country Line Creek near Hightowers, NC	36 19 29	79 18 19	NC	1954-1976	23
68	02075450	Little Winns Creek near Turbeville, VA	36 35 21	79 05 19	VA	1958-1974	17
69	02075500	Dan River at Paces, VA	36 38 32	79 05 22	VA	1901-2005	87
70	02076400	Whitethorn Creek tributary at Gretna, VA	36 56 01	79 22 09	VA	1966-1975	10
71	02076500	Georges Creek near Gretna, VA	36 56 12	79 18 41	VA	1950-1997	48
72	02077200	Hyco Creek near Leasburg, NC	36 23 52	79 11 48	NC	1965-2006	39
73	02077210[1,h]	Kilgore Creek tributary near Leasburg, NC	36 22 39	79 09 56	NC	1954-1971	13
74	02077240[h]	Double Creek near Roseville, NC	36 21 45	79 05 47	NC	1965-1982	16
75	02077250[r]	South Hyco Creek near Roseville, NC	36 23 10	79 06 25	NC	1967-1976	10
76	02077310	Storys Creek near Roxboro, NC	36 23 49	79 01 13	NC	1954-1971	18
77	02077500[r]	Hyco River near Denniston, VA	36 35 17	78 53 55	VA	1930-1964	18
78	02078000	Hyco River near Omega, VA	36 38 10	78 48 19	VA	1934-1950	17
79	02079640	Allen Creek near Boydton, VA	36 40 47	78 19 36	VA	1962-2005	40
80	02079720[1]	Smith Creek tributary near South Hill, VA	36 33 51	78 12 09	VA	1966-1975	10
81	02080500[h,r]	Roanoke River at Roanoke Rapids, NC	36 27 36	77 38 01	NC	1912-1949	38
82	02081000[1,h]	Roanoke River near Scotland Neck, NC	36 12 33	77 23 02	NC	1940-1949	10
83	02081060	Smithwick Creek tributary near Williamston, NC	35 43 52	77 04 41	NC	1953-1971	19
84	02081110	White Oak Swamp near Windsor, NC	36 04 47	76 58 35	NC	1953-1971	14
85	0208111310	Cashie River at SR 1257 near Windsor, NC	36 02 52	76 59 03	NC	1988-2006	19
86	02081210	Shelton Creek near Oxford, NC	36 18 48	78 43 15	NC	1954-1971	18
87	02081500	Tar River near Tar River, NC	36 11 39	78 34 59	NC	1940-2006	67
88	02081710	Long Creek at Kittrell, NC	36 13 31	78 27 14	NC	1954-1976	20
89	02081747	Tar River at US 401 at Louisburg, NC	36 05 35	78 17 46	NC	1964-2006	43
90	02081800	Cedar Creek near Louisburg, NC	36 03 15	78 20 23	NC	1954-1975	22
91	02082000[h]	Tar River near Nashville, NC	35 50 58	77 55 50	NC	1929-1970	42
92	02082500	Sapony Creek near Nashville, NC	35 53 11	77 54 39	NC	1951-1970	20
93	02082540[1]	Wildcat Branch near Mapleville, NC	36 03 30	78 08 38	NC	1953-1963	11
94	02082585[h]	Tar River at NC 97 Rocky Mount, NC	35 57 17	77 47 14	NC	1977-2006	30
95	02082610[1]	Tar River near Rocky Mount, NC	35 58 39	77 45 34	NC	1964-1973	10
96	02082630	Harts Mill Run near Tarboro, NC	35 55 41	77 37 09	NC	1953-1971	18
97	02082770[h]	Swift Creek at Hilliardston, NC	36 06 44	77 55 12	NC	1964-2006	43
98	02082835	Fishing Creek near Warrenton, NC	36 23 01	78 10 53	NC	1954-1976	22
99	02082950[h]	Little Fishing Creek near White Oak, NC	36 11 00	77 52 34	NC	1959-2006	47
100	02083000[h]	Fishing Creek near Enfield, NC	36 09 02	77 41 35	NC	1915-2006	92

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
101	02083090	Beaverdam Swamp near Heathsville, NC	36 16 50	77 41 47	NC	1953-1971	19
102	02083410	Deep Creek near Scotland Neck, NC	36 09 27	77 28 23	NC	1953-1973	21
103	02083500[h]	Tar River at Tarboro, NC	35 53 40	77 31 59	NC	1897-2006	105
104	02083800[h]	Conetoe Creek near Bethel, NC	35 46 34	77 27 44	NC	1957-2000	44
105	02084000[h]	Tar River at Greenville, NC	35 37 00	77 22 22	NC	1997-2006	10
106	02084240	Collie Swamp near Everetts, NC	35 49 35	77 12 02	NC	1953-1976	24
107	02084500	Herring Run near Washington, NC	35 34 04	77 01 08	NC	1951-1980	30
108	02084520	Upper Goose Creek near Yeatsville, NC	35 31 26	76 53 22	NC	1953-1973	21
109	02084540	Durham Creek at Edward, NC	35 19 26	76 52 27	NC	1966-2004	39
110	02084557	Van Swamp near Hoke, NC	35 43 51	76 44 46	NC	1978-2006	29
111	02084570	Acre Swamp near Pinetown, NC	35 35 03	76 50 22	NC	1953-1969	17
112	02084909	Sevenmile Creek near Efland, NC	36 03 56	79 08 39	NC	1988-2004	17
113	02085000	Eno River at Hillsborough, NC	36 04 16	79 05 44	NC	1928-2006	64
114	02085020[1]	Stony Creek tributary near Hillsboro, NC	36 03 02	79 02 13	NC	1953-1971	19
115	02085070	Eno River near Durham, NC	36 04 20	78 54 28	NC	1964-2006	43
116	02085190	North Fork Little River tributary near Rougemont, NC	36 11 42	79 00 51	NC	1954-1976	23
117	0208521324[2]	Little River at SR 1461 near Orange Factory, NC	36 08 30	78 55 09	NC	1962-2006	45
118	0208524090	Mountain Creek at SR 1617 near Bahama, NC	36 08 59	78 53 48	NC	1995-2006	11
119	02085500	Flat River at Bahama, NC	36 10 58	78 52 44	NC	1926-2006	81
120	02086000	Dial Creek near Bahama, NC	36 10 37	78 51 23	NC	1926-1991	47
121	0208650112	Flat River tributary near Willardville, NC	36 07 55	78 50 00	NC	1989-2006	14
122	02086624	Knap Of Reeds Creek near Butner, NC	36 07 41	78 47 54	NC	1983-2006	14
123	02087000[h]	Neuse River near Northside, NC	36 02 55	78 44 58	NC	1928-1980	53
124	0208700780	Little Lick Creek above SR 1814 near Oak Grove, NC	35 59 12	78 47 57	NC	1983-1995	13
125	02087030	Lick Creek near Durham, NC	35 58 51	78 44 18	NC	1954-1971	18
126	02087140[1]	Lower Barton Creek tributary near Raleigh, NC	35 54 45	78 40 54	NC	1954-1971	18
127	02087183[1,2,h,r]	Neuse River near Falls, NC	35 56 24	78 34 51	NC	1960-1980	21
128	02087240[1,h]	Stirrup Iron Creek tributary near Nelson, NC	35 53 07	78 49 36	NC	1954-1973	20
129	02087500[h,r]	Neuse River near Clayton, NC	35 38 50	78 24 19	NC	1928-1980	53
130	02087570[1,h,r]	Neuse River at Smithfield, NC	35 30 45	78 20 58	NC	1917-1980	48
131	02087580[c]	Swift Creek near Apex, NC	35 43 08	78 45 08	NC	1954-1971	18
132	02087910	Middle Creek near Holly Springs, NC	35 39 29	78 48 05	NC	1954-1971	18
133	02088000	Middle Creek near Clayton, NC	35 34 15	78 35 26	NC	1940-2006	66
134	02088140	Stone Creek near Newton Grove, NC	35 20 25	78 21 53	NC	1953-1971	19
135	02088210	Hannah Creek near Benson, NC	35 23 37	78 31 47	NC	1953-1971	19
136	02088420	Long Branch near Selma, NC	35 38 12	78 15 05	NC	1953-1971	19
137	02088470	Little River near Kenly, NC	35 35 21	78 11 17	NC	1965-1989	25
138	02088500[1,h]	Little River near Princeton, NC	35 30 41	78 09 37	NC	1931-2006	76
139	02089000[1,r]	Neuse River near Goldsboro, NC	35 20 15	77 59 51	NC	1930-1980	51
140	0208925200	Bear Creek at Mays Store, NC	35 16 29	77 47 40	NC	1988-2006	19
141	02089500[r]	Neuse River at Kinston, NC	35 15 28	77 35 08	NC	1928-1980	53
142	02090380[r]	Contentnea Creek near Lucama, NC	35 41 28	78 06 35	NC	1965-1976	12
143	02090560	Lee Swamp tributary near Lucama, NC	35 38 22	78 01 36	NC	1953-1971	19
144	02090625	Turner Swamp near Eureka, NC	35 34 15	77 52 46	NC	1969-1987	19
145	02090780	Whiteoak Swamp tributary near Wilson, NC	35 42 25	77 47 10	NC	1953-1971	19
146	02090960	Nahunta Swamp near Pikeville, NC	35 30 50	77 58 52	NC	1953-2003	22
147	02091000	Nahunta Swamp near Shine, NC	35 29 20	77 48 22	NC	1955-2006	52
148	02091430	Shepherd Run near Snow Hill, NC	35 26 07	77 38 41	NC	1953-1971	19
149	02091500[h]	Contentnea Creek at Hookerton, NC	35 25 44	77 34 57	NC	1929-2006	78
150	02091700	Little Contentnea Creek near Farmville, NC	35 32 41	77 30 40	NC	1957-1987	31

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
151	02091810	Halfmoon Creek near Fort Barnwell, NC	35 17 59	77 21 13	NC	1953-1965	12
152	02091970	Creeping Swamp near Vanceboro, NC	35 23 31	77 13 45	NC	1972-1985	14
153	02092000	Swift Creek near Vanceboro, NC	35 20 43	77 11 44	NC	1951-1989	39
154	02092020	Palmetto Swamp near Vanceboro, NC	35 20 19	77 10 15	NC	1953-1976	24
155	02092120	Bachelor Creek near New Bern, NC	35 10 25	77 06 13	NC	1953-1971	19
156	02092290	Rattlesnake Branch near Comfort, NC	35 00 32	77 35 49	NC	1953-1971	19
157	02092500[h]	Trent River near Trenton, NC	35 03 51	77 27 41	NC	1952-2006	55
158	02092520	Vine Swamp near Kinston, NC	35 09 30	77 33 15	NC	1953-1971	19
159	02092620	Upper Broad Creek tributary near Grantsboro, NC	35 08 07	76 56 30	NC	1953-1973	21
160	02092720	White Oak River at Belgrade, NC	34 53 31	77 14 01	NC	1953-1973	21
161	02092780	Bell Swamp near Hubert, NC	34 42 05	77 14 00	NC	1953-1970	18
162	02093000[h]	New River near Gum Branch, NC	34 50 57	77 31 10	NC	1950-2006	43
163	02093040	Southwest Creek tributary near Jacksonville, NC	34 47 19	77 33 07	NC	1954-1973	19
164	02093070	Southwest Creek near Jacksonville, NC	34 43 57	77 32 01	NC	1953-1973	20
165	02093290	Haw River near Summerfield, NC	36 14 32	79 52 19	NC	1954-1971	18
166	02093500[h]	Haw River near Benaja, NC	36 15 00	79 33 59	NC	1929-1971	43
167	02093800[h]	Reedy Fork near Oak Ridge, NC	36 10 21	79 57 10	NC	1956-2006	51
168	02094000[h]	Horsepen Creek at Battle Ground, NC	36 08 34	79 51 23	NC	1926-1959	30
169	02095000[c,h]	South Buffalo Creek near Greensboro, NC	36 03 36	79 43 33	NC	1929-1958	29
170	02095500[c]	North Buffalo Creek near Greensboro, NC	36 07 14	79 42 29	NC	1929-1990	62
171	02096500	Haw River at Haw River, NC	36 05 14	79 21 58	NC	1929-2006	78
172	02096660	Rock Creek near Whitsett, NC	36 03 55	79 35 56	NC	1954-1971	17
173	02096700	Big Alamance Creek near Elon College, NC	36 02 21	79 31 28	NC	1958-1980	23
174	02096740	Gun Branch near Alamance, NC	36 02 58	79 28 34	NC	1954-1973	19
175	02096846	Cane Creek near Orange Grove, NC	35 59 14	79 12 22	NC	1989-2006	18
176	02096850	Cane Creek near Teer, NC	35 56 35	79 14 45	NC	1960-1973	14
177	02096960[2,h]	Haw River near Bynum, NC	35 45 55	79 08 09	NC	1928-2006	78
178	02097010	Robeson Creek near Pittsboro, NC	35 43 30	79 12 32	NC	1954-1976	23
179	02097314	New Hope Creek near Blands, NC	35 53 06	78 57 55	NC	1983-2006	20
180	0209741955	Northeast Creek at SR 1100 near Genlee, NC	35 52 20	78 54 47	NC	1983-2006	20
181	02097464	Morgan Creek near White Cross, NC	35 55 25	79 06 54	NC	1989-2006	17
182	02097910	White Oak Creek near Wilsonville, NC	35 44 48	79 00 43	NC	1954-1971	18
183	02098000	New Hope River near Pittsboro, NC	35 44 13	79 01 35	NC	1950-1973	24
184	02098500	West Fork Deep River near High Point, NC	36 00 15	79 58 41	NC	1924-1966	42
185	02099000	East Fork Deep River near High Point, NC	36 02 14	79 56 44	NC	1929-2006	74
186	02099500	Deep River near Randleman, NC	35 54 13	79 51 10	NC	1929-2004	75
187	02100500[h]	Deep River at Ramseur, NC	35 43 35	79 39 20	NC	1923-2006	84
188	02101000	Bear Creek at Robbins, NC	35 26 01	79 34 59	NC	1940-1971	32
189	02101030	Falls Creek near Bennett, NC	35 33 21	79 29 55	NC	1954-1973	20
190	02101480[1]	Sugar Creek near Tramway, NC	35 25 29	79 14 49	NC	1954-1973	20
191	0210166029	Rocky River at SR 1300 near Crutchfield Crossroads, NC	35 48 25	79 31 39	NC	1989-2006	18
192	02101800	Tick Creek near Mount Vernon Springs, NC	35 39 35	79 24 06	NC	1959-2006	36
193	02101890	Bear Creek near Goldston, NC	35 37 34	79 17 53	NC	1952-1971	19
194	02102000	Deep River at Moncure, NC	35 37 37	79 06 58	NC	1931-2006	76
195	02102500[h,r]	Cape Fear River at Lillington, NC	35 24 22	78 48 48	NC	1924-1980	57
196	02102908	Flat Creek near Inverness, NC	35 10 58	79 10 39	NC	1969-2006	38
197	02102910	Dunhams Creek tributary near Carthage, NC	35 18 42	79 22 52	NC	1954-1971	18
198	02102930	Crane Creek near Vass, NC	35 17 54	79 16 18	NC	1954-1971	18
199	02103000	Little River at Manchester, NC	35 11 36	78 59 08	NC	1939-2006	15
200	02103390	South Prong Anderson Creek near Lillington, NC	35 15 32	78 55 26	NC	1953-1971	19

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
201	02103500	Little River at Linden, NC	35 15 47	78 46 34	NC	1928-1971	44
202	02104000	Cape Fear River at Fayetteville, NC	35 03 02	78 51 30	NC	1889-1959	71
203	02104080	Reese Creek near Fayetteville, NC	35 04 50	78 47 44	NC	1953-1971	17
204	02104220	Rockfish Creek at Raeford, NC	34 59 59	79 12 53	NC	1989-2006	18
205	02104500	Rockfish Creek near Hope Mills, NC	34 57 58	78 55 03	NC	1939-1954	16
206	02105500[r]	Cape Fear River at Wilm O Huske Lock near Tarheel, NC	34 50 45	78 49 14	NC	1941-1980	36
207	02105570	Browns Creek near Elizabethtown, NC	34 36 33	78 36 56	NC	1953-1973	18
208	02105630	Turnbull Creek near Elizabethtown, NC	34 41 33	78 35 01	NC	1949-1971	19
209	02105769[r]	Cape Fear River at Lock #1 near Kelly, NC	34 24 16	78 17 37	NC	1970-1980	11
210	02105900	Hood Creek near Leland, NC	34 16 43	78 07 31	NC	1953-2006	34
211	02106000	Little Coharie Creek near Roseboro, NC	34 57 14	78 29 16	NC	1951-1991	41
212	02106240	Turkey Creek near Turkey, NC	35 00 12	78 11 05	NC	1955-1973	18
213	02106410[1]	Stewarts Creek tributary near Warsaw, NC	34 57 26	78 04 41	NC	1955-1971	16
214	02106500[h]	Black River near Tomahawk, NC	34 45 18	78 17 19	NC	1952-2006	55
215	02106910[h]	Big Swamp near Roseboro, NC	34 58 39	78 34 06	NC	1953-1973	20
216	02107000	South River near Parkersburg, NC	34 48 46	78 27 25	NC	1952-1986	35
217	02107500	Colly Creek near Kelly, NC	34 27 49	78 15 25	NC	1951-1971	21
218	02107590[1]	Northeast Cape Fear River tributary near Mount Olive, NC	35 11 07	77 57 33	NC	1954-1971	18
219	02107600	Northeast Cape Fear River near Seven Springs, NC	35 10 21	77 55 55	NC	1959-1975	17
220	02107620	Mathews Creek near Pink Hill, NC	35 05 50	77 49 09	NC	1953-1969	16
221	02107980	Limestone Creek near Beulaville, NC	34 45 49	77 48 14	NC	1953-1971	19
222	02108000[h]	Northeast Cape Fear River near Chinquapin, NC	34 49 44	77 49 56	NC	1941-2006	66
223	02108500	Rockfish Creek near Wallace, NC	34 44 33	78 02 21	NC	1955-1981	27
224	02108548	Little Rockfish Creek at Wallace, NC	34 44 03	77 58 02	NC	1977-1992	16
225	02108610	Pike Creek near Burgaw, NC	34 30 01	77 53 57	NC	1953-1971	18
226	02108630	Turkey Creek near Castle Hayne, NC	34 23 48	77 54 47	NC	1953-1971	19
227	02108960	Buckhead Branch near Bolton, NC	34 20 53	78 26 18	NC	1953-1971	19
228	02109500	Waccamaw River at Freeland, NC	34 05 42	78 32 54	NC	1940-2006	67
229	02109640	Wet Ash Swamp near Ash, NC	34 02 18	78 30 13	NC	1953-1971	18
230	02110020	Mill Branch near Tabor City, NC	34 11 00	78 48 07	NC	1953-1971	18
231	02110500[1]	Waccamaw River near Longs, SC	33 54 46	78 42 54	SC	1952-2006	57
232	02111000[h]	Yadkin River at Patterson, NC	35 59 27	81 33 30	NC	1940-2006	66
233	02111180[h]	Elk Creek at Elkville, NC	36 04 17	81 24 11	NC	1966-2006	41
234	02111340	South Prong Lewis Fork Creek near North Wilkesboro, NC	36 11 23	81 24 39	NC	1955-1971	16
235	02111500[h]	Reddies River at North Wilkesboro, NC	36 10 30	81 10 08	NC	1940-2006	65
236	02112000[h,r]	Yadkin River at Wilkesboro, NC	36 09 09	81 08 44	NC	1904-1961	48
237	02112120[h]	Roaring River near Roaring River, NC	36 15 01	81 02 40	NC	1965-2006	42
238	02112247	Elkin River at Elkin, NC	36 15 12	80 51 44	NC	1971-1980	10
239	02112360[h]	Mitchell River near State Road, NC	36 18 41	80 48 26	NC	1965-2006	42
240	02112410	Fisher River near Bottom, NC	36 26 35	80 46 11	NC	1954-1971	16
241	02112500[1]	Fisher River near Dobson, NC	36 23 05	80 40 19	NC	1922-1933	12
242	02113000[h]	Fisher River near Copeland, NC	36 20 28	80 41 09	NC	1922-2006	85
243	02113850[h]	Ararat River at Ararat, NC	36 24 16	80 33 42	NC	1965-2006	42
244	02114010[1,h]	Ararat River at Dam near Pilot Mountain, NC	36 22 00	80 32 59	NC	1953-1968	16
245	02114450	Little Yadkin River at Dalton, NC	36 17 57	80 24 53	NC	1961-2006	46
246	02115500	Forbush Creek near Yadkinville, NC	36 08 00	80 32 59	NC	1941-1971	31
247	02115520[1]	Logan Creek near Smithtown, NC	36 12 50	80 33 31	NC	1954-1971	18
248	02115540	South Deep Creek near Yadkinville, NC	36 08 00	80 45 59	NC	1954-1966	13
249	02115830	Smith Creek near Kernersville, NC	36 06 19	80 06 18	NC	1954-1971	18
250	02115856	Salem Creek near Atwood, NC	36 02 10	80 18 34	NC	1972-1982	11

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
251	02115860	Muddy Creek near Muddy Creek, NC	36 00 01	80 20 25	NC	1965-1991	19
252	02115900	South Fork Muddy Creek near Clemmons, NC	36 00 22	80 18 06	NC	1965-1991	19
253	02116500[h,r]	Yadkin River at Yadkin College, NC	35 51 24	80 23 13	NC	1929-1961	33
254	02117030	Humpy Creek near Fork, NC	35 51 17	80 26 23	NC	1969-1983	15
255	02117410	Mcclelland Creek near Statesville, NC	35 57 04	80 56 45	NC	1954-1976	22
256	02117500	Rocky Creek at Turnersburg, NC	35 54 00	80 47 59	NC	1941-1971	31
257	02118000[m]	South Yadkin River near Mocksville, NC	35 50 42	80 39 32	NC	1939-2006	68
258	02118500	Hunting Creek near Harmony, NC	36 00 02	80 44 44	NC	1952-2006	55
259	02119000[1,h]	South Yadkin River at Cooleemee, NC	35 48 10	80 33 21	NC	1929-1965	37
260	02120500[r]	Third Creek at Cleveland, NC	35 45 01	80 40 59	NC	1941-1954	14
261	02120780	Second Creek near Barber, NC	35 43 04	80 35 45	NC	1980-2006	27
262	02120820	Deal Branch near Salisbury, NC	35 44 44	80 30 24	NC	1954-1971	15
263	02121000	Yadkin River near Salisbury, NC	35 43 41	80 33 19	NC	1896-1927	30
264	02121180	North Potts Creek at Linwood, NC	35 45 28	80 19 23	NC	1980-1990	11
265	02121500	Abbotts Creek at Lexington, NC	35 48 25	80 14 05	NC	1941-2006	33
266	02121940	Flat Swamp Creek near Lexington, NC	35 43 59	80 06 36	NC	1954-1971	18
267	02122560	Cabin Creek near Jackson Hill, NC	35 34 57	80 09 11	NC	1954-1971	17
268	02122720	Beaverdam Creek tributary near Denton, NC	35 31 58	80 05 03	NC	1954-1971	18
269	02123500[h]	Uwharrie River near Eldorado, NC	35 26 57	80 01 02	NC	1939-1971	32
270	02123567	Dutchmans Creek near Uwharrie, NC	35 22 45	80 01 49	NC	1982-2004	20
271	02124060	North Prong Clarke Creek near Huntersville, NC	35 25 14	80 47 53	NC	1954-1973	20
272	02124130	Mallard Creek near Charlotte, NC	35 19 06	80 44 15	NC	1954-1971	18
273	02125000	Big Bear Creek near Richfield, NC	35 20 05	80 20 08	NC	1955-2006	52
274	02125410	Chinkapin Creek near Monroe, NC	35 02 49	80 29 32	NC	1953-1971	18
275	02126000[h]	Rocky River near Norwood, NC	35 08 56	80 10 33	NC	1930-2006	77
276	02127000[h]	Brown Creek near Polkton, NC	35 02 01	80 08 59	NC	1936-1971	36
277	02127390[1]	Palmetto Branch at Ansonville, NC	35 06 04	80 07 10	NC	1953-1971	17
278	02128000	Little River near Star, NC	35 23 14	79 49 53	NC	1955-2006	51
279	02128260	Cheek Creek near Pekin, NC	35 12 38	79 50 48	NC	1954-1971	18
280	02129440	South Fork Jones Creek near Morven, NC	34 53 52	80 00 23	NC	1954-1971	18
281	02129530[1]	Little Creek tributary near Pee Dee, NC	34 55 08	79 54 37	NC	1955-1971	11
282	02130900	Black Creek near Mcbee, SC	34 30 51	80 10 59	SC	1960-2006	46
283	02131110	Jeffries Creek above Florence, SC	34 10 41	79 48 33	SC	1968-2006	38
284	02131309	Fork Creek at Jefferson, SC	34 38 20	80 23 19	SC	1977-1997	21
285	02131320	Little Fork Creek at Jefferson, SC	34 38 14	80 24 22	SC	1991-2000	10
286	02131472	Hanging Rock Creek near Kershaw, SC	34 30 59	80 34 58	SC	1981-2005	24
287	02131500[1]	Lynches River near Bishopville, SC	34 15 01	80 12 49	SC	1943-2006	59
288	02132000[h]	Lynches River at Effingham, SC	34 03 06	79 45 14	SC	1928-2006	79
289	02132100	Two Mile Br near Lake City, SC	33 53 39	79 45 37	SC	1976-2003	28
290	02132230	Bridge Creek tributary at Johns, NC	34 42 13	79 26 33	NC	1953-1973	18
291	02132320	Big Shoe Heel Creek near Laurinburg, NC	34 45 02	79 23 12	NC	1988-2006	17
292	02132500	Little Pee Dee River near Dillon, SC	34 24 18	79 20 24	SC	1940-2006	66
293	02133500	Drowning Creek near Hoffman, NC	35 03 40	79 29 38	NC	1940-2006	67
294	02133590	Beaverdam Creek near Aberdeen, NC	35 00 43	79 26 49	NC	1953-1971	18
295	02133624	Lumber River near Maxton, NC	34 46 22	79 19 55	NC	1988-2006	18
296	02133960	Raft Swamp near Red Springs, NC	34 52 17	79 10 11	NC	1953-1971	15
297	02134380	Tenmile Swamp near Lumberton, NC	34 43 35	78 59 30	NC	1953-1973	18
298	02134480	Big Swamp near Tarheel, NC	34 42 37	78 50 11	NC	1986-2006	21
299	02134500[h]	Lumber River at Boardman, NC	34 26 33	78 57 37	NC	1930-2006	77
300	02135000	Little Pee Dee River at Galivants Ferry, SC	34 03 26	79 14 49	SC	1942-2006	65

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
301	02135300	Scape Ore Swamp near Bishopville, SC	34 09 03	80 18 17	SC	1969-2006	38
302	02135500	Black River near Gable, SC	33 54 01	80 09 54	SC	1952-1992	36
303	02136000[h]	Black River at Kingstree, SC	33 39 41	79 50 09	SC	1928-2006	79
304	02137000[h]	Mill Creek at Old Fort, NC	35 37 59	82 11 13	NC	1961-1975	15
305	02137727	Catawba River near Pleasant Gardens, NC	35 41 09	82 03 37	NC	1981-2006	26
306	02138000[h]	Catawba River near Marion, NC	35 42 26	82 01 59	NC	1942-1981	40
307	02138500[h]	Linville River near Nebo, NC	35 47 41	81 53 24	NC	1923-2006	84
308	02138680[l]	White Branch near Marion, NC	35 38 46	81 55 17	NC	1955-1971	14
309	02140980	Carroll Creek near Collettsville, NC	35 53 21	81 44 17	NC	1955-1971	17
310	02140991	Johns River at Arneys Store, NC	35 50 01	81 42 43	NC	1986-2006	21
311	02141130	Zacks Fork Creek near Lenoir, NC	35 55 32	81 31 12	NC	1967-1976	10
312	02141890	Duck Creek near Taylorsville, NC	35 53 34	81 18 08	NC	1954-1971	18
313	02142000	Lower Little River near All Healing Springs, NC	35 56 44	81 14 13	NC	1954-2006	51
314	02142480	Hagan Creek near Catawba, NC	35 40 20	81 08 11	NC	1954-1971	15
315	0214253830	Norwood Creek near Troutman, NC	35 40 50	80 56 43	NC	1984-2006	22
316	02142900	Long Creek near Paw Creek, NC	35 19 43	80 54 35	NC	1966-2006	41
317	02143000[h]	Henry Fork near Henry River, NC	35 41 04	81 24 12	NC	1926-2006	70
318	02143040[h]	Jacob Fork at Ramsey, NC	35 35 26	81 34 01	NC	1962-2006	45
319	02143310	Lithia Inn Branch near Lincolnton, NC	35 27 47	81 13 26	NC	1954-1968	14
320	02143500[h]	Indian Creek near Laboratory, NC	35 25 14	81 15 55	NC	1952-2006	55
321	02144000	Long Creek near Bessemer City, NC	35 18 23	81 14 05	NC	1954-2006	53
322	02145000[h]	South Fork Catawba River at Lowell, NC	35 17 07	81 06 04	NC	1943-2006	52
323	02146890[l]	East Fork Twelve Mile Creek near Waxhaw, NC	34 57 47	80 42 39	NC	1954-1972	18
324	02146900[m]	Twelve Mile Creek near Waxhaw, NC	34 57 07	80 45 21	NC	1961-2004	44
325	02147500	Rocky Creek at Great Falls, SC	34 33 56	80 55 11	SC	1952-2006	50
326	02148090	Swift Creek near Camden, SC	34 11 50	80 28 57	SC	1991-2004	12
327	02148300	Colonels Creek near Leesburg, SC	34 00 26	80 43 57	SC	1968-2006	15
328	02149000[h]	Cove Creek near Lake Lure, NC	35 25 24	82 06 42	NC	1952-2006	55
329	02150420	Camp Creek near Rutherfordton, NC	35 27 47	81 54 28	NC	1955-1971	17
330	02151000	Second Broad River at Cliffside, NC	35 14 08	81 45 56	NC	1926-1997	72
331	02151500	Broad River near Boiling Springs, NC	35 12 39	81 41 51	NC	1926-2006	80
332	02152100	First Broad River near Casar, NC	35 29 35	81 40 56	NC	1960-2006	46
333	02152420	Big Knob Creek near Fallston, NC	35 29 34	81 32 24	NC	1953-1971	18
334	02152500[h]	First Broad River near Lawndale, NC	35 22 50	81 32 39	NC	1940-1980	41
335	02152610	Sugar Branch near Boiling Springs, NC	35 15 00	81 37 14	NC	1954-1987	34
336	02153500[l]	Broad River near Gaffney, SC	35 05 20	81 34 19	SC	1897-1990	54
337	02153780	Clarks Fork Creek near Smyrna, SC	35 04 45	81 23 16	SC	1981-2006	24
338	02153800	Bullock Creek near Sharon, SC	34 57 13	81 22 57	SC	1991-2006	16
339	02153840	Bells Creek near Sharon, SC	34 53 09	81 25 50	SC	1991-2005	12
340	02154500	North Pacolet River at Fingerville, SC	35 07 15	81 59 09	SC	1931-2006	74
341	02154790	South Pacolet River near Campobello, SC	35 06 23	82 07 46	SC	1989-2006	18
342	021563931	Turkey Creek near Lowrys, SC	34 48 47	81 22 09	SC	1991-2006	16
343	02156500[l]	Broad River near Carlisle, SC	34 35 43	81 25 16	SC	1939-2006	69
344	02157000	North Tyger River near Fairmont, SC	34 55 45	82 02 39	SC	1951-1988	38
345	02157500	Middle Tyger River at Lyman, SC	34 56 35	82 07 59	SC	1939-2005	51
346	02158000[m]	North Tyger River near Moore, SC	34 48 10	81 57 56	SC	1935-1978	41
347	02158500[l]	South Tyger River near Reidville, SC	34 52 35	82 05 09	SC	1935-1978	41
348	02159000[m]	South Tyger River near Woodruff, SC	34 45 21	81 56 18	SC	1935-1978	44
349	02159500[l]	Tyger River near Woodruff, SC	34 45 15	81 55 29	SC	1929-1956	28
350	02160000	Fairforest Creek near Union, SC	34 40 45	81 41 24	SC	1940-2006	65

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
351	02160105	Tyger River near Delta, SC	34 32 07	81 32 53	SC	1974-2006	32
352	02160326	Enoree River at Pelham, SC	34 51 23	82 13 34	SC	1994-2006	13
353	02160390[1]	Enoree River near Woodruff, SC	34 41 00	82 02 23	SC	1994-2006	14
354	02160500	Enoree River near Enoree, SC	34 36 38	81 54 34	SC	1930-1993	77
355	02160700[1]	Enoree River at Whitmire , SC	34 30 33	81 35 53	SC	1974-2006	34
356	02161000[1,2]	Broad River at Alston, SC	34 14 36	81 19 10	SC	1897-2006	38
357	02161500	Broad River at Richtex, SC	34 11 06	81 11 47	SC	1926-1983	58
358	02162010	Cedar Creek near Blythewood, SC	34 11 45	81 06 12	SC	1967-1996	29
359	02162350	Middle Saluda River near Cleveland, SC	35 07 12	82 32 15	SC	1981-2006	24
360	02162500	Saluda River near Greenville, SC	34 50 32	82 28 50	SC	1942-2006	62
361	02163000[1]	Saluda River near Pelzer, SC	34 40 05	82 27 54	SC	1930-1993	62
362	02163500	Saluda River near Ware Shoals, SC	34 23 30	82 13 24	SC	1939-2006	68
363	02164110[1]	Reedy River above Fork Shoals, SC	34 39 10	82 17 51	SC	1994-2006	14
364	02165000	Reedy River near Ware Shoals, SC	34 25 02	82 09 05	SC	1940-2002	63
365	02165200	South Rabon Creek near Gray Court, SC	34 31 12	82 09 25	SC	1968-2006	30
366	02166970[1]	Ninety-Six Creek near Ninety-Six, SC	34 07 57	81 59 47	SC	1981-2001	21
367	02167000[h,r]	Saluda River at Chappells, SC	34 10 28	81 51 50	SC	1927-1939	13
368	02167450	Little River near Silverstreet, SC	34 12 34	81 45 47	SC	1991-2006	16
369	02167582	Bush River near Prosperity, SC	34 10 08	81 36 37	SC	1991-2006	16
370	02169550	Congaree Creek at Cayce, SC	33 56 16	81 04 39	SC	1960-1980	21
371	02169630	Big Beaver Creek near St. Matthews, SC	33 44 13	80 57 29	SC	1967-1993	27
372	02169960	Lake Marion tributary near Vance, SC	33 27 27	80 26 31	SC	1976-2004	26
373	02172500	South Fork Edisto River near Montmorenci, SC	33 34 36	81 30 49	SC	1940-1993	49
374	02173000[h]	South Fork Edisto River near Denmark, SC	33 23 36	81 07 59	SC	1932-2006	73
375	02173030[1]	South Fork Edisto River near Cope, SC	33 21 33	81 03 34	SC	1992-2006	15
376	02173051[1]	South Fork Edisto River near Bamberg, SC	33 20 14	81 01 07	SC	1992-2006	15
377	02173500[h]	North Fork Edisto River at Orangeburg, SC	33 29 01	80 52 24	SC	1939-2006	68
378	02174000[1,h]	Edisto River near Branchville, SC	33 10 36	80 48 04	SC	1946-2006	61
379	02174250	Cow Castle Creek near Bowman, SC	33 22 44	80 41 59	SC	1971-2006	22
380	02175000[h]	Edisto River near Givhans, SC	33 01 41	80 23 29	SC	1939-2006	68
381	02175500	Salkehatchie River near Miley, SC	32 59 21	81 03 09	SC	1952-2006	55
382	02176000	Combahee River near Yemassee, SC	32 42 26	80 49 34	SC	1952-1966	15
383	02176500	Coosawhatchie River near Hampton, SC	32 50 11	81 07 54	SC	1952-2006	55
384	02177000	Chattooga River near Clayton, GA	34 48 50	83 18 22	GA	1915-2006	81
385	02178400[h]	Tallulah River near Clayton, GA	34 53 25	83 31 50	GA	1965-2006	42
386	02181800[h]	Little Panther Creek near Tallulah Falls, GA	34 42 48	83 24 07	GA	1956-1974	19
387	02182000	Panther Creek near Toccoa, GA	34 40 40	83 20 43	GA	1927-1978	51
388	02184500	Whitewater River at Jocassee, SC	34 58 19	82 56 24	SC	1952-1967	16
389	02185000	Keowee River near Jocassee, SC	34 57 21	82 54 41	SC	1950-1967	18
390	02185200	Little River near Walhalla, SC	34 50 11	82 58 48	SC	1967-2004	37
391	02185500	Keowee River near Newry, SC	34 44 20	82 51 50	SC	1940-1961	22
392	02186000	Twelvemile Creek near Liberty, SC	34 48 05	82 44 55	SC	1955-2006	27
393	02186645	Coneross Creek near Seneca, SC	34 38 57	82 59 30	SC	1989-2003	15
394	02187910	Rocky River near Starr, SC	34 22 59	82 34 38	SC	1989-2006	17
395	02188500[h]	Beaverdam Creek at Dewy Rose, GA	34 10 52	82 56 38	GA	1943-1977	35
396	02188600	Beaverdam Creek above Elberton, GA	34 10 07	82 53 48	GA	1987-2006	12
397	02189000[h,r]	Savannah River near Calhoun Falls, SC	34 04 15	82 38 29	SC	1897-1935	37
398	02189020[h]	Indian Creek near Carnesville, GA	34 21 19	83 17 16	GA	1964-1976	13
399	02189030[1]	Stephens Creek tributary at Carnesville, GA	34 21 51	83 13 16	GA	1964-1976	13
400	02189600	Bear Creek near Mize, GA	34 29 07	83 18 38	GA	1957-1969	13

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
401	02190100	Toms Creek near Eastanollee, GA	34 29 01	83 14 02	GA	1957-1969	13
402	02190200	Toms Creek tributary near Avalon, GA	34 29 35	83 13 23	GA	1955-1969	14
403	02190800[1]	Double Branch at Bowersville, GA	34 22 51	83 05 28	GA	1960-1975	16
404	02191200	Hudson River at Homer, GA	34 20 15	83 29 17	GA	1951-1979	29
405	02191270	Scull Shoal Creek near Danielsville, GA	34 09 30	83 09 51	GA	1964-1975	12
406	02191280[1]	Mill Shoal Creek near Royston, GA	34 16 13	83 06 08	GA	1964-1987	24
407	02191300[h]	Broad River above Carlton, GA	34 04 24	83 00 12	GA	1898-2006	108
408	02191600	Double Branch near Danielsville, GA	34 06 06	83 14 11	GA	1964-1976	13
409	02191750	Fork Creek at Carlton, GA	34 02 55	83 01 16	GA	1964-1975	12
410	02191890[h]	Brooks Creek near Lexington, GA	33 50 30	83 05 22	GA	1964-1975	12
411	02191910	Trouble Creek at Lexington, GA	33 52 24	83 05 60	GA	1959-1978	18
412	02191930	Buffalo Creek near Lexington, GA	33 46 40	83 03 01	GA	1964-2006	43
413	02191960[h]	Macks Creek near Lexington, GA	33 55 24	82 58 30	GA	1959-1975	17
414	02191970[h]	Little Macks Creek near Lexington, GA	33 56 09	82 57 41	GA	1959-1985	27
415	02192000[h]	Broad River near Bell, GA	33 58 27	82 46 12	GA	1927-2006	75
416	02192400	Anderson Mill Creek near Danburg, GA	33 48 35	82 41 35	GA	1964-1975	12
417	02192420	Anderson Mill Creek tributary near Danburg, GA	33 49 42	82 41 12	GA	1964-1975	12
418	02192500	Little River near Mt. Carmel, SC	34 04 17	82 30 02	SC	1940-2006	64
419	02193300	Stephens Creek near Crawfordville, GA	33 36 05	82 55 28	GA	1961-1975	13
420	02193340	Kettle Creek near Washington, GA	33 40 57	82 51 29	GA	1987-2006	20
421	02193400	Harden Creek near Sharon, GA	33 33 10	82 50 15	GA	1964-1975	12
422	02193500	Little River near Washington, GA	33 36 46	82 44 33	GA	1950-2006	39
423	02195150	Kiokee Creek at at Appling, GA	33 32 33	82 18 55	GA	1984-2006	23
424	02196000[h]	Stevens Creek near Modoc, SC	33 43 45	82 10 54	SC	1940-2006	62
425	02196250	Horn Creek near Colliers (Edgefield), SC	33 42 55	81 56 22	SC	1981-1994	14
426	02196689	Little Horse Creek near Graniteville, SC	33 33 49	81 52 26	SC	1990-2006	13
427	02197000[h,r]	Savannah River at Augusta, GA	33 22 26	81 56 34	SC	1876-1950	80
428	02197300[1]	Upper Three Runs near New Ellenton, SC	33 23 06	81 36 59	SC	1967-2002	36
429	02197310[1]	Upper Three Runs above Road C at Savannah River Plant, SC	33 17 09	81 41 39	SC	1975-2002	26
430	02197315[1]	Upper Three Runs at Road A at Savannah River Plant, SC	33 14 21	81 44 41	SC	1975-2002	27
431	02197410	Miller Creek tributary near Baldoc, SC	33 04 09	-82 35 35	SC	1977-1998	20
432	02197520[h]	Brier Creek near Thomson, GA	33 22 07	82 28 05	GA	1968-1993	25
433	02197550	Little Brier Creek near Thomson, GA	33 20 25	82 27 28	GA	1952-1967	16
434	02197600	Brushy Creek near Wrens, GA	33 10 38	82 18 20	GA	1959-2005	46
435	02197810[h]	Walnut Branch near Waynesboro, GA	33 08 12	82 02 09	GA	1965-1974	10
436	02197830[1,h]	Brier Creek near Waynesboro, GA	33 07 06	81 57 49	GA	1952-1994	27
437	02198000[h]	Brier Creek at Millhaven, GA	32 56 01	81 39 04	GA	1938-2006	69
438	02198100	Beaverdam Creek near Sardis, GA	32 56 16	81 48 55	GA	1987-2006	19
439	02198690	Ebenezer Creek at Springfield, GA	32 21 57	81 17 50	GA	1990-2006	17
440	02199700	South Fork Ogeechee River near Crawfordville, GA	33 31 00	82 54 22	GA	1951-1969	19
441	02200000[h]	Ogeechee River at Jewell, GA	33 17 49	82 46 39	GA	1984-2006	23
442	02200100[h]	Little Ogeechee River at Hamburg, GA	33 12 26	82 46 37	GA	1951-1976	25
443	02200400	Rocky Comfort Creek near Grange, GA	33 06 10	82 34 01	GA	1979-2006	27
444	02200500[h]	Ogeechee River near Louisville, GA	32 58 04	82 23 25	GA	1936-1966	31
445	02200900	Big Creek near Louisville, GA	32 59 01	82 21 22	GA	1951-1976	26
446	02200930	Spring Creek near Louisville, GA	32 55 21	82 18 48	GA	1965-2006	42
447	02200950[1,h]	Ogeechee River near Wadley, GA	32 52 12	82 19 10	GA	1970-1987	18
448	02201000[h]	Williamson Swamp Creek at Davisboro, GA	32 58 33	82 36 35	GA	1979-2006	28
449	02201110[h]	Nails Creek near Bartow, GA	32 52 26	82 26 33	GA	1965-1974	10
450	02201160	Boggy Gut Creek near Wadley, GA	32 53 43	82 24 01	GA	1965-1974	10
451	02201250[1,h]	Seals Creek tributary near Midville, GA	32 51 05	82 13 57	GA	1964-1974	11

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
452	02201350[h]	Buckhead Creek near Waynesboro, GA	32 58 22	82 07 14	GA	1963-1983	21
453	02201800[h]	Richardson Creek near Millen, GA	32 43 24	81 58 34	GA	1963-1983	21
454	02201830	Sculls Creek near Millen, GA	32 39 35	81 59 28	GA	1965-1975	11
455	02202000[1,h]	Ogeechee River at Scarboro, GA	32 42 39	81 52 45	GA	1936-2002	67
456	02202300	Mill Creek near Statesboro, GA	32 28 29	81 45 16	GA	1963-1974	12
457	02202500[h]	Ogeechee River near Eden, GA	32 11 30	81 24 57	GA	1936-2006	71
458	02202600	Black Creek near Blitchton, GA	32 10 05	81 29 17	GA	1980-2006	27
459	02202605	Mill Creek near Pembroke, GA	32 09 40	81 36 14	GA	1979-1996	18
460	02202800[h]	Canoochee Creek near Swainsboro, GA	32 36 20	82 15 20	GA	1951-1976	26
461	02202810[h]	Hughes Prong near Swainsboro, GA	32 37 30	82 19 03	GA	1965-1975	11
462	02202820[h]	Reedy Creek near Twin City, GA	32 35 41	82 12 22	GA	1965-1974	10
463	02202850[h]	Reedy Branch near Metter, GA	32 28 44	82 07 44	GA	1965-1974	10
464	02202865	Canoochee River near Metter, GA	32 21 21	82 05 24	GA	1970-1986	17
465	02202900[h]	Fifteenmile Creek near Metter, GA	32 23 34	82 00 54	GA	1963-1983	21
466	02202910[h]	Tenmile Creek tributary at Pulaski, GA	32 23 19	81 58 16	GA	1965-1987	23
467	02202950[h]	Cypress Flat Creek near Collins, GA	32 13 10	82 07 13	GA	1965-1974	10
468	02203000[h]	Canoochee River near Claxton, GA	32 11 06	81 53 19	GA	1938-2006	69
469	02203280[1,h]	Canoochee River near Daisy, GA	32 08 55	81 46 53	GA	1903-1986	38
470	02203559	Peacock Creek at Mcintosh, GA	31 48 50	81 31 12	GA	1967-1977	11
471	02204135[1]	Camp Creek tributary near Stockbridge, GA	33 34 35	84 08 51	GA	1977-2006	30
472	02208200	Beaverdam Creek tributary at Bold Springs, GA	33 53 59	83 47 36	GA	1965-1975	11
473	02208450	Alcovy River above Covington, GA	33 38 24	83 46 45	GA	1973-2006	33
474	02209000[h]	Alcovy River below Covington, GA	33 30 21	83 49 30	GA	1929-1965	25
475	02211300[h]	Towaliga River near Jackson, GA	33 15 50	84 04 17	GA	1961-1983	23
476	02211459	Big Towaliga Creek near Barnesville, GA	33 04 20	84 11 04	GA	1969-1981	13
477	02211500[h]	Towaliga River near Forsyth, GA	33 07 17	83 56 36	GA	1929-1966	25
478	02212500[1,h]	Ocmulgee River at Juliette, GA	33 05 50	83 47 10	GA	1916-1988	20
479	02212600	Falling Creek near Juliette, GA	33 05 59	83 43 25	GA	1965-2006	42
480	02213000[h]	Ocmulgee River at Macon, GA	32 50 19	83 37 14	GA	1893-2006	114
481	02213050[h]	Walnut Creek near Gray, GA	32 58 20	83 37 08	GA	1962-1994	33
482	02213350[h]	Tobesofkee Creek below Forsyth, GA	32 59 37	83 56 41	GA	1963-1987	24
483	02213400[h]	Little Tobesofkee Creek near Forsyth, GA	32 57 10	84 02 33	GA	1951-1961	11
484	02213470[h]	Tobesofkee Creek above Macon, GA	32 52 02	83 50 24	GA	1967-1978	12
485	02214000[h]	Echeconnee Creek near Macon, GA	32 45 55	83 50 22	GA	1938-1978	34
486	02214280	Savage Creek near Bullard, GA	32 35 34	83 28 11	GA	1979-2006	28
487	02214500	Big Indian Creek at Perry, GA	32 27 21	83 44 21	GA	1944-1977	34
488	02214820	Mossy Creek near Perry , GA	32 31 15	83 43 23	GA	1979-2006	25
489	02215000[1,h]	Ocmulgee River at Hawkinsville, GA	32 16 51	83 27 40	GA	1909-1996	86
490	02215100	Tucsawhatchee Creek near Hawkinsville, GA	32 14 22	83 30 06	GA	1984-2006	23
491	02215220	Ocmulgee River tributary near Abbeville, GA	32 06 54	83 24 12	GA	1965-1975	11
492	02215230[h]	Cedar Creek near Pineview, GA	32 05 35	83 30 12	GA	1965-1975	11
493	02215245	Folsom Creek tributary near Rochelle, GA	32 00 20	83 26 07	GA	1964-2006	43
494	02215280	Ball Creek tributary near Rochelle, GA	31 49 58	83 22 05	GA	1960-1977	18
495	02215500[h]	Ocmulgee River at Lumber City, GA	31 55 13	82 40 26	GA	1909-2006	98
496	02215800	Gum Swamp Creek near Chauncey, GA	32 07 28	83 03 37	GA	1984-2006	23
497	02216000[h]	Little Ocmulgee River at Towns, GA	32 00 29	82 45 10	GA	1938-1978	39
498	02216100[h]	Alligator Creek near Alamo, GA	32 01 36	82 41 43	GA	1951-1966	16
499	02216180	Turnpike Creek near Mcrae, GA	31 59 29	82 55 19	GA	1983-2006	24
500	02216610	Tillman Mill Creek near Lumber City, GA	31 58 54	82 38 31	GA	1966-1985	20
501	02217000	Allen Creek at Talmo, GA	34 11 34	83 43 11	GA	1952-1974	23

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
502	02217200	Middle Oconee River near Jefferson, GA	34 05 46	83 36 23	GA	1951-1965	15
503	02217250[l]	Buffalo Creek tributary near Jefferson, GA	34 05 00	83 38 01	GA	1964-1976	13
504	02217380	Mulberry River near Winder, GA	34 03 08	83 39 49	GA	1983-2006	23
505	02217400	Mulberry River tributary near Winder, GA	34 03 53	83 39 45	GA	1965-2006	42
506	02217450[l,h]	Mulberry River tributary near Jefferson, GA	34 04 38	83 38 53	GA	1965-1974	10
507	02217475[l]	Middle Oconee River near Arcade, GA	34 01 54	83 33 48	GA	1987-2006	20
508	02217500[h]	Middle Oconee River near Athens, GA	33 56 48	83 25 22	GA	1929-2006	71
509	02217660[l]	Little Curry Creek near Jefferson, GA	34 08 25	83 32 09	GA	1964-1976	13
510	02217900	North Oconee River at Athens, GA	33 56 55	83 22 04	GA	1929-1972	31
511	02218100	Porters Creek at Watkinsville, GA	33 50 56	83 23 42	GA	1964-1975	12
512	02218300[l,h]	Oconee River near Penfield, GA	33 43 16	83 17 44	GA	1970-2006	37
513	02218450[h]	Town Creek near Greensboro, GA	33 38 29	83 13 36	GA	1964-1987	24
514	02218500[h]	Oconee River near Greensboro, GA	33 34 52	83 16 22	GA	1904-1991	83
515	02219000	Apalachee River near Bostwick, GA	33 47 17	83 28 27	GA	1945-2006	33
516	02219500	Apalachee River near Buckhead, GA	33 36 31	83 20 58	GA	1901-1978	49
517	02220550	Whitten Creek near Sparta, GA	33 23 12	83 01 34	GA	1961-1986	26
518	02220900[h]	Little River near Eatonton, GA	33 18 50	83 26 14	GA	1971-2006	36
519	02221000[h]	Murder Creek near Monticello, GA	33 24 56	83 39 43	GA	1952-1976	25
520	02221525[h]	Murder Creek below Eatonton, GA	33 15 08	83 28 53	GA	1978-2006	29
521	02223082[h]	Buffalo Creek near Linton, GA	33 06 28	82 57 34	GA	1984-2006	23
522	02223200[h]	Commissioner Creek at Toomsboro, GA	32 49 54	83 04 43	GA	1949-1976	28
523	02223300[h]	Big Sandy Creek near Jeffersonville, GA	32 48 16	83 25 04	GA	1959-1971	13
524	02223349[l]	Big Sandy Creek tributary near Irwinton, GA	32 48 13	83 13 40	GA	1977-2006	30
525	02223360	Big Sandy Creek near Irwinton, GA	32 45 60	83 10 05	GA	1970-1987	18
526	02223500[h]	Oconee River at Dublin, GA	32 32 41	82 53 41	GA	1894-2006	113
527	02223700	Indian Branch tributary near Scott, GA	32 33 23	82 44 32	GA	1965-1975	11
528	02224000	Rocky Creek near Dudley, GA	32 29 39	83 08 49	GA	1952-1976	25
529	02224100[h]	Turkey Creek near Dublin, GA	32 27 22	82 56 32	GA	1984-2006	23
530	02224200	Mercer Creek near Soperton, GA	32 26 39	82 41 29	GA	1965-1975	11
531	02224400	Cypress Creek near Tarrytown, GA	32 16 50	82 35 44	GA	1965-1975	11
532	02224500[l,h]	Oconee River near Mount Vernon, GA	32 11 29	82 37 59	GA	1938-1996	58
533	02224650	Peterson Creek at Glenwood, GA	32 10 09	82 40 00	GA	1965-1974	10
534	02224800	Oconee River tributary near Glenwood, GA	32 03 17	82 39 08	GA	1965-1974	10
535	02225000[l,h]	Altamaha River near Baxley, GA	31 56 21	82 21 12	GA	1928-2006	47
536	02225100[h]	Cobb Creek near Lyons, GA	32 02 07	82 22 46	GA	1951-1966	16
537	02225150[h]	Ohoopee River near Wrightsville, GA	32 42 51	82 45 19	GA	1963-1983	21
538	02225180	Mulepen Creek near Adrian, GA	32 32 59	82 31 25	GA	1965-1974	10
539	02225200	Little Ohoopee River near Wrightsville, GA	32 47 21	82 33 01	GA	1951-1976	26
540	02225210[h]	Hurricane Branch near Wrightsville, GA	32 47 01	82 34 41	GA	1965-1974	10
541	02225240	Crooked Creek near Kite, GA	32 40 23	82 26 42	GA	1965-1974	10
542	02225250[h]	Little Ohoopee River near Swainsboro, GA	32 33 45	82 28 02	GA	1970-2006	29
543	02225300[h]	Ohoopee River near Oak Park, GA	32 23 30	82 18 48	GA	1951-1986	22
544	02225330	Beaver Creek near Cobbtown, GA	32 16 53	82 11 26	GA	1965-2006	41
545	02225350	Reedy Creek tributary near Soperton, GA	32 25 36	82 29 51	GA	1965-1988	24
546	02225500[h]	Ohoopee River near Reidsville, GA	32 04 43	82 10 38	GA	1904-2006	73
547	02225850	Beards Creek near Glennville, GA	31 55 27	81 52 57	GA	1966-1987	22
548	02226000[l,h]	Altamaha River at Doctortown, GA	31 39 17	81 49 40	GA	1925-2006	82
549	02226030[h]	Doctors Creek near Ludowici, GA	31 44 08	81 42 07	GA	1966-1987	22
550	02226100	Penholoway Creek near Jesup, GA	31 34 01	81 50 17	GA	1959-2000	42
551	02226190[h]	Little Creek near Willacoochee, GA	31 27 25	83 03 02	GA	1965-1987	23

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
552	02226200[h]	Satilla River near Douglas, GA	31 24 50	82 51 02	GA	1951-1976	26
553	02226300[1,h]	Satilla River near Pearson, GA	31 20 12	82 46 07	GA	1953-1965	13
554	02226465	Dryden Creek near Dixie Union, GA	31 20 24	82 28 42	GA	1978-1988	11
555	02226500[h]	Satilla River near Waycross, GA	31 14 18	82 19 28	GA	1937-2006	70
556	02226580[h]	Big Creek near Hoboken, GA	31 10 29	82 11 16	GA	1966-1987	22
557	02227000[h]	Hurricane Creek near Alma, GA	31 34 04	82 27 50	GA	1952-1987	35
558	02227100[h]	Little Hurricane Creek near Alma, GA	31 29 45	82 31 40	GA	1948-1962	15
559	02227200[h]	Little Hurricane Creek below Alma, GA	31 25 26	82 25 58	GA	1948-1978	31
560	02227290[h]	Alabaha River near Blackshear, GA	31 21 05	82 14 15	GA	1953-1987	21
561	02227400[h]	Big Satilla Creek near Alma, GA	31 39 29	82 25 56	GA	1948-1978	31
562	02227422[1]	Crooked Creek tributary near Bristol, GA	31 26 26	82 15 02	GA	1976-2006	31
563	02227430[h]	Little Satilla Creek at Odum, GA	31 40 05	82 02 26	GA	1949-1978	30
564	02227470[h]	Little Satilla Creek near Jesup, GA	31 33 49	81 59 10	GA	1949-1965	17
565	02227500[h]	Little Satilla River near Offerman, GA	31 27 05	82 03 16	GA	1951-2006	56
566	02227990[1]	Satilla River tributary at Atkinson, GA	31 13 33	81 51 09	GA	1977-2006	29
567	02228000[h]	Satilla River at Atkinson, GA	31 13 14	81 51 56	GA	1931-2006	76
568	02228050	Buffalo Creek at Hickox, GA	31 09 22	81 59 28	GA	1966-1987	22
569	02228055	Satilla River tributary near Winokur, GA	30 59 59	81 57 30	GA	1980-1989	10
570	02229000	Middle Prong St. Marys River at Taylor, FL	30 26 11	82 17 14	FL	1956-2001	38
571	02230000	Turkey Creek at Macclenny, FL	30 16 09	82 07 20	FL	1956-1982	27
572	02230500	South Prong St. Marys River at Glen St. Mary, FL	30 16 41	82 08 39	FL	1950-1971	22
573	02231000	St. Marys River near Macclenny, FL	30 21 32	82 04 53	FL	1927-2004	78
574	02231250	Little St. Marys River near Hilliard, FL	30 43 56	81 53 34	FL	1961-1989	29
575	02231268	Alligator Creek at Callahan, FL	30 33 60	81 50 00	FL	1982-2004	23
576	02231280	Thomas Creek near Crawford, FL	30 27 40	81 49 56	FL	1965-2004	40
577	02246300	Ortega River at Jacksonville, FL	30 14 51	81 47 48	FL	1965-2003	39
578	02246600	Trout River at Dinsmore, FL	30 25 52	81 46 06	FL	1961-1993	25
579	02314500	Suwannee River at Fargo, GA	30 40 50	82 33 38	GA	1928-2006	73
580	02314600[h]	Suwannoochee Creek at Dupont, GA	30 59 10	82 52 50	GA	1952-1976	25
581	02314700[h]	Suwannoochee Creek near Thelma, FL	30 49 19	82 50 27	GA	1963-1987	25
582	02315500	Suwannee River at White Springs, FL	30 19 33	82 44 17	FL	1907-2006	81
583	02315650[1]	Alapaha River tributary near Pitts, GA	32 00 21	83 33 27	GA	1965-1975	11
584	02315670	Alapaha River tributary near Rochelle, GA	31 56 41	83 30 52	GA	1965-1975	10
585	02315700	Alapaha River at Rebecca, GA	31 48 56	83 28 26	GA	1951-1977	27
586	02315900[h]	Deep Creek near Ashburn, GA	31 43 50	83 34 60	GA	1951-1976	26
587	02315980[h]	Jacks Creek near Ocilla, GA	31 33 39	83 21 28	GA	1960-1975	16
588	02316000[h]	Alapaha River near Alapaha, GA	31 23 04	83 11 33	GA	1938-2006	43
589	02316200[h]	Willacoochee River near Ocilla, GA	31 30 07	83 09 43	GA	1950-1977	28
590	02316220[h]	Little Brushy Creek near Ocilla, GA	31 36 31	83 13 56	GA	1966-1975	10
591	02316260	Alapaha River tributary near Willacoochee, GA	31 16 51	83 03 45	GA	1965-1975	11
592	02316390[1,h]	Alapaha River at Lakeland, GA	31 02 47	83 02 37	GA	1970-1987	18
593	02317500[h]	Alapaha River at Statenville, GA	30 42 15	83 01 60	GA	1928-2006	79
594	02317600[h]	Alapahoochee River near Statenville, GA	30 42 14	83 07 18	GA	1984-2006	23
595	02317620	Alapaha River near Jennings, FL	30 35 54	83 04 24	FL	1977-2001	13
596	02317700[h]	Withlacoochee River near Nashville, GA	31 11 55	83 16 21	GA	1951-1977	27
597	02317710[1,h]	Withlacoochee River tributary near Nashville, GA	31 11 55	83 17 17	GA	1960-1987	28
598	02317730[h]	New River tributary near Nashville, GA	31 17 19	83 20 36	GA	1960-1975	16
599	02317734[h]	New River near Nashville, GA	31 10 38	83 19 20	GA	1970-1987	18
600	023177483[h]	Withlacoochee River near Bemiss, GA	30 57 10	83 16 07	GA	1977-2006	25
601	02317760	Little River near Ashburn, GA	31 41 33	83 42 08	GA	1965-1975	11

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
602	02317765	Newell Branch near Worth, GA	31 44 21	83 43 30	GA	1965-1975	11
603	02317770[h]	Newell Branch near Ashburn, GA	31 41 47	83 41 51	GA	1965-1975	11
604	02317775[h]	Daniels Creek near Ashburn, GA	31 40 41	83 45 06	GA	1965-1987	23
605	02317780[h]	Lime Sink Creek near Sycamore, GA	31 36 21	83 40 31	GA	1965-1984	20
606	02317795[h]	Mill Creek near Tifton, GA	31 29 37	83 34 04	GA	1965-1975	11
607	02317800[h]	Little River near Tifton, GA	31 26 22	83 33 38	GA	1951-1973	23
608	02317810[l]	Arnold Creek tributary near Tifton, GA	31 25 31	83 34 23	GA	1965-2002	37
609	02317830[h]	Little River near Lenox, GA	31 15 16	83 30 32	GA	1968-1978	11
610	02317840	Warrior Creek near Sylvester, GA	31 33 11	83 48 53	GA	1965-1975	11
611	02317845	Warrior Creek tributary near Sylvester, GA	31 32 55	83 49 11	GA	1965-1975	11
612	02317870	Warrior Creek near Sumner, GA	31 21 46	83 46 11	GA	1966-1987	22
613	02317890[l]	Little Creek near Sylvester, GA	31 36 49	83 45 29	GA	1965-1975	11
614	02317900[h]	Ty Ty Creek at Ty Ty, GA	31 28 23	83 39 47	GA	1951-1978	28
615	02317905[h]	Little Creek near Omega, GA	31 23 35	83 38 00	GA	1965-1975	11
616	02317910[h]	Ty Ty Creek tributary at Crosland, GA	31 19 18	83 37 24	GA	1960-1974	15
617	02317980[l,h]	Little River near Sparks, GA	31 11 35	83 31 22	GA	1961-1979	19
618	02318000[h]	Little River near Adel, GA	31 09 20	83 32 37	GA	1941-2006	42
619	02318015	Bull Creek near Norman Park, GA	31 13 14	83 37 20	GA	1965-1975	11
620	02318020[l]	Bull Creek tributary near Ellenton, GA	31 09 20	83 37 06	GA	1960-1975	16
621	02318500[h]	Withlacoochee River near Quitman, GA	30 47 35	83 27 13	GA	1928-2006	36
622	02318600[h]	Okapilco Creek near Berlin, GA	31 02 49	83 37 02	GA	1963-1984	22
623	02318700	Okapilco Creek near Quitman, GA	30 49 32	83 33 45	GA	1980-2006	27
624	02318725[l,h]	Okapilco Creek at Quitman, GA	30 47 11	83 31 33	GA	1970-1986	13
625	02326200[h]	Aucilla River near Boston, GA	30 46 45	83 48 12	GA	1962-1984	23
626	02326500	Aucilla River at Lamont, FL	30 22 12	83 48 25	FL	1951-2001	40
627	02326598	Caney Creek near Monticello, FL	30 30 53	83 56 24	FL	1969-1981	13
628	02327200[h]	Ochlockonee River at Moultrie, GA	31 10 59	83 48 32	GA	1951-1977	27
629	02327350	Ochlockonee River tributary near Coolidge, GA	31 01 25	83 57 35	GA	1965-2006	42
630	02327355[h]	Ochlockonee River near Coolidge, GA	31 00 08	83 56 21	GA	1981-2006	26
631	02327400[h]	Sallys Branch tributary near Sale City, GA	31 14 47	84 01 40	GA	1966-1975	10
632	02327415	Little Ochlockonee River near Moultrie, GA	31 07 02	83 58 42	GA	1981-2006	24
633	02327500[h]	Ochlockonee River near Thomasville, GA	30 52 33	84 02 44	GA	1937-2006	51
634	02327550[h]	Barnetts Creek near Meigs, GA	31 01 33	84 08 14	GA	1965-1987	21
635	02327700[h]	Barnetts Creek near Thomasville, GA	30 54 19	84 04 34	GA	1951-1977	27
636	02327810[l,h]	Ochlockonee River near Cairo, GA	30 47 31	84 09 16	GA	1970-1987	18
637	02327860	Popple Branch near Whigham, GA	30 55 36	84 20 18	GA	1977-2002	26
638	02327900[h]	Wolf Creek near Whigham, GA	30 53 37	84 17 26	GA	1951-1977	27
639	02328000[h]	Tired Creek near Cairo, GA	30 51 55	84 15 46	GA	1944-1979	36
640	02329000	Ochlockonee River near Havana, FL	30 33 15	84 23 03	FL	1926-2006	81
641	02329490	Willacoochee Creek near Quincy, FL	30 38 14	84 30 02	FL	1975-1990	15
642	02329534[h]	Quincy Creek at Quincy, FL	30 36 01	84 34 50	FL	1975-1992	18
643	02329600	Little River near Midway, FL	30 30 45	84 31 25	FL	1965-2006	41
644	02329700	Rocky Comfort Creek near Quincy, FL	30 32 45	84 38 09	FL	1965-1981	17
645	02329877	Ocklawaha Creek near Wetumpka, FL	30 27 01	84 38 36	FL	1975-1990	15
646	02330050	Telogia Creek near Greensboro, FL	30 33 35	84 43 36	FL	1965-1986	22
647	02330100	Telogia Creek near Bristol, FL	30 25 36	84 55 40	FL	1903-2006	53
648	02330450[h]	Chattahoochee River at Helen, GA	34 42 03	83 43 44	GA	1981-2006	26
649	02331000	Chattahoochee River near Leaf, GA	34 34 37	83 38 09	GA	1940-1999	60
650	02331500[h]	Soque River near Demorest, GA	34 34 23	83 35 27	GA	1905-1965	34
651	02331600	Chattahoochee River near Cornelia, GA	34 32 27	83 37 22	GA	1940-2006	67

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
652	02333000[h]	Chattahoochee River near Gainesville, GA	34 19 17	83 52 46	GA	1938-1955	18
653	02333500[h]	Chestatee River near Dahlonega, GA	34 31 41	83 56 23	GA	1929-2006	71
654	02337000[h]	Sweetwater Creek near Austell, GA	33 46 22	84 36 53	GA	1904-2006	72
655	02337400[h]	Dog River near Douglasville, GA	33 39 36	84 51 41	GA	1951-1977	27
656	02337448[1]	Hurricane Creek tributary near Fairplay, GA	33 35 03	84 50 54	GA	1977-2006	30
657	02337500	Snake Creek near Whitesburg, GA	33 31 46	84 55 42	GA	1955-2001	47
658	02338660	New River near Corinth, GA	33 14 07	84 59 16	GA	1979-2006	28
659	02338840	Yellowjacket Creek below Hogansville, GA	33 08 22	84 58 31	GA	1979-2006	13
660	02339000[h]	Yellowjacket Creek near La Grange, GA	33 05 27	85 03 40	GA	1951-1971	21
661	02339225	Wehadkee Creek below Rock Mills, AL	33 07 20	85 14 57	AL	1979-1990	12
662	02340250[h]	Flat Shoal Creek near West Point, GA	32 52 53	85 04 41	GA	1948-2006	29
663	02340500	Mountain Oak Creek near Hamilton, GA	32 44 28	85 04 08	GA	1944-1973	30
664	02340750[h]	Osanippa Creek near Fairfax, AL	32 47 20	85 11 30	AL	1953-1974	22
665	02341220	Mulberry Creek near Mulberry Grove, GA	32 42 11	84 57 29	GA	1984-2006	22
666	02341600	Juniper Creek near Geneva, GA	32 31 42	84 34 14	GA	1963-2006	44
667	02341723	Pine Knot Creek near Juniper, GA	32 26 15	84 39 25	GA	1979-2006	27
668	02341800	Upatoi Creek near Columbus, GA	32 24 49	84 49 12	GA	1969-2006	38
669	02341900	Ochillee Creek near Cussetta, GA	32 21 54	84 49 02	GA	1979-2006	28
670	02342150[1,h]	Uchee Creek near Seale, AL	32 21 17	85 05 44	AL	1951-1970	20
671	02342200	Phelps Creek near Opelika, AL	32 33 49	85 16 36	AL	1959-1974	16
672	02342500[1,h]	Uchee Creek near Fort Mitchell, AL	32 19 01	85 00 54	AL	1947-2003	57
673	02342933[1,h]	South Fork Cowikee Creek near Batesville, AL	32 01 04	85 17 45	AL	1964-2005	41
674	02343200[h]	Pataula Creek near Lumpkin, GA	31 56 04	84 48 12	GA	1949-1978	30
675	02343219	Bluff Springs Branch near Lumpkin, GA	32 01 53	84 53 18	GA	1977-2006	30
676	02343225[h]	Pataula Creek near Georgetown, GA	31 49 07	84 58 26	GA	1951-1978	28
677	02343244[h]	Cemochechobee Creek near Coleman, GA	31 39 12	84 53 02	GA	1984-2006	22
678	02343267[h]	Temple Creek near Blakely, GA	31 26 35	84 59 00	GA	1978-2006	28
679	02343275[1,h]	Abbie Creek near Abbeville, AL	31 33 43	85 12 18	AL	1951-1990	25
680	02343300[1,h]	Abbie Creek near Haleburg, AL	31 28 25	85 09 45	AL	1958-1993	35
681	02343700[1]	Stevenson Creek near Headland, AL	31 21 19	85 11 05	AL	1960-1974	15
682	02344700	Line Creek near Senoia, GA	33 19 09	84 31 20	GA	1965-2006	42
683	02345000[1,h]	Flint River near Molena, GA	32 59 21	84 31 45	GA	1900-1953	41
684	02345500[1]	Flint River near Woodbury, GA	32 57 59	84 31 58	GA	1900-1927	28
685	02346180[h]	Flint River near Thomaston, GA	32 50 20	84 25 27	GA	1900-1994	73
686	02346193[h]	Scott Creek near Talbotton, GA	32 39 48	84 36 06	GA	1969-1987	19
687	02346195[h]	Lazer Creek near Talbotton, GA	32 44 33	84 33 20	GA	1981-2006	24
688	02346210[h]	Kimbrough Creek near Talbotton, GA	32 41 19	84 30 48	GA	1969-1987	19
689	02346217	Coleoatchee Creek near Manchester, GA	32 49 20	84 36 16	GA	1969-2006	37
690	02346500[h]	Potato Creek near Thomaston, GA	32 54 15	84 21 45	GA	1938-1973	36
691	02347500[h]	Flint River near Carsonville, GA	32 43 17	84 13 57	GA	1913-2006	88
692	02348300[h]	Patsiliga Creek near Reynolds, GA	32 34 21	84 05 27	GA	1963-1984	22
693	02348485[h]	Whitewater Creek near Butler, GA	32 30 15	84 20 03	GA	1979-2002	22
694	02349000[h]	Whitewater Creek near Butler, GA	32 28 01	84 15 58	GA	1944-1977	34
695	02349030	Cedar Creek near Rupert, GA	32 23 22	84 17 49	GA	1979-2005	27
696	02349330[1]	Buck Creek tributary near Tazewell, GA	32 20 50	84 22 26	GA	1977-2006	30
697	02349350	Buck Creek near Ellaville, GA	32 18 36	84 17 36	GA	1979-2006	28
698	02349605[1,h]	Flint River near Montezuma, GA	32 17 35	84 02 37	GA	1905-2006	102
699	02349695[1]	Horsehead Creek near Montezuma, GA	32 21 28	83 56 12	GA	1977-2006	30
700	02349900	Turkey Creek at Byromville, GA	32 11 44	83 54 08	GA	1951-2006	56
701	02350512[1,h]	Flint River near Oakfield, GA	31 43 30	84 01 07	GA	1929-2006	49

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
702	02350520[h]	Abrams Creek tributary near Doles, GA	31 40 47	83 48 04	GA	1965-1975	11
703	02350600[h]	Kinchafoonee Creek at Preston, GA	32 03 09	84 32 54	GA	1948-2006	51
704	02350685[1]	Choctahatchee Creek tributary near Plains, GA	32 02 03	84 26 01	GA	1977-2006	29
705	02350900[h]	Kinchafoonee Creek near Dawson, GA	31 45 52	84 15 12	GA	1948-2006	41
706	02351500	Muckalee Creek near Americus, GA	32 04 59	84 15 29	GA	1963-2006	26
707	02351700	Muckalee Creek near Smithville, GA	31 53 44	84 11 52	GA	1951-1966	16
708	02351800[h]	Muckaloochee Creek at Smithville, GA	31 54 20	84 14 44	GA	1948-1978	29
709	02351890[h]	Muckalee Creek near Leesburg, GA	31 46 34	84 08 22	GA	1980-2006	27
710	02351900[h]	Muckalee Creek near Leesburg, GA	31 43 56	84 07 30	GA	1951-1986	22
711	02352500	Flint River at Albany, GA	31 35 39	84 08 39	GA	1893-2006	114
712	02353000[1,h]	Flint River at Newton, GA	31 18 25	84 20 20	GA	1938-2006	69
713	02353100	Ichawaynochaway Creek near Graves, GA	31 46 17	84 33 44	GA	1963-1990	22
714	02353200	Little Ichawaynochaway Creek near Shellman, GA	31 46 46	84 36 13	GA	1951-1962	12
715	02353400[h]	Pachitla Creek near Edison, GA	31 33 18	84 40 51	GA	1948-2006	49
716	02353500[h]	Ichawaynochaway Creek at Milford, GA	31 22 58	84 32 47	GA	1906-2006	69
717	02354500[h]	Chickasawhatchee Creek at Elmodel, GA	31 21 02	84 28 57	GA	1940-2006	49
718	02354800	Ichawaynochaway Creek near Elmodel, GA	31 17 38	84 29 31	GA	1996-2006	11
719	02355000[h]	Ichawaynochaway Creek near Newton, GA	31 16 21	84 29 19	GA	1938-1947	10
720	02356000[1,h]	Flint River at Bainbridge, GA	30 54 42	84 34 48	GA	1905-2006	98
721	02356100	Spring Creek near Arlington, GA	31 24 48	84 46 33	GA	1951-1980	25
722	02356640	Spring Creek at Colquitt, GA	31 10 16	84 44 31	GA	1981-2006	24
723	02357000	Spring Creek near Iron City, GA	31 02 25	84 44 24	GA	1938-2006	65
724	02358600	Flat Creek near Chattahoochee, FL	30 37 44	84 50 06	FL	1961-1982	21
725	02358785[1,h]	Cowarts Creek near Cottonwood, AL	31 01 01	85 13 21	AL	1971-1994	11
726	02359000	Chipola River near Altha, FL	30 32 03	85 09 55	FL	1913-2006	72
727	02360000[1,h]	West Fork Choctawhatchee River at Blue Springs, AL	31 39 50	85 30 18	AL	1944-1971	28
728	02360275[1,h]	Judy Creek near Ozark, AL	31 27 48	85 34 20	AL	1951-1994	29
729	02360500[1,h]	East Fork Choctawhatchee River near Midland City, AL	31 22 24	85 28 38	AL	1953-1990	17
730	02361000[1,h]	Choctawhatchee River near Newton, AL	31 20 35	85 36 38	AL	1922-2005	76
731	02362610[1,h]	Pea River near Midway, AL	32 03 01	85 34 21	AL	1973-1994	12
732	02363000[1,h]	Pea River near Ariton, AL	31 35 42	85 46 59	AL	1939-2005	66
733	02365310[1]	Grants Branch tributary near Fadette, AL	31 02 22	85 35 11	AL	1972-1981	10
734	02379500[h]	Cartecay River near Ellijay, GA	34 41 03	84 27 31	GA	1938-1986	48
735	02380000[h]	Ellijay River at Ellijay, GA	34 41 33	84 28 45	GA	1919-1972	22
736	02380500[h]	Coosawattee River near Ellijay, GA	34 40 30	84 30 31	GA	1939-2006	64
737	02381100	Mountaintown Creek tributary near Ellijay, GA	34 42 04	84 31 54	GA	1965-1974	10
738	02381300[h]	Fir Creek near Ellijay, GA	34 41 06	84 37 23	GA	1966-1987	22
739	02381600[h]	Fausett Creek near Talking Rock, GA	34 34 13	84 28 08	GA	1966-2006	41
740	02381900[h]	Ball Creek near Talking Rock, GA	34 31 52	84 34 11	GA	1965-1974	10
741	02382200[h]	Talking Rock Creek near Hinton, GA	34 31 22	84 36 40	GA	1964-2006	42
742	02382600[h]	Sugar Creek near Chatsworth, GA	34 40 26	84 42 40	GA	1965-1974	10
743	02382800[h]	Dry Creek at Oakman, GA	34 33 13	84 42 27	GA	1965-1974	10
744	02382900[h]	Pine Log Creek near Rydal, GA	34 22 02	84 42 45	GA	1964-1974	11
745	02383000[h]	Rock Creek near Fairmount, GA	34 21 32	84 46 46	GA	1952-1974	23
746	02383200[h]	Redbud Creek near Ranger, GA	34 31 57	84 43 39	GA	1964-1974	11
747	02384500	Conasauga River near Eton, GA	34 49 40	84 51 03	GA	1954-2006	49
748	02384540	Mill Creek near Crandall, GA	34 52 19	84 43 17	GA	1985-2006	22
749	02384600	Pinhook Creek near Eton, GA	34 49 34	84 48 54	GA	1964-2006	43
750	02384900	Coahulla Creek near Cleveland, TN	35 07 00	84 50 18	TN	1955-1985	31
751	02385000[h]	Coahulla Creek near Varnell, GA	34 53 43	84 55 15	GA	1940-1962	16

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
752	02385700[h]	Rock Creek near Chatsworth, GA	34 46 33	84 44 33	GA	1965-1974	10
753	02385800[h]	Holly Creek near Chatsworth, GA	34 43 00	84 46 12	GA	1961-2006	46
754	02387000[h]	Conasauga River at Tilton, GA	34 40 00	84 55 42	GA	1938-2006	69
755	02387100[h]	Polecat Creek near Spring Place, GA	34 39 08	84 50 33	GA	1964-1974	11
756	02387200[h]	Beamer Creek near Spring Place, GA	34 38 03	84 51 52	GA	1964-1974	11
757	02387300[1]	Dead Mans Branch near Resaca, GA	34 35 44	84 52 11	GA	1965-1987	23
758	02387560[h]	Oothkalooga Creek tributary at Adairsville, GA	34 21 34	84 55 20	GA	1965-1974	10
759	02387570[h]	Oothkalooga Creek at Adairsville, GA	34 22 40	84 56 34	GA	1964-1974	11
760	02387700	Rocky Creek at Curryville, GA	34 26 44	85 05 12	GA	1965-1974	10
761	02387800[h]	Bailey Creek near Villanow, GA	34 40 10	85 05 40	GA	1965-1974	10
762	02388000[h]	West Armuchee Creek near Subligna, GA	34 34 04	85 09 37	GA	1961-1981	21
763	02388200[h]	Storey Mill Creek near Summerville, GA	34 25 14	85 16 35	GA	1966-1987	22
764	02388300	Heath Creek near Rome, GA	34 21 57	85 16 17	GA	1969-1990	22
765	02388400[h]	Dozier Creek near Shannon, GA	34 18 53	85 05 47	GA	1965-1974	10
766	02388900[1]	Etowah River near Dahlonega, GA	34 30 56	84 03 40	GA	1950-2006	29
767	02389000[h]	Etowah River near Dawsonville, GA	34 22 57	84 03 21	GA	1940-1980	39
768	02389300[h]	Shoal Creek near Dawsonville, GA	34 25 13	84 08 47	GA	1959-1974	16
769	02390000	Amicalola Creek near Dawsonville, GA	34 25 32	84 12 43	GA	1940-2006	14
770	02391000[1]	Etowah River near Ball Ground, GA	34 19 05	84 20 35	GA	1908-1921	11
771	02392000	Etowah River at Canton, GA	34 14 24	84 29 41	GA	1892-2006	115
772	02394400[h]	Pumpkinvine Creek below Dallas, GA	33 54 59	84 52 41	GA	1951-1977	27
773	02394820[h]	Euharlee Creek at Rockmart, GA	33 59 55	85 03 09	GA	1984-2006	23
774	02394950[h]	Hills Creek near Taylorsville, GA	34 04 32	84 57 02	GA	1960-1974	15
775	02395120	Two Run Creek near Kingston, GA	34 14 34	84 53 23	GA	1981-2006	26
776	02397410[h]	Cedar Creek at Cedartown, GA	33 59 45	85 15 53	GA	1949-1997	27
777	02397500[h]	Cedar Creek near Cedartown, GA	34 03 41	85 18 47	GA	1943-2006	36
778	02397750[h]	Duck Creek above Lafayette, GA	34 42 16	85 19 51	GA	1965-1974	10
779	02397830	Harrisburg Creek near Hawkins, GA	34 36 02	85 23 21	GA	1980-2006	27
780	02398000	Chattooga River at Summerville, GA	34 27 59	85 20 10	GA	1938-2006	69
781	02398300[h]	Chattooga River above Gaylesville, AL	34 17 25	85 30 33	AL	1949-2005	48
782	02400000	Terrapin Creek near Piedmont, AL	33 57 23	85 34 38	AL	1945-1963	19
783	02400033	Nances Creek near White Plains, AL	33 50 43	85 40 00	AL	1971-1981	11
784	02400100[h]	Terrapin Creek at Ellisville, AL	34 03 54	85 36 51	AL	1963-2005	41
785	02401000[h]	Big Wills Creek near Reece City, AL	34 05 53	86 02 17	AL	1943-2005	54
786	02401500	Big Canoe Creek near Gadsden, AL	33 54 11	86 06 36	AL	1938-1965	28
787	02404000[h]	Choccolocco Creek near Jenifer, AL	33 34 14	85 55 50	AL	1904-1979	55
788	02404400[h]	Choccolocco Creek at Jackson Shoal near Lincoln, AL	33 32 54	86 05 49	AL	1961-2005	42
789	02404500[h]	Choccolocco Creek near Lincoln, AL	33 33 38	86 07 35	AL	1939-1963	25
790	02411735[1]	Mcclendon Creek tributary near Dallas, GA	33 50 58	84 57 20	GA	1977-2006	29
791	02411800[h]	Little River near Buchanan, GA	33 47 51	85 07 03	GA	1960-1985	26
792	02411900[h]	Tallapoosa River at Tallapoosa, GA	33 46 27	85 18 00	GA	1951-1977	27
793	02411902[1]	Mann Creek tributary near Tallapoosa, GA	33 51 16	85 17 28	GA	1977-2006	29
794	02412000	Tallapoosa River near Heflin, AL	33 37 22	85 30 48	AL	1953-2005	53
795	02412500[h]	Tallapoosa River near Ofelia, AL	33 19 34	85 35 31	AL	1939-1970	32
796	02413000	Little Tallapoosa River at Carrollton, GA	33 35 50	85 04 49	GA	1936-1965	29
797	02413200[h]	Little Tallapoosa River near Bowden, GA	33 30 46	85 14 03	GA	1949-1977	29
798	02413300	Little Tallapoosa River near Newell, AL	33 26 14	85 23 57	AL	1976-2005	30
799	02413400[h]	Wedowee Creek above Wedowee, AL	33 19 56	85 21 39	AL	1960-1972	13
800	02413475[h]	Wedowee Creek near Wedowee , AL	33 19 30	85 29 02	AL	1951-1975	25
801	02413500[h]	Little Tallapoosa River near Wedowee, AL	33 20 57	85 32 43	AL	1938-1979	34

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
802	02414800[h]	Harbuck Creek near Hackneyville, AL	33 07 08	85 56 41	AL	1951-1970	20
803	02415000[h]	Hillabee Creek near Hackneyville, AL	33 03 55	85 52 41	AL	1953-2005	41
804	02419000[1,h]	Uphapee Creek near Tuskegee, AL	32 28 36	85 41 42	AL	1940-2005	65
805	03160610	Old Field Creek near West Jefferson, NC	36 21 29	81 31 45	NC	1955-1971	17
806	03161000[h]	South Fork New River near Jefferson, NC	36 23 36	81 24 25	NC	1925-2006	79
807	03162110[h]	Buffalo Creek at Warrensville, NC	36 27 22	81 30 50	NC	1955-1971	17
808	03162500[h]	North Fork New River at Crumpler, NC	36 30 15	81 23 24	NC	1909-1966	39
809	03162880	Vile Creek near Sparta, NC	36 30 39	81 06 15	NC	1955-1971	17
810	03164000	New River near Galax, VA	36 38 50	80 58 44	VA	1930-2005	76
811	03165000[h]	Chestnut Creek at Galax, VA	36 38 45	80 55 09	VA	1945-2005	61
812	03166800	Glade Creek at Grahams Forge, VA	36 55 51	80 54 01	VA	1976-1995	20
813	03167000	Reed Creek at Grahams Forge, VA	36 56 20	80 53 14	VA	1909-2005	87
814	03167700	Beaverdam Creek at Hillsville, VA	36 46 05	80 43 32	VA	1971-1995	24
815	03168500	Peak Creek at Pulaski, VA	37 02 50	80 46 34	VA	1927-1961	17
816	03168750	Thorne Springs Branch near Dublin, VA	37 05 30	80 44 33	VA	1957-2005	49
817	03169350	Brush Creek at Terrys Fork, VA	37 02 44	80 16 44	VA	1957-1976	20
818	03170000	Little River at Graysontown, VA	37 02 15	80 33 24	VA	1929-2005	77
819	03171150	Crab Creek tributary near Christiansburg, VA	37 07 56	80 27 31	VA	1957-1976	20
820	03171500[h,r]	New River at Eggleston, VA	37 17 22	80 37 00	VA	1915-1939	24
821	03173000[h]	Walker Creek at Bane, VA	37 16 05	80 42 34	VA	1938-2005	68
822	03175500	Wolf Creek near Narrows, VA	37 18 20	80 50 59	VA	1909-2005	76
823	03176500[h,r]	New River at Glen Lyn, VA	37 22 22	80 51 38	VA	1915-1938	24
824	03439000[m]	French Broad River at Rosman, NC	35 08 36	82 49 29	NC	1936-2006	71
825	03439500[1]	French Broad at Calvert, NC	35 08 55	82 47 58	NC	1925-1955	31
826	03440000	Catheys Creek near Brevard, NC	35 12 40	82 46 59	NC	1945-2004	29
827	03441000	Davidson River near Brevard, NC	35 16 23	82 42 21	NC	1921-2006	83
828	03441440	Little River above High Falls near Cedar Mountain, NC	35 11 32	82 36 48	NC	1963-1990	28
829	03441500[h]	Little River near Penrose, NC	35 13 23	82 38 06	NC	1943-1955	13
830	03442000[h]	Crab Creek near Penrose, NC	35 14 02	82 36 38	NC	1943-1955	13
831	03443000	French Broad River at Blantyre, NC	35 17 57	82 37 26	NC	1921-2006	86
832	03444000[h]	Boylston Creek near Horseshoe, NC	35 22 10	82 33 49	NC	1943-1955	13
833	03444500	South Fork Mills River at The Pink Beds, NC	35 21 58	82 44 21	NC	1927-1973	31
834	03446000[h]	Mills River near Mills River, NC	35 23 53	82 35 42	NC	1925-2006	74
835	03446410[1]	Laurel Branch near Edneyville, NC	35 22 15	82 24 09	NC	1955-1966	12
836	03446500[h]	Clear Creek near Hendersonville, NC	35 21 14	82 26 39	NC	1946-1955	10
837	03447000[h]	Mud Creek at Naples, NC	35 23 14	82 30 13	NC	1939-1955	17
838	03447500[h]	Cane Creek at Fletcher, NC	35 26 08	82 29 22	NC	1926-1958	18
839	03448000[1]	French Broad River at Bent Creek, NC	35 30 07	82 35 32	NC	1935-1986	52
840	03448500[h]	Hominy Creek at Candler, NC	35 32 28	82 40 34	NC	1943-1977	35
841	0344894205[h]	North Fork Swannanoa River near Walkertown, NC	35 41 00	82 19 59	NC	1989-2006	18
842	03449000[r]	Norh Fork Swannanoa Rivernear Black Mountain, NC	35 39 11	82 21 03	NC	1926-1952	27
843	03450000	Beetree Creek near Swannanoa, NC	35 39 11	82 24 19	NC	1927-2006	70
844	03451000[h]	Swannanoa River at Biltmore, NC	35 34 06	82 32 41	NC	1921-2006	78
845	03451500[h]	French Broad River at Asheville, NC	35 36 32	82 34 41	NC	1896-2006	111
846	03452000	Sandymush Creek near Alexander, NC	35 43 49	82 40 10	NC	1943-1955	13
847	03453000[h]	Ivy River near Marshall, NC	35 46 11	82 37 15	NC	1935-2006	52
848	03453500[1,h]	French Broad River at Marshall, NC	35 47 11	82 39 39	NC	1943-2006	64
849	03453880	Brush Creek at Walnut, NC	35 50 40	82 44 30	NC	1954-1971	17
850	03454000	Big Laurel Creek near Stackhouse, NC	35 55 11	82 45 42	NC	1935-1973	39
851	03454500[h]	French Broad River at Hot Springs, NC	35 53 23	82 49 16	NC	1935-1949	15

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
852	03455500	West Fork Pigeon River near Hazelwood, NC	35 23 46	82 56 15	NC	1955-2006	52
853	03456500	East Fork Pigeon River near Canton, NC	35 27 42	82 52 11	NC	1955-2006	52
854	03456991[2,h]	Pigeon River near Canton, NC	35 31 23	82 50 48	NC	1908-2006	81
855	03457500	Allen Creek near Hazelwood, NC	35 25 49	83 00 29	NC	1950-1973	24
856	03459000	Jonathan Creek near Cove Creek, NC	35 37 22	83 00 26	NC	1931-1973	43
857	03459500[h]	Pigeon River near Hepco, NC	35 38 06	82 59 24	NC	1928-2006	79
858	03460000	Cataloochee Creek near Cataloochee, NC	35 40 03	83 04 25	NC	1935-2006	62
859	03461200	Cosby Creek above Cosby, TN	35 46 58	83 13 03	TN	1959-1987	29
860	03461910	North Toe River at Newland, NC	36 05 01	81 55 44	NC	1955-1973	19
861	03462000[h]	North Toe River at Altapass, NC	35 53 59	82 01 49	NC	1935-1958	24
862	03463300	South Toe River near Celo, NC	35 49 53	82 11 03	NC	1958-2006	49
863	03463500[h]	South Toe River at Newdale, NC	35 54 22	82 11 18	NC	1935-1952	18
864	03463910	Phipps Creek near Burnsville, NC	35 54 40	82 22 09	NC	1957-1973	14
865	03464000[h]	Cane River near Sioux, NC	36 00 52	82 19 39	NC	1934-1971	38
866	03464500[h]	Nolichucky River at Poplar, NC	36 04 28	82 20 41	NC	1926-1955	30
867	03465000	North Indian Creek near Unicoi, TN	36 10 35	82 17 35	TN	1945-1984	39
868	03465500[h]	Nolichucky River at Embreeville, TN	36 10 35	82 27 27	TN	1921-2006	86
869	03467000	Lick Creek at Mohawk, TN	36 12 05	83 02 52	TN	1947-2006	28
870	03467500[h]	Nolichucky River near Morristown, TN	36 10 49	83 10 32	TN	1921-1982	61
871	03469160	East Fork Little Pigeon Rivernear Sevierville, TN	35 51 55	83 29 17	TN	1954-1982	29
872	03469500	West Prong Little Pigeon River near Pigeon Forge, TN	35 48 21	83 34 28	TN	1947-1982	32
873	03470000[h]	Little Pigeon River at Sevierville, TN	35 52 42	83 34 40	TN	1920-1982	63
874	03477000[h,r]	South Fork Holston River at Bluff City, TN	36 28 38	82 15 46	TN	1901-1950	50
875	03478910[h]	Cove Creek at Sherwood, NC	36 15 50	81 47 02	NC	1955-1972	18
876	03479000[h]	Watauga River near Sugar Grove, NC	36 14 21	81 49 20	NC	1940-2006	67
877	03480540[1]	Peavine Branch near Banner Elk, NC	36 10 20	81 54 41	NC	1953-1963	11
878	03481000[h]	Elk River near Elk Park, NC	36 11 01	81 57 44	NC	1935-1955	21
879	03482000	Roan Creek near Neva, TN	36 22 37	81 53 13	TN	1943-1985	40
880	03483000[h]	Watauga River at Butler, TN	36 19 59	82 00 15	TN	1921-1948	28
881	03485500[h]	Doe River at Elizabethton, TN	36 20 40	82 12 36	TN	1912-1982	66
882	03487550[h]	Reedy Creek at Orebank, TN	36 33 42	82 27 34	TN	1964-2006	42
883	03491000	Big Creek near Rogersville, TN	36 25 34	82 57 07	TN	1942-2006	59
884	03491200	Big Creek tributary near Rogersville, TN	36 25 30	82 57 17	TN	1955-1985	31
885	03491500	Holston River near Rogersville, TN	36 22 18	83 00 12	TN	1902-1941	40
886	03497000[h,r]	Tennessee River at Knoxville, TN	35 57 17	83 51 42	TN	1890-1941	48
887	03497300	Little River above Townsend, TN	35 39 52	83 42 41	TN	1964-2006	43
888	03498500[h]	Little River near Maryville, TN	35 47 08	83 53 05	TN	1951-2006	56
889	03498700[1]	Nails Creek near Knoxville, TN	35 52 49	83 46 47	TN	1955-1985	31
890	03500000	Little Tennessee River near Prentiss, NC	35 09 00	83 22 47	NC	1945-2006	62
891	03500240[h]	Cartoogechaye Creek near Franklin, NC	35 09 32	83 23 39	NC	1962-2006	45
892	03501000[h]	Cullasaja River at Cullasaja, NC	35 09 59	83 19 25	NC	1908-1971	52
893	03501760	Coon Creek near Franklin, NC	35 14 04	83 20 28	NC	1957-1973	17
894	03502000[h]	Little Tennessee River at Iotla, NC	35 14 03	83 23 42	NC	1929-1945	17
895	03503000	Little Tennessee River at Needmore, NC	35 20 11	83 31 37	NC	1945-2006	61
896	03504000	Nantahala River near Rainbow Springs, NC	35 07 39	83 37 07	NC	1940-2006	67
897	03506500	Nantahala River at Almond, NC	35 22 32	83 33 59	NC	1923-1943	19
898	03507000	Little Tennessee River at Judson, NC	35 24 30	83 33 26	NC	1897-1944	48
899	03509000[2]	Scott Creek above Sylva, NC	35 23 02	83 12 51	NC	1929-1995	50
900	03510500[1,h,r]	Tuckasegee River at Dillsboro, NC	35 22 00	83 15 37	NC	1928-1940	13
901	03511000	Oconaluftee River at Cherokee, NC	35 29 04	83 18 56	NC	1922-1949	28

Table 1. Summary of rural streamgaging stations in and near South Carolina, Georgia, and North Carolina that were considered for use in the regional regression analysis, 2006.—Continued

[USGS, U.S. Geological Survey. Footnotes are at the end of the table]

Map identification number (fig. 2)	USGS station number	Station name	Latitude (degree minute second)	Longitude (degree minute second)	State	Period of record	Number of systematic peaks
902	03512000[h]	Oconaluftee River at Birdtown, NC	35 27 41	83 21 13	NC	1949-2006	58
903	03513000[r]	Tuckasegee River at Bryson City, NC	35 25 39	83 26 49	NC	1898-1940	43
904	03513410[1]	Jenkins Branch tributary at Bryson City, NC	35 24 50	83 27 20	NC	1957-1971	13
905	03513500	Noland Creek near Bryson City, NC	35 29 05	83 30 15	NC	1936-1971	36
906	03514000	Hazel Creek at Proctor, NC	35 28 38	83 42 58	NC	1943-1952	10
907	03516000	Snowbird Creek near Robbinsville, NC	35 18 40	83 51 35	NC	1943-1952	10
908	03518500[h]	Tellico River at Tellico Plains, TN	35 21 43	84 16 44	TN	1926-2006	62
909	03519500[r]	Little Tennessee River at Mcghee, TN	35 36 16	84 12 42	TN	1905-1944	40
910	03519610	Baker Creek tributary near Binfield, TN	35 41 56	84 02 46	TN	1967-2002	33
911	03519640	Baker Creek near Greenback, TN	35 40 21	84 06 28	TN	1966-1998	33
912	03520100	Sweetwater Creek near Loudon, TN	35 44 17	84 22 25	TN	1954-1982	29
913	03528400	White Creek near Sharps Chapel, TN	36 20 43	83 53 40	TN	1935-1970	36
914	03534500	Buffalo Creek at Norris, TN	36 11 06	84 03 40	TN	1948-1982	31
915	03535000	Bullrun Creek near Halls Crossroads, TN	36 06 52	83 59 17	TN	1958-2006	35
916	03535180	Willow Fork near Halls Crossroads, TN	36 05 59	83 54 27	TN	1967-2006	40
917	03538250	East Fork Poplar Creek near Oak Ridge, TN	35 57 58	84 21 30	TN	1961-1988	28
918	03543500	Sewee Creek near Decatur, TN	35 34 53	84 44 53	TN	1935-1994	60
919	03544947	Brier Creek near Hiawassee, GA	34 50 05	83 42 34	GA	1984-2006	23
920	03545000	Hiwassee River at Presley, GA	34 54 17	83 43 01	GA	1942-2001	60
921	03546000	Shooting Creek near Hayesville, NC	35 01 29	83 42 27	NC	1923-1955	13
922	03548500[r]	Hiwassee River above Murphy, NC	35 04 53	84 00 10	NC	1897-1941	44
923	03550000[h]	Valley River at Tomotla, NC	35 08 20	83 58 50	NC	1905-2006	96
924	03550500[h]	Nottely River near Blairsville, GA	34 50 28	83 56 10	GA	1943-2000	58
925	03554000[r]	Nottely River near Ranger, NC	35 01 37	84 06 55	NC	1901-1941	32
926	03556000	Turtletown Creek at Turtletown, TN	35 07 60	84 20 36	TN	1935-1971	37
927	03557000[r]	Hiwassee River near Reliance, TN	35 13 20	84 31 34	TN	1901-1939	33
928	03558000[h]	Toccoa River near Dial, GA	34 47 24	84 14 24	GA	1913-1996	84
929	03560000[h]	Fightingtown Creek at Mccaysville, GA	34 58 53	84 23 12	GA	1943-1973	31
930	03560500	Davis Mill Creek at Copperhill, TN	34 59 43	84 22 56	TN	1950-1994	35
931	03561000	North Potato Creek near Ducktown, TN	35 00 54	84 22 58	TN	1935-1970	36
932	03565300	South Chestuee Creek near Benton, TN	35 10 02	84 42 58	TN	1958-1987	30
933	03565500	Oostanaula Creek near Sanford, TN	35 19 39	84 42 18	TN	1955-2006	38
934	03566200	Brymer Creek near Mcdonald, TN	35 07 20	84 57 00	TN	1955-1985	31
935	03566420	Wolftever Creek near Ooltewah, TN	35 03 44	85 03 59	TN	1965-2006	39
936	03566660[h]	Sugar Creek near Ringgold, GA	34 58 14	85 01 29	GA	1965-1974	10
937	03566685[h]	Little Chickamauga Creek near Ringgold, GA	34 50 32	85 08 28	GA	1964-1975	12
938	03566687[h]	Little Chickamauga Creek tributary near Ringgold, GA	34 51 36	85 08 40	GA	1965-1974	10
939	03566700[h]	South Chickamauga Creek at Ringgold, GA	34 55 07	85 07 32	GA	1949-1965	17
940	03567200[h]	West Chickamauga Creek near Kensington, GA	34 48 10	85 20 52	GA	1950-1976	27
941	03567500	South Chickamauga Creek near Chickamauga, TN	35 00 51	85 12 24	TN	1929-1994	64
942	03568500	Chattanooga Creek near Flintstone, GA	34 58 20	85 19 40	GA	1951-1974	24
943	03568933	Lookout Creek near New England, GA	34 53 51	85 27 47	GA	1980-2006	27

[1] Station not used in regression analysis.

[2] Peaks at indicated station were combined with peaks at adjacent nearby station on same stream.

[c] Peak-flow record available for station includes channelization or urbanization periods that were not used in the regression analysis.

[h] Peak-flow record adjusted for historical period.

[m] Extended record using MOVE1 analysis.

[r] Peak-flow record available for station includes regulated period that was not used in the regression analysis.

Table 4. Flood-frequency statistics for rural streamgaging stations in South Carolina that were considered for use in the regression equations, 2006.

[USGS, U.S. Geological Survey; G, estimated from the Bulletin 17B analysis of the streamgaging station; R, estimated from the regression equation; W, weighted estimate using equation 21; N/A, not applicable]

USGS station number	Map identification number (figs. 2, 4)	Flow, in cubic feet per second											
		50-percent chance exceedance			20-percent chance exceedance			10-percent chance exceedance			4-percent chance exceedance		
		G	R	W	G	R	W	G	R	W	G	R	W
02110500	231	5,860	5,710	5,850	9,590	9,990	9,630	12,300	13,200	12,400	16,100	17,200	16,200
02130900	282	769	894	775	1,220	1,460	1,240	1,570	1,880	1,590	2,060	2,440	2,110
02131110	283	518	729	538	968	1,370	1,020	1,360	1,860	1,450	1,990	2,520	2,120
02131309	284	685	1,260	775	1,330	2,180	1,530	1,920	2,850	2,210	2,890	3,710	3,220
02131320	285	415	919	602	946	1,610	1,270	1,460	2,120	1,830	2,310	2,770	2,610
02131472	286	714	1,230	804	1,430	2,130	1,580	2,030	2,780	2,220	2,910	3,620	3,130
02131500	287	6,360	5,310	6,290	10,400	8,520	10,300	13,300	10,900	13,100	17,100	13,900	16,800
02132000	288	5,530	6,500	5,550	9,000	10,700	9,050	11,600	13,800	11,700	15,200	17,800	15,400
02132100	289	215	406	248	481	777	556	747	1,070	853	1,210	1,460	1,320
02132500	292	2,590	3,390	2,610	3,990	5,890	4,070	5,030	7,760	5,170	6,470	10,200	6,740
02135000	300	11,800	10,400	11,800	17,700	17,600	17,700	21,600	22,800	21,700	26,600	29,500	26,900
02135300	301	577	867	607	1,090	1,440	1,140	1,520	1,880	1,580	2,170	2,450	2,240
02135500	302	2,900	2,800	2,890	5,110	4,870	5,070	6,770	6,430	6,710	9,050	8,440	8,930
02136000	303	5,400	6,130	5,440	10,600	10,600	10,600	15,200	13,900	15,100	22,300	18,200	21,800
02147500	325	6,300	4,840	6,210	10,100	8,030	9,910	12,900	10,300	12,600	16,800	13,100	16,300
02148090	326	60	86	63	90	146	98	110	191	124	136	250	159
02148300	327	250	423	260	341	698	368	404	906	452	487	1,180	572
02153500	336	32,100	21,300	31,600	52,600	33,400	51,400	67,500	41,900	65,600	87,700	52,400	84,000
02153780	337	1,080	1,250	1,100	1,820	2,170	1,880	2,380	2,840	2,470	3,170	3,690	3,300
02153800	338	2,230	2,820	2,410	4,810	4,760	4,790	7,130	6,140	6,680	10,800	7,890	9,220
02153840	339	523	514	522	731	919	756	875	1,220	929	1,060	1,610	1,170
02154500	340	2,930	3,690	2,970	5,030	6,160	5,090	6,570	7,940	6,660	8,650	10,200	8,780
02154790	341	1,690	2,210	1,780	3,000	3,750	3,170	4,040	4,870	4,260	5,520	6,310	5,780
021563931	342	3,150	2,760	3,090	5,140	4,660	5,040	6,670	6,010	6,500	8,850	7,730	8,480
02156500	343	41,700	30,400	41,200	68,300	47,200	67,100	88,700	58,800	86,500	118,000	72,800	113,000
02157000	344	1,340	1,860	1,380	2,160	3,180	2,230	2,730	4,130	2,860	3,480	5,350	3,690
02157500	345	2,590	2,490	2,590	3,270	4,220	3,280	3,680	5,460	3,710	4,170	7,040	4,240
02158000	346	3,740	4,340	3,780	6,290	7,220	6,380	8,290	9,260	8,410	11,200	11,800	11,300
02158500	347	2,450	3,290	2,490	3,750	5,530	3,850	4,680	7,120	4,850	5,940	9,130	6,240
02159000	348	2,910	4,540	3,010	5,030	7,540	5,240	6,760	9,660	7,080	9,310	12,300	9,770
02159500	349	6,590	7,170	6,670	11,900	11,700	11,900	16,300	14,900	16,000	23,100	18,900	21,800
02160000	350	3,930	4,660	3,950	5,990	7,740	6,060	7,350	9,910	7,460	9,030	12,600	9,230
02160105	351	9,900	11,800	10,000	15,700	19,000	16,000	20,100	24,000	20,500	26,300	30,000	26,900
02160326	352	2,830	2,820	2,830	4,770	4,760	4,770	6,300	6,140	6,250	8,520	7,880	8,260
02160390	353	6,040	5,690	5,950	11,400	9,380	10,600	16,100	12,000	14,100	23,500	15,200	18,800
02160500	354	6,070	6,520	6,090	10,000	10,700	10,100	13,300	13,600	13,300	18,200	17,300	18,100
02160700	355	7,030	8,280	7,120	12,000	13,500	12,200	16,200	17,100	16,300	22,300	21,600	22,200
02161000[a]	356	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02161500	357	58,800	41,900	58,400	88,200	64,400	87,200	110,000	79,800	109,000	142,000	98,200	138,000
02162010	358	2,630	1,950	2,570	3,750	3,340	3,730	4,310	4,330	4,320	4,850	5,600	4,910
02162350	359	1,310	1,170	1,280	2,560	2,040	2,420	3,610	2,710	3,320	5,180	3,610	4,570

Table 4. Flood-frequency statistics for rural streamgaging stations in South Carolina that were considered for use in the regression equations, 2006.—Continued

[USGS, U.S. Geological Survey; G, estimated from the Bulletin 17B analysis of the streamgaging station; R, estimated from the regression equation; W, weighted estimate using equation 21; N/A, not applicable]

USGS station number	Map identification number (figs. 2, 4)	Flow, in cubic feet per second											
		2-percent chance exceedance			1-percent chance exceedance			0.5-percent chance exceedance			0.2-percent chance exceedance		
		G	R	W	G	R	W	G	R	W	G	R	W
02110500	231	19,000	20,800	19,200	22,000	24,500	22,400	25,200	27,800	25,700	29,700	32,800	30,300
02130900	282	2,460	2,850	2,520	2,900	3,240	2,970	3,380	3,720	3,450	4,080	4,250	4,120
02131110	283	2,550	3,100	2,710	3,200	3,720	3,380	3,960	4,290	4,090	5,150	5,160	5,150
02131309	284	3,800	4,480	4,120	4,890	5,160	5,030	6,190	5,840	5,980	8,290	6,880	7,390
02131320	285	3,120	3,350	3,280	4,080	3,880	3,940	5,220	4,390	4,590	7,040	5,200	5,590
02131472	286	3,660	4,370	3,910	4,470	5,030	4,690	5,360	5,690	5,500	6,650	6,710	6,670
02131500	287	20,100	16,300	19,500	23,000	18,500	22,300	26,100	21,000	25,100	30,200	24,200	28,900
02132000	288	18,100	21,100	18,300	21,200	24,200	21,500	24,500	27,500	24,800	29,100	31,800	29,500
02132100	289	1,670	1,800	1,730	2,240	2,180	2,200	2,940	2,520	2,680	4,120	3,050	3,400
02132500	292	7,630	12,200	8,040	8,860	14,400	9,470	10,200	16,400	11,000	12,100	19,300	13,200
02135000	300	30,300	35,300	30,700	34,000	41,100	34,700	37,600	46,600	38,600	42,500	54,400	44,000
02135300	301	2,740	2,890	2,790	3,390	3,310	3,360	4,110	3,800	4,000	5,210	4,380	4,850
02135500	302	10,900	10,100	10,700	12,700	11,900	12,500	14,700	13,600	14,400	17,400	16,000	17,000
02136000	303	28,600	21,900	27,500	35,900	25,700	33,800	44,200	29,100	40,400	56,900	34,300	50,100
02147500	325	20,000	15,600	19,200	23,300	17,700	22,100	26,900	19,800	25,200	31,900	23,100	29,500
02148090	326	155	293	186	175	336	215	194	386	245	221	442	284
02148300	327	551	1,380	670	618	1,570	773	687	1,800	888	783	2,060	1,040
02153500	336	104,000	61,300	98,100	120,000	69,500	112,000	137,000	77,100	126,000	161,000	88,900	145,000
02153780	337	3,810	4,460	3,990	4,490	5,140	4,690	5,220	5,810	5,420	6,250	6,850	6,490
02153800	338	14,000	9,450	11,300	17,800	10,800	13,300	22,000	12,100	15,300	28,500	14,200	18,300
02153840	339	1,210	1,960	1,370	1,360	2,280	1,570	1,510	2,590	1,790	1,720	3,080	2,100
02154500	340	10,300	12,100	10,500	11,900	14,000	12,200	13,700	15,700	14,000	16,000	18,300	16,400
02154790	341	6,750	7,550	7,040	8,070	8,700	8,320	9,500	9,800	9,630	11,500	11,500	11,500
021563931	342	10,700	9,260	10,100	12,600	10,600	11,800	14,700	11,900	13,500	17,800	13,900	15,900
02156500	343	141,000	85,100	134,000	167,000	95,800	155,000	194,000	106,000	177,000	234,000	122,000	208,000
02157000	344	4,060	6,430	4,360	4,630	7,390	5,050	5,220	8,320	5,760	6,010	9,780	6,760
02157500	345	4,520	8,430	4,620	4,850	9,670	5,000	5,170	10,900	5,380	5,590	12,700	5,890
02158000	346	13,600	14,100	13,700	16,200	16,100	16,200	19,000	18,000	18,800	23,100	21,000	22,500
02158500	347	6,920	10,900	7,380	7,950	12,500	8,570	9,020	14,000	9,810	10,500	16,400	11,600
02159000	348	11,500	14,700	12,100	13,900	16,700	14,600	16,600	18,700	17,200	20,700	21,800	21,000
02159500	349	29,100	22,400	26,600	35,800	25,400	31,400	43,400	28,400	36,300	55,100	32,900	43,300
02160000	350	10,300	15,000	10,600	11,400	17,100	11,900	12,600	19,200	13,200	14,100	22,300	15,000
02160105	351	31,400	35,500	32,200	36,900	40,100	37,600	42,800	44,500	43,200	51,500	51,500	51,300
02160326	352	10,400	9,440	9,950	12,400	10,800	11,600	14,600	12,100	13,300	17,900	14,200	15,800
02160390	353	30,300	18,100	22,700	38,200	20,600	26,400	47,400	23,000	30,100	61,800	26,700	35,500
02160500	354	22,400	20,500	22,100	27,200	23,300	26,400	32,600	26,000	31,000	40,800	30,200	37,800
02160700	355	27,700	25,600	27,200	33,700	29,000	32,400	40,500	32,300	37,700	50,900	37,400	45,500
02161000[a]	356	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02161500	357	167,000	115,000	161,000	195,000	128,000	186,000	225,000	141,000	211,000	269,000	162,000	247,000
02162010	358	5,150	6,730	5,280	5,380	7,720	5,600	5,570	8,700	5,880	5,760	10,200	6,220
02162350	359	6,530	4,260	5,530	8,020	5,040	6,580	9,660	5,720	7,590	12,100	6,770	9,050

Table 4. Flood-frequency statistics for rural streamgaging stations in South Carolina that were considered for use in the regression equations, 2006.—Continued

[USGS, U.S. Geological Survey; G, estimated from the Bulletin 17B analysis of the streamgaging station; R, estimated from the regression equation; W, weighted estimate using equation 21; N/A, not applicable]

USGS station number	Map identification number (figs. 2, 4)	Flow, in cubic feet per second											
		50-percent chance exceedance			20-percent chance exceedance			10-percent chance exceedance			4-percent chance exceedance		
		G	R	W	G	R	W	G	R	W	G	R	W
02162500	360	4,540	7,820	4,620	6,610	12,700	6,780	8,010	16,200	8,280	9,780	20,700	10,300
02163000	361	6,280	9,200	6,340	8,930	14,900	9,060	10,700	18,900	10,900	12,800	24,100	13,200
02163500	362	8,750	11,200	8,830	13,200	18,000	13,300	16,100	22,800	16,400	19,800	28,900	20,200
02164110[b]	363	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02165000	364	4,120	5,500	4,170	6,380	9,070	6,490	7,970	11,600	8,160	10,100	14,700	10,400
02165200	365	710	1,430	795	1,380	2,460	1,570	1,980	3,210	2,260	2,930	4,180	3,310
02166970	366	863	1,010	868	1,060	1,770	1,080	1,180	2,320	1,220	1,320	3,030	1,390
02167000	367	19,100	18,300	19,000	36,300	29,000	35,300	51,000	36,400	48,400	73,600	45,500	66,600
02167450	368	3,040	5,400	3,460	5,560	8,930	6,380	7,650	11,400	8,780	10,800	14,500	12,200
02167582	369	2,540	3,450	2,620	3,650	5,780	3,870	4,410	7,440	4,800	5,410	9,520	6,060
02169550	370	860	981	866	1,130	1,590	1,160	1,320	2,060	1,370	1,560	2,660	1,660
02169630	371	104	161	111	189	278	205	264	366	288	383	482	414
02169960	372	57	68	58	93	138	98	120	195	131	158	275	179
02172500	373	1,530	1,420	1,530	2,300	2,280	2,300	2,840	2,950	2,850	3,540	3,800	3,570
02173000	374	2,380	3,920	2,410	3,780	6,410	3,840	4,910	8,300	5,030	6,570	10,700	6,810
02173030[c]	375	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02173051[c]	376	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02173500	377	2,370	3,900	2,400	3,730	6,550	3,800	4,760	8,550	4,880	6,210	11,100	6,450
02174000	378	5,460	7,440	5,500	8,340	12,300	8,450	10,400	15,900	10,600	13,200	20,500	13,500
02174250	379	301	466	336	642	888	712	961	1,220	1,050	1,490	1,660	1,560
02175000	380	9,150	10,300	9,180	14,300	17,100	14,400	17,900	22,200	18,000	22,400	28,600	22,600
02175500	381	1,470	2,610	1,510	2,230	4,640	2,320	2,770	6,160	2,930	3,490	8,140	3,770
02176000	382	6,000	5,660	5,950	9,210	9,870	9,330	11,500	13,000	11,800	14,400	17,000	15,000
02176500	383	1,650	1,890	1,670	2,880	3,440	2,930	3,860	4,610	3,940	5,300	6,140	5,420
02184500	388	3,160	2,210	3,060	4,510	3,750	4,410	5,480	4,930	5,390	6,770	6,500	6,720
02185000	389	9,570	5,380	9,120	13,700	8,820	13,000	16,600	11,400	15,700	20,400	14,800	19,200
02185200	390	3,460	2,720	3,360	6,270	4,590	6,000	8,420	5,950	7,960	11,400	7,710	10,500
02185500	391	16,500	10,600	16,300	20,100	16,900	20,000	22,200	21,500	22,200	24,600	27,400	24,700
02186000	392	3,260	3,310	3,260	5,060	5,570	5,120	6,310	7,170	6,430	7,940	9,200	8,150
02186645	393	2,320	2,410	2,320	3,030	4,090	3,090	3,470	5,300	3,600	4,010	6,830	4,250
02187910	394	1,900	3,370	2,160	3,510	5,650	4,000	4,830	7,280	5,520	6,780	9,320	7,660
02189000	397	45,100	33,800	45,000	66,800	52,200	66,600	82,400	65,000	82,000	103,000	80,700	102,000
02192500	418	4,660	5,200	4,690	7,470	8,610	7,530	9,460	11,000	9,570	12,100	14,000	12,300
02196000	424	11,700	9,170	11,600	17,900	14,800	17,800	22,200	18,800	22,000	27,500	23,700	27,300
02196250	425	658	528	609	1,410	912	1,170	2,120	1,200	1,600	3,300	1,560	2,160
02196689	426	205	309	219	323	513	359	414	667	474	543	868	639
02197000	427	98,400	54,800	97,200	158,000	83,400	156,000	203,000	103,000	199,000	267,000	126,000	257,000
02197300[d]	428	332	N/A	N/A	443	N/A	N/A	526	N/A	N/A	640	N/A	N/A
02197310[d]	429	741	N/A	N/A	1,030	N/A	N/A	1,240	N/A	N/A	1,530	N/A	N/A
02197315[e]	430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02197410	431	287	229	281	430	447	433	533	618	547	672	854	706

Table 4. Flood-frequency statistics for rural streamgaging stations in South Carolina that were considered for use in the regression equations, 2006.—Continued

[USGS, U.S. Geological Survey; G, estimated from the Bulletin 17B analysis of the streamgaging station; R, estimated from the regression equation; W, weighted estimate using equation 21; N/A, not applicable]

USGS station number	Map identification number (figs. 2, 4)	Flow, in cubic feet per second											
		2-percent chance exceedance			1-percent chance exceedance			0.5-percent chance exceedance			0.2-percent chance exceedance		
		G	R	W	G	R	W	G	R	W	G	R	W
02162500	360	11,100	24,400	11,800	12,400	28,100	13,400	13,700	31,500	15,000	15,500	36,700	17,300
02163000	361	14,400	28,300	15,000	16,000	32,400	16,800	17,600	36,200	18,600	19,600	42,100	21,100
02163500	362	22,500	34,000	23,100	25,100	38,700	26,100	27,700	43,100	29,000	31,100	50,000	33,000
02164110[b]	363	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02165000	364	11,700	17,500	12,200	13,400	19,900	14,100	15,100	22,300	16,000	17,500	25,900	18,700
02165200	365	3,790	5,030	4,230	4,790	5,800	5,210	5,950	6,540	6,230	7,750	7,710	7,740
02166970	366	1,420	3,670	1,510	1,520	4,240	1,640	1,610	4,790	1,760	1,720	5,670	1,940
02167000	367	93,400	53,400	81,300	116,000	60,300	96,100	142,000	66,900	111,000	181,000	77,000	132,000
02167450	368	13,400	17,300	15,100	16,400	19,600	17,900	19,700	21,900	20,900	24,700	25,500	25,200
02167582	369	6,180	11,400	7,110	6,970	13,000	8,180	7,780	14,600	9,290	8,900	17,000	10,900
02169550	370	1,740	3,120	1,890	1,930	3,540	2,120	2,120	4,070	2,380	2,380	4,650	2,730
02169630	371	492	569	521	620	657	635	769	755	762	1,010	873	933
02169960	372	189	346	221	222	425	268	257	499	319	308	613	394
02172500	373	4,090	4,450	4,140	4,650	5,050	4,710	5,220	5,800	5,320	6,010	6,620	6,130
02173000	374	8,010	12,700	8,370	9,620	14,500	10,100	11,400	16,600	12,000	14,200	19,200	14,900
02173030[c]	375	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02173051[c]	376	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02173500	377	7,410	13,200	7,770	8,700	15,300	9,210	10,100	17,500	10,800	12,100	20,400	13,100
02174000	378	15,400	24,300	15,900	17,700	28,000	18,400	20,100	32,000	21,000	23,400	37,000	24,700
02174250	379	1,980	2,050	2,010	2,570	2,470	2,510	3,260	2,860	3,020	4,370	3,450	3,770
02175000	380	25,800	34,000	26,200	29,100	39,400	29,700	32,500	44,700	33,400	36,900	52,000	38,200
02175500	381	4,060	9,870	4,480	4,630	11,700	5,240	5,230	13,300	6,040	6,070	15,800	7,200
02176000	382	16,700	20,500	17,600	19,000	24,100	20,400	21,300	27,400	23,100	24,500	32,300	27,100
02176500	383	6,510	7,490	6,680	7,840	8,930	8,070	9,310	10,200	9,520	11,500	12,200	11,700
02184500	388	7,790	7,630	7,760	8,850	9,000	8,900	9,970	10,200	10,100	11,500	12,000	11,700
02185000	389	23,400	17,300	21,900	26,500	20,300	24,800	29,700	22,800	27,600	34,200	26,800	31,700
02185200	390	13,800	9,170	12,500	16,300	10,600	14,500	19,000	11,900	16,500	22,700	14,000	19,300
02185500	391	26,200	32,100	26,500	27,700	36,900	28,200	29,200	41,300	29,900	31,000	48,000	32,100
02186000	392	9,180	11,000	9,510	10,400	12,600	10,900	11,700	14,100	12,200	13,400	16,500	14,200
02186645	393	4,390	8,190	4,760	4,760	9,390	5,260	5,130	10,600	5,760	5,610	12,400	6,460
02187910	394	8,440	11,100	9,490	10,300	12,700	11,300	12,300	14,300	13,200	15,300	16,700	16,000
02189000	397	120,000	94,000	118,000	137,000	106,000	135,000	155,000	117,000	152,000	180,000	135,000	176,000
02192500	418	14,200	16,700	14,400	16,200	19,000	16,600	18,400	21,200	18,800	21,300	24,700	21,900
02196000	424	31,500	28,100	31,200	35,400	31,700	35,000	39,300	35,400	38,800	44,500	40,900	44,000
02196250	425	4,400	1,870	2,620	5,720	2,160	3,060	7,270	2,460	3,520	9,760	2,880	4,150
02196689	426	649	1,020	774	765	1,160	914	892	1,330	1,070	1,080	1,520	1,280
02197000	427	318,000	147,000	303,000	373,000	164,000	349,000	432,000	181,000	398,000	516,000	206,000	464,000
02197300[d]	428	732	N/A	N/A	831	N/A	N/A	938	N/A	N/A	1,090	N/A	N/A
02197310[d]	429	1,770	N/A	N/A	2,030	N/A	N/A	2,310	N/A	N/A	2,710	N/A	N/A
02197315[e]	430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02197410	431	780	1,060	840	894	1,290	987	1,010	1,500	1,140	1,180	1,820	1,360

Table 4. Flood-frequency statistics for rural streamgaging stations in South Carolina that were considered for use in the regression equations, 2006.—Continued

[USGS, U.S. Geological Survey; G, estimated from the Bulletin 17B analysis of the streamgaging station; R, estimated from the regression equation; W, weighted estimate using equation 21; N/A, not applicable]

[a] For the log-Pearson analysis, the peaks from station 02161000 were combined with 02161500.

[b] During the review process, this site was determined to be excessively influenced by urbanization and, therefore, was not included in this study.

[c] Because this station has a relatively short systematic record and is located near station 02173000, which has systematic record from 1932–2006, it is recommended that the flood-frequency estimates from station 02173000 be used for sites at or near this station. See the Application of Methods section of this report for techniques to transfer flood-frequency estimates from a gaged location to a near-by ungaged location.

[d] Station is located in an undefined region of South Carolina and was not included in the regional regression analysis. However, at-site flood-frequency estimates are provided using the station skew.

[e] Station is located in an undefined region of South Carolina and is influenced by backwater. Consequently, no flood-frequency estimates are provided.

Table 13. Variance of prediction values for rural streamgaging stations in South Carolina that were considered for use in the regression equations.

[USGS, U.S. Geological Survey; G, computed from the Bulletin 17B analysis of the streamgaging station; and W, weighted using equation 22; --, drainage area of station exceeds upper or lower limit of regional regression model; N/A, not applicable]

USGS station number	Map identi-fication number (figs. 2, 4)	Variance of prediction, in log units															
		50-percent chance exceedance		20-percent chance exceedance		10-percent chance exceedance		4-percent chance exceedance		2-percent chance exceedance		1-percent chance exceedance		0.5-percent chance exceedance		0.2-percent chance exceedance	
		G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W
02110500	231	0.0013	0.0012	0.0015	0.0014	0.0020	0.0018	0.0031	0.0028	0.0043	0.0037	0.0058	0.0049	0.0077	0.0062	0.0106	0.0083
02130900	282	0.0013	0.0012	0.0017	0.0016	0.0025	0.0022	0.0040	0.0035	0.0056	0.0047	0.0077	0.0061	0.0102	0.0078	0.0141	0.0103
02131110	283	0.0028	0.0025	0.0040	0.0033	0.0058	0.0046	0.0094	0.0068	0.0131	0.0089	0.0178	0.0112	0.0234	0.0138	0.0322	0.0176
02131309	284	0.0054	0.0043	0.0083	0.0059	0.0121	0.0078	0.0194	0.0109	0.0266	0.0135	0.0353	0.0164	0.0456	0.0194	0.0615	0.0238
02131320	285	0.0186	0.0099	0.0247	0.0112	0.0335	0.0132	0.0489	0.0165	0.0632	0.0192	0.0797	0.0221	0.0984	0.0252	0.1264	0.0296
02131472	286	0.0060	0.0047	0.0069	0.0052	0.0090	0.0064	0.0131	0.0086	0.0172	0.0106	0.0223	0.0129	0.0283	0.0154	0.0377	0.0191
02131500	287	0.0013	0.0012	0.0014	0.0013	0.0018	0.0017	0.0028	0.0025	0.0038	0.0033	0.0051	0.0044	0.0068	0.0057	0.0094	0.0076
02132000	288	0.0006	0.0006	0.0007	0.0007	0.0010	0.0010	0.0017	0.0016	0.0024	0.0022	0.0033	0.0030	0.0045	0.0040	0.0064	0.0055
02132100	289	0.0062	0.0048	0.0089	0.0062	0.0128	0.0081	0.0205	0.0112	0.0282	0.0139	0.0377	0.0169	0.0490	0.0200	0.0667	0.0245
02132500	292	0.0008	0.0008	0.0011	0.0010	0.0015	0.0014	0.0025	0.0023	0.0035	0.0031	0.0049	0.0042	0.0065	0.0054	0.0091	0.0074
02135000	300	0.0008	0.0008	0.0009	0.0008	0.0011	0.0010	0.0017	0.0016	0.0023	0.0021	0.0032	0.0029	0.0042	0.0037	0.0058	0.0051
02135300	301	0.0030	0.0026	0.0039	0.0033	0.0054	0.0043	0.0084	0.0063	0.0116	0.0081	0.0155	0.0103	0.0202	0.0127	0.0277	0.0162
02135500	302	0.0027	0.0024	0.0030	0.0026	0.0039	0.0033	0.0058	0.0047	0.0077	0.0060	0.0102	0.0077	0.0132	0.0095	0.0180	0.0123
02136000	303	0.0012	0.0011	0.0015	0.0014	0.0021	0.0019	0.0034	0.0030	0.0049	0.0042	0.0068	0.0056	0.0092	0.0073	0.0131	0.0098
02147500	325	0.0013	0.0012	0.0016	0.0015	0.0022	0.0020	0.0035	0.0031	0.0049	0.0041	0.0066	0.0054	0.0087	0.0069	0.0120	0.0092
02148090	326	0.0038	0.0033	0.0046	0.0038	0.0060	0.0047	0.0086	0.0064	0.0110	0.0079	0.0139	0.0095	0.0171	0.0113	0.0219	0.0140
02148300	327	0.0017	0.0016	0.0025	0.0022	0.0036	0.0031	0.0055	0.0045	0.0074	0.0058	0.0097	0.0073	0.0123	0.0090	0.0162	0.0114
02153500	336	0.0009	0.0009	0.0011	0.0010	0.0014	0.0013	0.0022	0.0020	0.0030	0.0027	0.0042	0.0037	0.0056	0.0048	0.0078	0.0065
02153780	337	0.0032	0.0028	0.0040	0.0034	0.0054	0.0044	0.0081	0.0061	0.0109	0.0078	0.0142	0.0097	0.0181	0.0118	0.0242	0.0149
02153800	338	0.0106	0.0070	0.0130	0.0080	0.0173	0.0097	0.0251	0.0125	0.0328	0.0150	0.0418	0.0176	0.0523	0.0205	0.0684	0.0247
02153840	339	0.0025	0.0022	0.0035	0.0030	0.0049	0.0040	0.0073	0.0056	0.0096	0.0071	0.0123	0.0088	0.0153	0.0106	0.0200	0.0132
02154500	340	0.0012	0.0012	0.0013	0.0013	0.0017	0.0016	0.0026	0.0024	0.0036	0.0032	0.0050	0.0043	0.0066	0.0055	0.0093	0.0075
02154790	341	0.0053	0.0042	0.0065	0.0050	0.0087	0.0062	0.0128	0.0084	0.0168	0.0104	0.0216	0.0126	0.0272	0.0151	0.0358	0.0186
021563931	342	0.0041	0.0034	0.0056	0.0044	0.0078	0.0057	0.0118	0.0080	0.0157	0.0100	0.0203	0.0122	0.0256	0.0146	0.0339	0.0181
02156500	343	0.0008	0.0008	0.0010	0.0009	0.0014	0.0013	0.0023	0.0021	0.0032	0.0029	0.0045	0.0039	0.0060	0.0051	0.0085	0.0070
02157000	344	0.0018	0.0017	0.0020	0.0018	0.0026	0.0023	0.0038	0.0033	0.0052	0.0044	0.0068	0.0056	0.0089	0.0070	0.0121	0.0092
02157500	345	0.0003	0.0003	0.0004	0.0004	0.0005	0.0005	0.0008	0.0007	0.0011	0.0010	0.0014	0.0014	0.0019	0.0018	0.0026	0.0024
02158000	346	0.0016	0.0015	0.0021	0.0019	0.0030	0.0026	0.0047	0.0040	0.0066	0.0053	0.0089	0.0069	0.0118	0.0087	0.0163	0.0115
02158500	347	0.0013	0.0012	0.0016	0.0015	0.0022	0.0020	0.0034	0.0030	0.0047	0.0040	0.0063	0.0052	0.0082	0.0066	0.0113	0.0087
02159000	348	0.0017	0.0016	0.0023	0.0020	0.0032	0.0028	0.0052	0.0043	0.0073	0.0058	0.0100	0.0075	0.0132	0.0095	0.0183	0.0124
02159500	349	0.0034	0.0029	0.0047	0.0038	0.0067	0.0051	0.0105	0.0074	0.0144	0.0095	0.0192	0.0118	0.0249	0.0143	0.0338	0.0181
02160000	350	0.0009	0.0009	0.0009	0.0009	0.0011	0.0011	0.0017	0.0016	0.0024	0.0022	0.0032	0.0029	0.0043	0.0038	0.0060	0.0052

Table 13. Variance of prediction values for rural streamgaging stations in South Carolina that were considered for use in the regression equations.—Continued

[USGS, U.S. Geological Survey; G, computed from the Bulletin 17B analysis of the streamgaging station; and W, weighted using equation 22; --, drainage area of station exceeds upper or lower limit of regional regression model; N/A, not applicable]

USGS station number	Map identi-fication number (figs. 2, 4)	Variance of prediction, in log units															
		50-percent chance exceedance		20-percent chance exceedance		10-percent chance exceedance		4-percent chance exceedance		2-percent chance exceedance		1-percent chance exceedance		0.5-percent chance exceedance		0.2-percent chance exceedance	
		G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W
02160105	351	0.0018	0.0017	0.0025	0.0022	0.0035	0.0030	0.0056	0.0045	0.0077	0.0060	0.0103	0.0077	0.0134	0.0096	0.0183	0.0124
02160326	352	0.0057	0.0045	0.0078	0.0056	0.0108	0.0072	0.0161	0.0098	0.0212	0.0120	0.0272	0.0144	0.0341	0.0170	0.0445	0.0207
02160390	353	0.0080	0.0058	0.0119	0.0075	0.0170	0.0096	0.0261	0.0127	0.0348	0.0154	0.0451	0.0182	0.0568	0.0212	0.0748	0.0255
02160500	354	0.0009	0.0009	0.0013	0.0012	0.0020	0.0018	0.0034	0.0030	0.0049	0.0042	0.0069	0.0056	0.0094	0.0073	0.0133	0.0099
02160700	355	0.0019	0.0017	0.0027	0.0024	0.0039	0.0033	0.0064	0.0051	0.0089	0.0067	0.0122	0.0087	0.0161	0.0109	0.0223	0.0141
02161000	356	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02161500	357	0.0005	0.0005	0.0007	0.0007	0.0010	0.0010	0.0018	0.0017	0.0027	0.0024	0.0037	0.0033	0.0051	0.0044	0.0072	0.0061
02162010	358	0.0018	0.0017	0.0013	0.0013	0.0015	0.0014	0.0022	0.0020	0.0029	0.0026	0.0037	0.0033	0.0046	0.0041	0.0059	0.0052
02162350	359	0.0054	0.0043	0.0066	0.0050	0.0087	0.0062	0.0130	0.0085	0.0172	0.0106	0.0224	0.0129	0.0286	0.0155	0.0381	0.0192
02162500	360	0.0007	0.0007	0.0008	0.0008	0.0011	0.0010	0.0016	0.0015	0.0023	0.0021	0.0031	0.0028	0.0040	0.0036	0.0056	0.0049
02163000	361	0.0005	0.0005	0.0006	0.0006	0.0008	0.0007	0.0012	0.0011	0.0017	0.0016	0.0023	0.0021	0.0030	0.0028	0.0042	0.0038
02163500	362	0.0008	0.0008	0.0008	0.0008	0.0010	0.0010	0.0016	0.0015	0.0022	0.0020	0.0030	0.0027	0.0040	0.0036	0.0056	0.0049
02164110	363	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02165000	364	0.0009	0.0009	0.0011	0.0010	0.0014	0.0013	0.0022	0.0020	0.0031	0.0028	0.0042	0.0037	0.0056	0.0048	0.0077	0.0064
02165200	365	0.0041	0.0034	0.0056	0.0044	0.0079	0.0058	0.0125	0.0083	0.0172	0.0106	0.0229	0.0131	0.0297	0.0158	0.0405	0.0198
02166970	366	0.0006	0.0006	0.0008	0.0007	0.0010	0.0010	0.0015	0.0014	0.0020	0.0018	0.0025	0.0023	0.0032	0.0029	0.0042	0.0038
02167000	367	0.0023	0.0020	0.0029	0.0026	0.0041	0.0034	0.0065	0.0052	0.0091	0.0069	0.0124	0.0088	0.0164	0.0110	0.0228	0.0143
02167450	368	0.0063	0.0049	0.0084	0.0060	0.0115	0.0075	0.0172	0.0102	0.0227	0.0124	0.0292	0.0149	0.0368	0.0176	0.0484	0.0215
02167582	369	0.0023	0.0020	0.0030	0.0026	0.0041	0.0035	0.0061	0.0049	0.0081	0.0063	0.0104	0.0078	0.0131	0.0095	0.0173	0.0120
02169550	370	0.0010	0.0009	0.0014	0.0013	0.0020	0.0019	0.0032	0.0028	0.0044	0.0038	0.0057	0.0048	0.0074	0.0061	0.0099	0.0079
02169630	371	0.0034	0.0030	0.0053	0.0042	0.0078	0.0058	0.0128	0.0084	0.0178	0.0108	0.0239	0.0134	0.0312	0.0162	0.0426	0.0203
02169960	372	0.0026	0.0023	0.0033	0.0029	0.0046	0.0038	0.0070	0.0055	0.0095	0.0070	0.0125	0.0088	0.0160	0.0109	0.0216	0.0138
02172500	373	0.0010	0.0009	0.0012	0.0011	0.0016	0.0015	0.0025	0.0023	0.0035	0.0031	0.0047	0.0041	0.0062	0.0052	0.0086	0.0070
02173000	374	0.0005	0.0005	0.0008	0.0007	0.0012	0.0011	0.0021	0.0019	0.0031	0.0028	0.0044	0.0039	0.0060	0.0051	0.0087	0.0071
02173030	375	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02173051	376	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02173500	377	0.0005	0.0005	0.0007	0.0007	0.0010	0.0009	0.0017	0.0016	0.0024	0.0022	0.0034	0.0031	0.0046	0.0041	0.0066	0.0056
02174000	378	0.0005	0.0005	0.0006	0.0006	0.0008	0.0008	0.0013	0.0012	0.0019	0.0017	0.0026	0.0024	0.0035	0.0032	0.0050	0.0044
02174250	379	0.0071	0.0053	0.0097	0.0066	0.0135	0.0083	0.0208	0.0113	0.0280	0.0139	0.0367	0.0167	0.0470	0.0197	0.0629	0.0240
02175000	380	0.0006	0.0006	0.0007	0.0006	0.0008	0.0008	0.0013	0.0012	0.0018	0.0017	0.0025	0.0023	0.0034	0.0031	0.0049	0.0043
02175500	381	0.0009	0.0009	0.0011	0.0011	0.0016	0.0015	0.0024	0.0022	0.0034	0.0030	0.0046	0.0040	0.0061	0.0052	0.0084	0.0069
02176000	382	0.0035	0.0030	0.0043	0.0035	0.0056	0.0045	0.0081	0.0061	0.0105	0.0076	0.0134	0.0093	0.0167	0.0112	0.0217	0.0139
02176500	383	0.0016	0.0015	0.0021	0.0019	0.0029	0.0025	0.0046	0.0039	0.0064	0.0052	0.0088	0.0068	0.0116	0.0086	0.0161	0.0114

Table 13. Variance of prediction values for rural streamgaging stations in South Carolina that were considered for use in the regression equations.—Continued

[USGS, U.S. Geological Survey; G, computed from the Bulletin 17B analysis of the streamgaging station; and W, weighted using equation 22; --, drainage area of station exceeds upper or lower limit of regional regression model; N/A, not applicable]

USGS station number	Map identification number (figs. 2, 4)	Variance of prediction, in log units															
		50-percent chance exceedance		20-percent chance exceedance		10-percent chance exceedance		4-percent chance exceedance		2-percent chance exceedance		1-percent chance exceedance		0.5-percent chance exceedance		0.2-percent chance exceedance	
		G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W
02184500	388	0.0021	0.0019	0.0030	0.0027	0.0043	0.0036	0.0067	0.0053	0.0089	0.0067	0.0116	0.0084	0.0147	0.0103	0.0196	0.0130
02185000	389	0.0019	0.0018	0.0027	0.0024	0.0037	0.0032	0.0057	0.0046	0.0076	0.0059	0.0098	0.0074	0.0125	0.0091	0.0166	0.0116
02185200	390	0.0029	0.0026	0.0032	0.0028	0.0042	0.0035	0.0061	0.0049	0.0083	0.0064	0.0109	0.0081	0.0142	0.0100	0.0193	0.0129
02185500	391	0.0005	0.0005	0.0006	0.0006	0.0008	0.0008	0.0011	0.0011	0.0015	0.0014	0.0019	0.0018	0.0024	0.0023	0.0032	0.0030
02186000	392	0.0022	0.0020	0.0025	0.0022	0.0032	0.0028	0.0047	0.0040	0.0063	0.0051	0.0082	0.0064	0.0104	0.0080	0.0140	0.0103
02186645	393	0.0013	0.0013	0.0017	0.0015	0.0022	0.0020	0.0032	0.0028	0.0041	0.0036	0.0053	0.0045	0.0066	0.0055	0.0086	0.0070
02187910	394	0.0062	0.0048	0.0079	0.0057	0.0107	0.0072	0.0159	0.0097	0.0210	0.0119	0.0270	0.0143	0.0340	0.0170	0.0448	0.0208
02189000	397	0.0003	0.0003	0.0004	0.0004	0.0006	0.0006	0.0010	0.0009	0.0014	0.0014	0.0020	0.0019	0.0027	0.0025	0.0039	0.0035
02192500	418	0.0011	0.0010	0.0012	0.0011	0.0016	0.0015	0.0024	0.0022	0.0033	0.0030	0.0045	0.0039	0.0060	0.0051	0.0083	0.0069
02196000	424	0.0008	0.0007	0.0008	0.0008	0.0010	0.0010	0.0016	0.0015	0.0022	0.0020	0.0030	0.0027	0.0040	0.0036	0.0056	0.0049
02196250	425	0.0113	0.0074	0.0155	0.0089	0.0215	0.0109	0.0324	0.0140	0.0427	0.0167	0.0549	0.0196	0.0690	0.0227	0.0904	0.0271
02196689	426	0.0041	0.0035	0.0061	0.0047	0.0086	0.0062	0.0133	0.0086	0.0176	0.0107	0.0228	0.0130	0.0287	0.0155	0.0377	0.0191
02197000	427	0.0004	0.0004	0.0005	0.0005	0.0007	0.0007	0.0013	0.0012	0.0018	0.0017	0.0026	0.0024	0.0035	0.0031	0.0050	0.0044
02197300	428	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02197310	429	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02197315	430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
02197410	431	0.0023	0.0020	0.0030	0.0026	0.0042	0.0035	0.0063	0.0050	0.0085	0.0065	0.0110	0.0081	0.0140	0.0099	0.0187	0.0126

Appendixes

A — Water-year peak-flow and stage data at selected gaging stations in South Carolina through 2006.

B — Development of generalized skew coefficient.

C — Water-year peak-flow and stage data at selected gaging stations in South Carolina on regulated streams through 2006.

Appendix A

Water-year peak-flow and stage data at selected gaging stations in South Carolina through 2006

The following tables contain peak-flow data for streamflow-gaging stations in South Carolina. The tables contain a brief description of the gage location, type of gage, gage datum (if known), drainage area in square miles, period of record, extreme flows of record, a description of how the stage-flow relation was obtained, historical data, hydrologic unit number[1], and explanatory remarks where appropiate.

The tables of peak stages, peak flows, and dates of peaks show only the water-year maximums. Underlined data in these tables signify the following:

1. An underlined entry in the "Water year" column indicates discontinuous record.
2. An underlined entry in the "Gage height" column indicates a change in gage datum and means that the gage heights above and below the line are not comparable.
3. Underlined entries in the "Date" and "Flow" columns indicate a change in the site location that significantly affects the Stage-Flow relation.

Abbreviations and acronyms:

lat	latitude
º	degrees
'	minutes
"	seconds
long	longitude
ft	feet
mi	mile
mi^2	square miles
ft^3/s	cubic feet per second
---	data not available
a	peak stage occurred at a different time than the peak flow
b	historic peak
WSP	water-supply paper

Water year is the 12-month period beginning October 1 and ending September 30 of any given year and is designated by the calendar year in which the water year ends. For example, October 1, 2005, to September 30, 2006, is the 2006 water year.

Reference

Eidson, J.P., Lacy, C.M., Nance, Luke, Hansen, W.F., Lowery, M.A., and Hurley, N.M., Jr., 2005, Development of a 10- and 12-digit hydrologic unit code numbering system for South Carolina, 2005: U.S. Department of Agriculture, Natural Resources Conservation Service, 38 p. + 1 pl.

[1] The hydrologic unit number is determined from a set of maps developed by the U.S. Geological Survey that depict the approved boundaries of river-basin units of the United States and documented by Eidson and others (2005). These maps and associated codes provide a standardized base for use by water-resources organizations in locating, storing, retrieving, and exchanging hydrologic data; indexing and inventorying of hydrologic data and information; cataloging of water-data acquisition activities; and a variety of other applications.

WACCAMAW RIVER BASIN

02110500 WACCAMAW RIVER NEAR LONGS, S.C.

LOCATION.--Lat 33º54'45", long 78º42'55" referenced to North American Datum of 1927, Horry County, Hydrologic Unit 03040206, on the upstream side of the upstream bridge on State Highway 9, 500 ft downstream from Buck Creek, 2.1 mi southeast of Longs, and at river mile 85.4.

DRAINAGE AREA.--1,110 mi^2, approximately.

GAGE.--Data collection platform. Datum of gage is 5.28 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Aug. 11, 1967, nonrecording gage at same site and datum.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 26,500 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1951	Jan. 8	9.41	1,860	1971	Mar. 12	12.85	8,300	1991	Jan. 31	11.73	5,050
1952	Apr. 2	10.05	2,520	1972	Feb. 14	12.19	6,100	1992	Aug. 23	13.03	8,380
1953	Mar. 15	11.50	6,360	1973	Feb. 20	13.10	8,620	1993	Jan. 14	13.63	10,200
1954	Apr. 11	10.00	2,520	1974	Aug. 26	12.01	5,720	1994	Mar. 9	11.18	3,860
1955	Sept. 29	13.82	10,300	1975	Feb. 25	11.27	4,240	1995	Jan. 21	12.46	6,400
1956	Feb. 19	9.89	2,230	1976	July 13	11.54	4,780	1996	Sept. 15	14.95	15,800
1957	Mar. 15	10.38	3,780	1977	Mar. 14	10.95	3,630	1997	Oct. 16	12.64	7,050
1958	Apr. 18	12.46	7,540	1978	Jan. 28	11.92	5,540	1998	Feb. 8	13.82	11,100
1959	Mar. 13	13.40	9,760	1979	Sept. 16	12.72	7,470	1999	Sept. 22	17.94	28,200
1960	Aug. 4	13.52	10,000	1980	Mar. 24	12.24	6,200	2000	Oct. 25	14.49	13,900
1961	July 6	13.94	11,100	1981	Aug. 23	14.87	16,200	2001	Mar. 22	11.17	4,050
1962	Mar. 16	11.11	4,520	1982	Feb. 22	11.97	5,540	2002	Mar. 15	8.15	1,180
1963	Feb. 1	11.90	6,180	1983	Mar. 26	14.40	12,200	2003	Mar. 23	12.25	6,720
1964	Mar. 5	12.02	6,200	1984	Apr. 5	11.50	4,800	2004	Aug. 21	12.02	6,150
1965	Oct. 17	12.09	6,380	1985	Feb. 21	11.31	4,250	2005	Oct. 5	9.81	2,220
1966	Mar. 10	12.64	7,750	1986	Aug. 27	9.94	2,150	2006	Oct. 13	12.15	6,470
1967	Aug. 20	11.73	5,530	1987	Mar. 9	12.75	7,550				
1968	Jan. 21	10.42	2,970	1988	Jan. 26	10.12	2,440				
1969	Aug. 13	13.26	9,440	1989	Sept. 29	10.84	3,440				
1970	Mar. 31	11.96	6,060	1990	Oct. 4	12.01	5,660				

PEE DEE RIVER BASIN

02130800 BACK SWAMP NEAR DARLINGTON, S.C.

LOCATION.-- Lat 34º18'11", long 79º46'07" referenced to North American Datum of 1927, Darlington County, Hydrologic Unit 03040201, near a culvert on State Secondary Road 35, 0.8 mi northeast of State Secondary Road 173, 4.9 mi southeast of S.C. Highway 34, and 6.0 mi southeast of Darlington.

DRAINAGE AREA.--6.22 mi^2.

GAGE.--Crest-stage partial-record station. Approximate elevation of gage is 100 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

REMARKS.—This station was not included in the regression analysis due to the larger peaks being affected by backwater.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 150 ft^3/s and extended based on indirect-flow computations.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1976	June 23	5.30	87.0	1986	Mar. 20	8.82	281	1996	Mar. 9	6.09	106
1977	Aug. 2	5.71	103	1987	Feb. 28	6.96	146	1997	Jan. 9	9.92	[1]---
1978	Jan. 26	5.52	96.0	1988	May 6	5.04	41.0	1998	Nov. 22	9.67	[1]---
1979	Feb. 24	6.48	139	1989	July 26	4.78	23.5	1999	May 3	9.29	312
1980	Nov. 26	8.04	228	1990	Feb. 28	5.21	51.0	2000	Oct 13	6.99	150
1981	Aug. 11	4.68	66.0	1991	Oct. 11	5.23	52.0	2001	Nov. 27	6.22	103
1982	June 5	5.35	89.0	1992	Aug. 23	6.81	136	2003	July 2	5.83	---
1983	April 10	8.59	267	1993	Jan. 15	7.98	220	2004	Sept. 8	9.04	299
1984	April 5	5.85	82.0	1994	Sept. 18	6.45	117	2005	Mar. 17	6.09	95.3
1985	Aug. 18	5.45	62.0	1995	Dec. 24	12.21	800	2006	June 14	---	---

[1]Affected by backwater.

PEE DEE RIVER BASIN

02130900 BLACK CREEK NEAR MCBEE, SC

LOCATION.-- Lat 34º30'50", long 80º11'00" referenced to North American Datum of 1927, Chesterfield County, Hydrologic Unit 03040201, near right bank, at downstream side of bridge on U.S. Highway 1, 0.2 mi upstream from Little Alligator Creek, 5.8 mi northeast of McBee, and at river mile 59.1.

DRAINAGE AREA.--108 mi^2.

GAGE.--Data collection platform. Datum of gage is 224.72 ft above National Geodetic Vertical Datum of 1929. Prior to December 22, 1959, nonrecording gage at same site and datum.

STAGE-FLOW RELATION -- Defined by current-meter measurements throughout entire range of flow.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1960	Apr. 7	9.59	804	1976	June 23	9.51	694	1992	Apr. 24	9.24	574
1961	Feb. 26	9.65	840	1977	Mar. 15	9.68	762	1993	Apr. 8	10.29	1,050
1962	Mar. 13	9.76	906	1978	Jan. 28	9.51	694	1994	Mar. 5	9.18	552
1963	Jan. 22	9.37	678	1979	Feb. 27	10.35	1,090	1995	Dec. 25	10.05	931
1964	Mar. 17	10.04	1,070	1980	Mar. 31	10.21	1,010	1996	Oct. 7	9.47	688
1965	Oct. 18	10.08	1,100	1981	July 5	9.47	666	1997	July 26	10.17	991
1966	Mar. 6	9.34	670	1982	Jan. 6	9.51	683	1998	Mar. 20	10.95	1,480
1967	Aug. 26	9.43	715	1983	Mar. 19	10.61	1,240	1999	May 2	9.37	625
1968	Jan. 13	9.27	640	1984	Mar. 31	9.21	563	2000	Jan. 27	9.13	534
1969	June 18	10.08	1,110	1985	Aug. 27	9.08	517	2001	Apr. 2	8.19	269
1970	Mar. 24	8.83	411	1986	Nov. 23	8.85	440	2002	Jan. 28	7.62	201
1971	Aug. 19	10.44	1,120	1987	Mar. 2	10.03	921	2003	Apr. 12	10.13	1,040
1972	Oct. 4	10.06	930	1988	Jan. 21	8.01	286	2004	Sept. 9	11.93	2,430
1973	Apr. 2	9.80	800	1989	Mar. 26	9.57	710	2005	Apr. 12	8.55	395
1974	Aug. 10	8.97	471	1990	Oct. 4	10.55	1,210	2006	June 16	10.31	1,070
1975	July 16	11.29	1770	1991	Oct. 12	13.07	4,500				

PEE DEE RIVER BASIN

02131110 JEFFRIES CREEK ABOVE FLORENCE, SC

LOCATION.-- Lat 34º10'40", long 79º48'34" referenced to North American Datum of 1927, Florence County, Hydrologic Unit 03040201, at bridge on State Highway 29, 2.6 mi southwest of Florence, and 5.0 mi upstream from confluence with Middle Swamp.

DRAINAGE AREA. – 46.6 mi^2.

GAGE. − Crest-stage gage.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 2,170 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1968	Jan. 11	4.84	198	1980	Nov. 13	6.75	635	1993	Dec. 04	5.90	482
1969	Oct. 19	5.49	298	1981	Aug. 11	5.85	374	1994	Aug. 25	6.30	604
1970	Mar. 22	6.31	493	1982	Aug. 19	5.14	241	1995	Dec. 24	10.72	3,220
1971	Mar. 03	9.02	2,230	1983	Mar. 18	8.15	1,430	1996	Jun. 22	7.15	931
1972	Feb. 04	5.71	343	1984	Jul. 28	5.33	271	1997	Jul. 31	5.38	346
1973	Feb. 02	8.37	1,610	1985	Feb. 06	4.65	205	1998	Mar. 20	7.30	1,000
1974	Aug. 05	7.04	747	1986	Nov. 30	4.49	180	1999	May 01	6.11	544
1975	Apr. 03	6.72	625	1987	Mar. 01	6.40	637	2000	Oct. 18	6.78	776
1976	Mar. 18	5.97	403	1988	Aug. 30	5.04	274	2001	Jul. 19	5.57	392
1977	Aug. 18	5.83	370	1989	Aug. 30	4.71	214	2002	Dec. 01	4.61	198
1978	Jan. 26	5.05	227	1990	Oct. 10	7.09	905	2004	Sep. 08	7.83	1,240
1979	Feb. 25	5.83	370	1991	Aug. 12	6.65	726	2005	Jun. 28	6.39	634
1980	Nov. 13	6.75	635	1992	Aug. 23	8.45	1,555	2006	Jun. 14	6.63	718

PEE DEE RIVER BASIN

02131309 FORK CREEK AT JEFFERSON, SC

LOCATION.-- Lat 34º38'19", long 80º23'20" referenced to North American Datum of 1927, Chesterfield County, Hydrologic Unit 03040202, on upstream side, at center of span on State Highway 151 bridge, 1.0 mi south of intersection of State Highways 265 and 151, at Jefferson.

DRAINAGE AREA. -- 24.3 mi^2.

GAGE. – Datum collection platform. Datum of gage is 302.68 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 1,200 ft^3/s and extended on basis of slope-area computation.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1977	Mar. 13	7.36	1,000	1984	Mar. 29	5.55	432	1991	Oct. 11	13.32	[1]8,690
1978	Jan. 20	6.76	854	1985	Aug. 18	5.37	392	1992	Apr. 21	6.00	530
1979	Feb. 24	7.89	1,250	1986	Nov. 30	4.00	194	1993	Nov. 26	7.00	840
1980	Mar. 29	6.65	782	1987	Jan. 19	6.43	694	1994	July 1	6.94	820
1981	Feb. 11	4.51	256	1988	Aug. 30	5.90	522	1995	Dec. 23	6.79	772
1982	Jan. 1	5.96	539	1989	May 2	6.95	916	1996	Oct. 4	5.19	356
1983	Mar. 18	7.73	1,170	1990	Oct. 2	7.60	1,060	1997	July 24	6.03	539

[1] Flow computed by indirect methods including a contracted opening and free flow-over-embankment computation.

PEE DEE RIVER BASIN

02131320 LITTLE FORK CREEK AT JEFFERSON, SC

LOCATION.-- Lat 34º38'13", long 80º24'23" referenced to North American Datum of 1927, Chesterfield County, Hydrologic Unit 03040202, on downstream side and near center span of State Highway 265 bridge, 0.9 miles south of intersection of State Highway 265 and 151, at the town of Jefferson.

DRAINAGE AREA. -- 15.0 mi^2.

GAGE. – Datum of gage is 300 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 1,140 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1991	Oct. 11	12.83	2,440	1995	Jun. 29	7.16	723	1998	Feb. 17	6.93	676
1992	Apr. 21	6.04	389	1996	Aug. 27	4.05	198	1999	Oct. 08	4.00	183
1993	Nov. 26	7.25	634	1997	Jul. 24	7.63	825	2000	Mar. 20	2.98	83
1994	Mar. 02	4.83	210								

PEE DEE RIVER BASIN

02131472 HANGING ROCK CREEK NEAR KERSHAW, S.C.

LOCATION.--Lat 34º30'58", long 80º34'59" referenced to North America Datum of 1927, Lancaster County, Hydrologic Unit 03040202, on State Road 770, 2.1 mi south of Kershaw, and 4.0 miles upstream from mouth.

DRAINAGE AREA.--23.9 mi^2.

GAGE.--Data collection platform. Elevation of gage is 345 ft above National Geodetic Vertical Datum (from topographic map).

STAGE-FLOW RELATION.--Defined by current-meter measurements below 1,420 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1981	Feb. 11	6.70	440	1990	Oct. 2	9.64	2,030	1999	Oct. 8	7.09	520
1982	June 4	7.21	551	1991	Oct. 10	10.69	3,760	2000	Sept. 3	4.92	218
1983	Mar. 17	9.19	1,570	1992	Apr. 21	5.95	333	2001	July 13	3.12	99
1984	Feb. 14	8.11	863	1993	Jan. 8	7.70	699	2002	Aug. 26	3.79	133
1985	Aug. 18	9.43	1,800	1994	Aug. 16	7.62	671	2003	Mar. 20	8.02	822
1986	---	---	---	1995	Dec. 23	9.16	1,540	2004	Sept. 8	8.54	1,080
1987	Jan. 19	8.29	950	1996	Oct. 4	6.91	480	2005	Mar. 28	6.69	436
1988	Aug. 29	6.67	434	1997	July 24	8.72	1,200	2006	Oct. 7	13.58	---
1989	Sept. 22	8.42	1,020	1998	Mar. 19	8.55	1,090				

PEE DEE RIVER BASIN

02131500 LYNCHES RIVER NEAR BISHOPVILLE, S.C.

LOCATION.--Lat 34º15'00", long 80º12'50" referenced to North American Datum of 1927, Lee County, Hydrologic Unit 03040202, near center of span on downstream side of bridge on U.S. Highway 15, 1.0 mi upstream from Seaboard Coast Line Railroad bridge, 2.9 mi northeast of Bishopville, 3.0 mi downstream from Bells Branch, and at river mile 89.5.

DRAINAGE AREA.--675 mi^2.

GAGE.-- Data collection platform. Datum of gage is 155.59 ft above NGVD of 1929. Prior to June 11, 1948, nonrecording gage at site 100 ft upstream at same datum. June 11, 1948 to December 15, 1954, nonrecording gage at present site and datum. October 1977 to February 2002, nonrecording gage at present site and datum.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 11,300 ft^3/s and extended by velocity-area studies.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1943	Jan. 21	15.66	7,210	1964	Mar. 18	16.86	12,200	1985	Sept. 19	12.17	2,230
1944	Mar. 22	17.43	12,400	1965	Oct. 19	16.33	10,600	1986	Nov. 30	14.04	5,080
1945	Sept. 19	22.35	29,400	1966	Mar. 7	14.92	6,700	1987	Mar. 1	12.16	2,210
1946	Dec. 29	14.06	3,980	1967	Sept. 12	---	[1]7,400	1988	Oct. 29	12.38	2,450
1947	Apr. 18	14.36	4,460	1968	Jan. 13	15.63	8,260	1989	July 26	13.09	3,410
1948	Mar. 10	15.47	7,480	1969	Apr. 22	14.35	5,700	1990	Oct. 10	15.84	8,560
1949	Dec. 1	16.85	10,900	1970	Mar. 25	14.12	5,240	1991	May 14	14.72	6,240
1950	Dec. 18	11.91	1,790	1971	Mar. 6	16.28	9,700	1992	Mar. 7	12.59	2,720
1951	Apr. 12	13.02	2,970	1972	Apr. 4	11.79	1,860	1993	Dec. 4	14.80	6,390
1952	Sept. 3	18.06	15,000	1973	Apr. 4	17.40	12,400	1994	---	---	---
1953	Feb. 19	13.86	4,350	1974	Apr. 10	13.80	4,600	1995	Feb. 24	14.74	6,280
1954	Apr. 4	14.73	5,800	1975	July 16	15.99	8,980	1996	---	---	---
1955	Apr. 17	15.40	7,720	1976	June 27	15.36	7,720	1997	---	---	---
1956	Mar. 20	14.40	5,230	1977	Mar. 22	16.11	9,280	1998	Mar. 24	17.03	11,600
1957	May 15	13.97	4,520	1978	---	---	---	1999	Feb. 2	13.22	3,610
1958	Jan. 27	15.41	7,260	1979	Feb. 25	18.26	15,600	2000	---	---	---
1959	Apr. 15	14.75	6,400	1980	Nov. 12	15.86	8,720	2001	---	---	---
1960	Apr. 7	15.68	7,960	1981	Feb. 23	13.60	4,250	2002	Feb. 10	9.69	1,220
1961	Feb. 27	15.90	9,320	1982	Jan. 5	15.69	8,380	2003	Apr. 13	15.41	7,610
1962	Mar. 14	16.25	10,200	1983	---	18.36	16,000	2004	Sept. 11	15.01	6,790

1963	Jan. 23	14.89	6,680	1984	Mar. 31	15.12	7,010	2005	Apr. 17	12.36	2,660
								2006	June 17	14.73	6,260

[1]Estimated by hydrographic comparison with Station 02132000, Lynches River at Effingham.

PEE DEE RIVER BASIN

02132000 LYNCHES RIVER NEAR EFFINGHAM, S.C.

LOCATION.--Lat 34º03'05", long 79º45'15" referenced to North American Datum of 1927, Florence County, Hydrologic Unit 03040202, on left bank at downstream side of bridge on U.S. Highway 52, 75 ft upstream from Seaboard Coast Line Railroad Bridge, 1.0 mi south of Effingham, and at river mile 43.4.

DRAINAGE AREA.--1,030 mi^2, approximately.

GAGE.--Data collection platform. Datum of gage is 58.49 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 7, 1934, nonrecording gage at same site and datum.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 16,900 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1892	Jan. 24	17.50	---	1931	Aug. 31	10.40	2,330	1970	Mar. 31	12.76	3,980
1893	Sept. 4	16.00	---	1932	Jan. 15	13.70	4,780	1971	Mar. 5	17.46	11,700
1894	Aug. 11	16.20	---	1933	Oct. 24	15.30	6,830	1972	Jan. 18	14.21	5,360
1895	Oct. 15	16.50	---	1934	June 13	10.30	2,300	1973	Feb. 5	16.68	9,710
1896	July 15	16.00	---	1935	Sept. 14	12.58	3,750	1974	Aug. 15	12.18	3,550
1897	Feb. 13	14.40	---	1936	Apr. 12	18.66	14,400	1975	July 20	16.69	9,740
1898	Aug. 30	13.70	---	1937	May 2	14.09	5,200	1976	June 28	13.37	4,500
1899	Feb. 12	17.20	---	1938	Aug. 2	13.72	4,880	1977	Mar. 20	13.81	4,920
1900	Apr. 25	16.60	---	1939	Mar. 4	17.39	11,200	1978	Jan. 26	16.09	8,380
1901	June 22	17.20	---	1940	Aug. 18	9.43	1,980	1979	Mar. 2	17.45	11,100
1902	Feb. 8	15.00	---	1941	July 18	12.22	3,420	1980	Apr. 3	16.69	9,380
1903	Feb. 14	16.90	---	1942	May 28	14.39	5,640	1981	Feb. 21	10.23	2,430
1904	Aug. 14	12.80	---	1943	Jan. 26	13.48	4,600	1982	Jan. 10	15.28	6,850
1905	Feb. 22	13.50	---	1944	Mar. 26	16.42	9,050	1983	Mar. 24	17.19	10,400
1906	June 17	14.60	---	1945	Sept. 22	21.21	25,000	1984	Apr. 5	13.54	4,670
1907	July 5	10.00	---	1946	Jan. 2	13.10	4,200	1985	Feb. 11	11.92	3,550
1908	Aug. 30	20.00	18,000[b]	1947	Apr. 16	13.57	4,700	1986	Nov. 30	12.57	3,950
1909	June 12	12.90	---	1948	Feb. 16	14.67	6,180	1987	Mar. 7	17.07	10,200
1910	June 18	13.10	---	1949	Dec. 5	15.92	8,320	1988	Jan. 28	10.02	2,410
1911	Mar. 16	9.50	---	1950	Dec. 24	8.43	1,630	1989	Mar. 31	14.39	5,820

1912	Feb. 21	16.50	---	1951	Apr. 17	9.81	2,120	1990	Oct. 10	15.46	6,520
1913	Mar. 21	15.70	---	1952	Sept. 6	16.76	10,900	1991	Oct. 18	18.87	13,900
1914	Mar. 6	12.80	---	1953	Feb. 23	12.35	3,920	1992	Aug. 24	12.57	3,830
1915	Jan. 25	13.60	---	1954	Apr. 8	12.35	3,720	1993	Jan. 15	16.44	8,130
1916	July 20	18.70	---	1955	Apr. 22	12.80	3,920	1994	Mar. 5	12.63	3,890
1917	June 18	12.00	---	1956	Mar. 25	11.41	2,840	1995	Dec. 25	18.35	12,300
1918	May 18	12.00	---	1957	May 21	10.09	2,260	1996	Mar. 16	11.20	2,850
1919	July 29	16.00	---	1958	Feb. 1	13.53	5,290	1997	Feb. 23	13.63	4,700
1920	Mar. 22	11.90	---	1959	Feb. 12	12.74	3,840	1998	Mar. 25	16.76	8,670
1921	Feb. 16	16.50	---	1960	Apr. 10	16.31	8,840	1999	May 3	12.18	3,530
1922	Mar. 12	17.30	---	1961	Mar. 3	15.74	7,600	2000	Feb. 2	12.59	3,840
1923	Mar. 24	12.60	---	1962	Mar. 18	15.83	7,800	2001	Mar. 23	9.81	2,210
1924	Apr. 13	13.40	---	1963	Jan. 27	15.01	6,400	2002	Sept. 1	8.11	1,450
1925	Jan. 21	17.30	---	1964	Mar. 22	15.75	7,800	2003	Apr. 17	15.93	7,320
1926	Apr. 18	14.30	---	1965	Oct. 22	15.87	7,940	2004	Sept. 10	15.96	7,370
1927	Mar. 12	8.80	---	1966	Mar. 7	15.38	7,020	2005	Oct. 5	13.66	4,720
1928	Sept. 24	19.50	16,100	1967	Sept. 16	14.08	5,570	2006	June 21	13.08	4,700
1929	Mar. 10	17.50	10,800	1968	Jan. 18	14.26	5,420				
1930	Oct. 7	19.25	15,200	1969	Apr. 26	12.52	3,790				

[b] Flow is a historic peak.

PEE DEE RIVER BASIN

02132100 TWO MILE BRANCH NEAR LAKE CITY, S.C.

LOCATION.--Lat 33º53'38", long 79º45'38", referenced to North American Datum of 1927, Florence County, Hydrologic Unit 03040202, on downstream side of box culvert on U.S. Highway 378 By-Pass (west) about 0.2 mi east of intersection with State Secondary Highway 278 and 1.4 mi north of Lake City.

DRAINAGE AREA.--18.4 mi^2.

GAGE.--Crest-stage partial-record station.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 1,140 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1976	June 28	5.15	210	1986	Nov. 30	4.47	95.0	1996	Mar. 15	5.82	131
1977	Mar. 20	4.87	156	1987	Sept. 10	5.67	114	1997	July 31	6.19	183
1978	Jan. 26	5.48	290	1988	Mar. 11	5.43	92.0	1998	Mar. 24	7.96	714
1979	Feb. 24	5.31	248	1989	Apr. 22	4.63	43.0	1999	May 3	6.59	261
1980	Mar. 13	7.31	1,200	1990	Oct. 11	5.01	61.0	2000	Oct. 18	7.34	486
1981	July 3	4.46	102	1991	Oct. 17	7.65	588	2001	Mar. 23	5.26	78
1982	Jan. 10	5.46	285	1992	May 1	5.77	125	2002	Apr. 6	5.26	78
1983	July 10	5.73	364	1993	Jan. 15	6.86	352	2003	Aug. 15	7.97	719
1984	Mar. 31	5.01	182	1994	Mar. 5	6.66	278				
1985	Aug. 18	5.21	222	1995	Dec. 24	10.19	2,400				

PEE DEE RIVER BASIN

02132500 LITTLE PEE DEE RIVER NEAR DILLON, S.C.

LOCATION.--Lat 34º24'17", long 79º20'25" referenced to North American Datum of 1927, Dillon County, Hydrologic Unit 03040204, on State Highway 9 bridge, 1.9 mi southeast of Dillon, 3.9 mi upstream from Maple Swamp, and at river mile 88.3

DRAINAGE AREA. -- 524 mi^2

GAGE. – Water-stage recorder prior to Sept. 1971, crest-stage partial-record station thereafter. Datum of gage is 75.14 ft above National Geodetic Vertical Datum of 1929 (Levels by South Carolina Department of Transportation). Prior to July 31, 1967, nonrecording gage and crest-stage partial-record station at same site and datum.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 6,030 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1940	Feb. 13	8.45	1,080	1963	Jan. 23	10.73	3,440	1986	Nov. 30	9.69	2,320
1941	July 19	9.60	2,130	1964	Feb. 22	10.44	3,050	1987	Feb. 28	11.50	4,710
1942	Mar. 13	10.12	2,770	1965	Oct. 7	12.26	5,500	1988	Jan. 28	8.51	1,110
1943	July 12	9.46	2,020	1966	June 12	12.07	5,220	1989	Apr. 12	9.46	2,070
1944	Mar. 25	9.55	2,130	1967	Aug. 27	8.80	1,370	1990	Mar. 1	9.01	1,580
1945	Sept. 20	14.64	9,810	1968	Jan. 14	9.72	2,250	1991	Aug. 3	10.91	3,850
1946	Jan. 3	9.40	2,020	1969	Aug. 5	10.31	2,890	1992	Aug. 23	9.56	2,180
1947	Apr. 22	9.78	2,470	1970	Mar. 24	9.60	2,200	1993	Jan. 15	11.83	5,230
1948	Feb. 15	10.79	3,750	1971	Mar. 5	12.20	5,820	1994	Mar. 5	9.62	2,240
1949	Nov. 30	10.47	3,330	1972	May 20	8.56	1,150	1995	Feb. 24	12.73	6,760
1950	Nov. 7	8.06	915	1973	Feb. 19	12.54	5,960	1996	Sept. 13	10.05	2,740
1951	Apr. 11	8.52	1,200	1974	Aug. 12	9.90	2,560	1997	Oct. 17	10.22	2,930
1952	Sept. 6	8.87	1,540	1975	Feb. 18	10.65	3,500	1998	Jan. 13	11.58	4,800
1953	May 9	9.58	2,240	1976	Feb. 4	8.93	1,500	1999	Jan. 30	9.64	2,200
1954	Apr. 13	9.01	1,630	1977	Jan. 10	9.82	2,460	2000	Oct. 23	12.12	5,660
1955	Apr. 17	10.66	3,240	1978	Jan. 30	9.76	2,400	2001	---	---	---
1956	Feb. 9	9.22	1,820	1979	Feb. 24	10.49	3,290	2002	---	---	---
1957	June 12	--	1,200	1980	Mar. 13	9.69	2,320	2003	Mar. 26	10.20	2,910
1958	Dec. 1	10.32	3,090	1981	Aug. 11	8.74	1,300	2004	Sept. 14	10.52	3,310
1959	Apr. 17	10.04	2,710	1982	Jan. 5	10.51	3,300	2005	Aug. 18	8.83	1,390
1960	Oct. 17	11.42	4,650	1983	Apr. 10	12.38	6,130	2006	Dec. 9	9.10	1,660
1961	Mar. 1	9.65	2,240	1984	Apr. 5	10.43	3,210				
1962	Feb. 26	9.71	2,350	1985	Sept. 19	9.98	2,660				

PEE DEE RIVER BASIN

02135000 LITTLE PEE DEE RIVER AT GALIVANTS FERRY, S.C.

LOCATION.--Lat 34º03'25", long 79º14'50" referenced to North American Datum of 1927, Horry-Marion County, Hydrologic Unit 03040204, near left bank on downstream side of bridge on U.S. Highway 501, at Galivants Ferry, 1.0 mi downstream from Lake Swamp, and at river mile 41.7.

DRAINAGE AREA.--2,790 mi^2, approximately.

GAGE.--Water-stage recorder and data collection platform. Datum of gage is 23.95 ft above National Geodetic Vertical Datum of 1929. Prior to July 26, 1967, nonrecording gage and crest-stage gage at same site and datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Stage of 16.0 ft, in September 1928, from floodmark set by local resident.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 26,100 ft^3/s and graphicallyextended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1928	Sept. --	16.00	---	1964	Sept. 17	10.30	13,400	1987	Mar. 6	11.94	18,200
1942	Mar. 14	9.87	11,000	1965	Oct. 9	13.01	27,600	1988	Jan. 28	8.77	6,110
1943	July 18	9.76	10,500	1966	Mar. 11	10.68	15,300	1989	Apr. 17	10.19	8,920
1944	Feb. 24	9.95	11,500	1967	Feb. 20	8.66	6,090	1990	Dec. 17	9.43	6,690
1945	Sept. 23	13.23	26,800	1968	Jan. 19	9.64	10,300	1991	Feb. 4	9.32	6,500
1946	Jan. 2	10.74	15,200	1969	Aug. 10	11.07	17,200	1992	Aug. 23	11.58	17,500
1947	Apr. 20	9.69	10,600	1970	Mar. 27	9.71	10,600	1993	Jan. 14	12.47	22,800
1948	Feb. 18	11.24	17,600	1971	Mar. 8	12.29	25,000	1994	Aug. 23	9.62	7,930
1949	Dec. 4	10.62	14,800	1972	Feb. 8	10.02	12,000	1995	Feb. 24	11.62	17,700
1950	July 18	8.08	4,310	1973	Apr. 10	11.86	22,100	1996	Sept. 14	11.46	17,600
1951	Apr. 16	8.32	4,890	1974	Aug. 12	11.79	21,600	1997	Oct. 13	10.94	13,800
1952	Apr. 2	8.82	6,690	1975	Feb. 26	11.13	13,000	1998	Feb. 8	12.33	22,000
1953	Mar. 19	9.47	9,730	1976	Feb. 4	9.91	8,030	1999	Sept. 22	12.11	20,600
1954	Apr. 15	9.10	7,930	1977	Mar. 28	10.69	10,900	2000	Oct. 23	12.46	22,700
1955	Sept. 11	10.36	13,900	1978	May 15	11.27	12,200	2001	Mar. 25	8.62	4,890
1956	Feb. 14	9.48	9,270	1979	Sept. 11	12.51	20,200	2002	Apr. 13	6.96	2,100
1957	Mar. 13	8.98	7,510	1980	Apr. 1	11.60	14,800	2003	July 22	10.21	10,800
1958	Apr. 7	10.00	12,000	1981	Aug. 23	10.67	11,400	2004	Sept. 15	10.52	11,600
1959	Mar. 10	11.21	17,600	1982	Feb. 20	10.87	11,400	2005	Apr. 2	8.15	3,810

1960	Aug. 2	10.66	14,800	1983	Mar. 22	12.72	24,400	2006	Jan. 6	8.65	4,960
1961	Apr. 18	10.09	12,500	1984	Apr. 5	10.44	10,500				
1962	Mar. 18	9.95	11,100	1985	Feb. 15	9.45	6,750				
1963	Jan. 27	10.57	15,200	1986	Dec. 13	8.75	5,010				

PEE DEE RIVER BASIN

02135300 SCAPE ORE SWAMP NEAR BISHOPVILLE, S.C.

LOCATION.--Lat 34º09'02", long 80º18'18", referenced to North American Datum of 1927, Lee County, Hydrologic Unit 03040205, on left bank, on downstream side of bridge on U.S. Highway 15, 0.1 mi downstream from Beaverdam Creek, 0.9 mi upstream from Seaboard Coast Line Railroad bridge, and 5.8 mi southwest of Bishopville.

DRAINAGE AREA.--96.0 mi^2.

GAGE.--Data collection platform. Datum of gage is 164.53 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.--Defined by current-meter measurements throughout entire range of flows.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1969	Feb. 19	6.90	630	1982	Jan. 4	6.61	494	1995	Dec. 24	9.86	2,580
1970	Mar. 24	6.78	570	1983	Mar. 19	7.82	1,150	1996	Mar. 9	6.87	484
1971	Mar. 5	8.09	1,330	1984	May 31	6.95	662	1997	Oct. 10	7.32	774
1972	Jan. 15	7.14	764	1985	Aug. 19	6.59	486	1998	Jan. 10	7.49	826
1973	June 12	7.28	848	1986	Aug. 22	6.83	574	1999	May 2	6.69	409
1974	Feb. 19	6.07	273	1987	Mar. 3	7.27	786	2000	Jan. 27	6.85	462
1975	Apr. 5	7.26	846	1988	Aug. 30	7.90	1,180	2001	Nov. 27	5.26	125
1976	June 20	6.60	490	1989	Sept. 26	6.86	636	2002	Apr. 3	5.32	94
1977	Dec. 18	6.57	478	1990	Oct. 2	6.54	464	2003	Apr. 12	6.26	263
1978	Apr. 28	7.02	702	1991	Oct. 12	11.80	4,500	2004	Sept. 8	6.48	325
1979	Sept. 7	8.54	1,700	1992	Feb. 28	6.74	417	2005	June 29	5.95	197
1980	Mar. 31	6.99	684	1993	Jan. 10	8.08	1,160	2006	Aug. 5	6.20	249
1981	Feb. 13	5.96	278	1994	Feb. 26	7.12	592				

PEE DEE RIVER BASIN

02135500 BLACK RIVER NEAR GABLE, SC

LOCATION. -- Lat 33º54'00", long 80º09'55" referenced to North American Datum of 1927, Sumter County, Hydrologic Unit 03040205, near left bank on downstream side of McBride Crossing on U.S. Highway 378, 1.0 mi downstream from Church Branch, 6.3 mi northwest of Gable, and at river mile 123.1

DRAINAGE AREA. -- 401 mi^2.

GAGE. -- Water-stage recorder. Elevation of gage is 95 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Crest-stage partial-record station Oct. 1970 to Sept. 1971 at same site and datum. Prior to Dec. 9, 1955, wire-weight gage at same site and datum.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 10,700 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1952	Sept. 3	5.22	4,150	1964	Sept. 1	5.80	6,650	1981	July 4	5.03	2,860
1953	Feb. 28	3.95	1,660	1965	June 16	6.10	8,300	1982	Feb. 19	4.60	2,200
1954	Dec. 17	3.30	742	<u>1966</u>	Mar. 6	5.13	3,830	1983	Mar. 19	5.92	4,950
1955	Apr. 18	3.26	518	<u>1971</u>	Mar. 5	6.82	12,500	1984	July 24	4.79	2,560
1956	Feb. 9	3.58	835	[1]1973	June 13	6.92	7,900	1985	Aug. 19	4.71	2,420
1957	Mar. 28	3.77	713	1974	Aug. 6	4.79	2,540	1986	Nov. 23	5.97	5,080
1958	Apr. 17	5.16	3,780	1975	Feb. 21	5.09	2,880	1987	Mar. 2	5.21	3,370
1959	Mar. 8	4.44	2,320	1976	June 20	5.12	3,060	1988	Sept. 3	4.24	1,750
1960	Apr. 7	5.15	3,780	1977	Dec. 16	4.46	1,840	1989	Mar. 26	4.16	1,570
1961	Aug. 6	5.08	3,670	1978	Jan. 28	4.56	2,080	1990	Oct. 4	5.95	5,150
1962	Feb. 25	4.33	2,340	1979	Sept. 7	5.68	4,320	1991	Oct. 15	6.26	5,940
1963	Jan. 23	4.45	2,520	1980	Mar. 31	4.98	2,760	1992	Aug. 22	4.87	2,840

[1]Stage-Flow relation altered by bridge construction.

PEE DEE RIVER BASIN

02136000 BLACK RIVER AT KINGSTREE, SC

LOCATION. -- Lat 33º39'40", long 79º50'10" referenced to North American Datum of 1927, Williamsburg County, Hydrologic Unit 03040205, on left bank, at upstream side of bridge on U.S. Highway 52 at Kingstree, 1.0 mi downstream from Kingstree Swamp Canal, and at river mile 86.7.

DRAINAGE AREA. -- 1,252 mi^2..

REVISED RECORDS. -- WSP 1032: 1928(m), drainage area WSP 1333: 1930(m), 1931, 1936.

GAGE. -- Data collection platform. Datum of gage is 25.66 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 7, 1934, nonrecording gage at same site and datum.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 10,700 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1893	Sept. 11	14.50	--	1931	Jan. 20	10.10	3,120	1969	May 26	11.53	4,690
1894	Aug. 9	12.50	--	1932	Mar. 16	8.60	1,550	1970	Mar. 28	12.42	6,520
1895	Feb. 4	11.60	--	1933	Feb. 19	11.20	4,600	1971	Mar. 7	15.22	23,600
1896	Feb. 14	10.70	--	1934	June 12	6.80	908	1972	Feb. 7	12.50	7,120
1897	Feb. 15	10.30	--	1935	Sept. 17	9.83	2,510	1973	June 14	19.77	58,000
1898	Sept. 7	9.90	--	1936	Apr. 13	13.07	11,800	1974	Feb. 22	11.22	3,860
1899	Feb. 21	11.60	--	1937	Feb. 4	11.53	5,440	1975	Feb. 25	12.42	7,120
1900	Apr. 26	11.90	--	1938	Apr. 14	12.00	6,730	1976	July 9	12.24	6,490
1901	June 1	12.00	--	1939	Mar. 4	13.21	12,200	1977	Mar. 18	11.43	4,260
1902	Mar. 5	10.10	--	1940	Feb. 23	9.70	2,400	1978	Jan. 29	12.16	6,230
1903	June 16	11.80	--	1941	July 24	11.32	5,000	1979	Sept. 11	12.88	8,880
1904	Feb. 28	10.00	--	1942	Mar. 9	12.26	8,160	1980	Mar. 23	12.68	8,060
1905	May 9	10.90	--	1943	Mar. 29	10.44	3,310	1981	July 12	9.09	1,520
1906	June 22	11.80	--	1944	Mar. 27	11.93	6,680	1982	Jan. 7	11.30	4,250
1907	Oct. 27	10.10	--	1945	Sept. 20	16.07	29,100	1983	Mar. 21	14.05	15,200
1908	May 3	10.40	--	1946	Jan. 2	11.62	5,780	1984	Aug. 1	12.99	9,350
1909	July 17	9.40	--	1947	Apr. 19	12.22	7,760	1985	Feb. 14	10.50	2,940
1910	June 22	11.40	--	1948	Feb. 14	12.81	10,400	1986	Nov. 28	12.59	7,720
1911	Oct. 22	8.20	--	1949	Dec. 2	12.50	9,020	1987	Mar. 5	12.92	9,050
1912	Jan. 12	13.30	--	1950	Sept. 12	9.78	2,510	1988	Mar. 16	10.38	2,710
1913	Mar. 19	12.90	--	1951	Apr. 9	9.63	2,300	1989	Apr. 18	11.40	4,440
1914	Mar. 9	11.20	--	1952	Sept. 7	11.61	5,780	1990	Oct. 9	12.62	5,070
1915	May 16	12.70	--	1953	Mar. 3	11.44	5,240	1991	Aug. 8	12.92	5,920
1916	July 17	15.50	--	1954	Jan. 4	9.09	1,860	1992	Mar. 1	10.66	2,580
1917	Jan. 30	10.90	--	1955	Sept. 9	10.79	3,900	1993	Jan. 14	14.88	16,500
1918	May 19	12.00	--	1956	Mar. 5	9.96	2,670	1994	Mar. 7	12.47	5,050
1919	July 28	12.50	--	1957	Mar. 29	8.92	1,590	1995	Dec. 28	15.35	22,100
1920	Apr. 7	10.90	--	1958	Apr. 19	13.54	11,800	1996	Mar. 21	10.43	2,210
1921	May 22	11.10	--	1959	Mar. 9	13.58	12,000	1997	June 11	11.80	3,440
1922	Mar. 14	12.70	--	1960	Dec. 22	12.65	7,420	1998	Feb. 7	13.40	9,480

1923	Oct. 25	10.20	--	1961	Apr. 18	12.97	9,020	1999	May 7	12.07	5,320
1924	July 6	14.60	--	1962	Mar. 1	11.70	5,020	2000	Feb.1	12.05	4,930
1925	Jan. 21	15.20	--	1963	Jan. 27	11.67	4,920	2001	Mar. 24	10.28	2,250
1926	Feb. 10	9.90	--	1964	Sept. 5	12.52	7,310	2002	Apr. 14	6.59	567
1927	Aug. 19	10.50	--	1965	Oct. 7	14.73	17,900	2003	Apr. 13	13.17	8,670
1928	Sept. 21	18.00	41,600	1966	Mar. 8	13.00	9,240	2004	Sept. 1	12.33	6,370
1929	Feb. 22	11.70	6,060	1967	Jan. 13	9.08	1,680	2005	Apr. 1	10.49	2,740
1930	Jan. 25	12.20	7,760	1968	June 17	10.45	3,080	2006	Mar. 2	9.77	2,050

SANTEE RIVER BASIN

02147500 ROCKY CREEK AT GREAT FALLS, SC

LOCATION. -- Lat 34º33'45", long 80º55'12" referenced to North American Datum of 1927, Chester County, Hydrologic Unit 03050103, on left bank, 350 ft downstream from Turkey Branch, 1.0 mi west of Great Falls, and at river mile 1.8.

DRAINAGE AREA. -- 194 mi^2.

GAGE. -- Data collection platform. Elevation of gage is 299 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 21,000 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1952	Mar. 4	9.77	8,880	1969	Apr. 19	9.94	9,930	1991	Mar. 4	10.13	10,300
1953	Feb. 21	7.71	5,230	1970	Mar. 22	6.67	4,000	1992	Mar. 7	6.39	3,580
1954	Jan. 17	8.08	5,860	1971	Mar. 4	8.41	6,900	1993	Jan. 22	8.36	6,810
1955	Apr. 15	8.27	6,180	1972	Jan. 11	7.36	5,110	1994	Mar. 3	6.16	3,280
1956	Mar. 17	7.56	5,080	1973	Apr. 1	12.92	16,600	1995	Dec. 23	6.46	3,690
1957	Apr. 6	7.04	4,290	1974	Oct. 2	6.66	3,990	1996	Feb. 3	7.47	5,300
1958	Jan. 25	7.93	5,600	1975	Mar. 14	9.21	8,470	1997	July 24	9.94	9,920
1959	Sept. 30	10.23	10,800	1976	Mar. 17	6.43	3,650	1998	Sept. 4	9.02	8,090
1960	Feb. 14	8.70	6,910	1977	Jan. 10	7.35	5,100	1999	Jan. 24	6.04	3,120
1961	Feb. 25	8.83	7,340	1978	Oct. 26	11.62	13,300	2000	Mar. 21	5.86	2,890
1962	Jan. 7	8.86	7,570	1979	Feb. 24	7.78	5,790	2001	Mar. 30	5.73	2,730
1963	Mar. 13	8.43	6,510	1980	Mar. 29	9.02	8,090	2002	Apr. 1	4.70	1,640
1964	Mar. 15	9.29	8,490	1981	Feb. 12	7.57	5,420	2003	Mar. 20	10.82	11,700
1965	Oct. 16	10.95	13,000	1987	Mar. 1	8.64	7,320	2004	Sept. 8	8.93	7,910
1966	Mar. 5	8.38	6,470	1988	Nov. 28	4.86	1,790	2005	June 30	8.26	6,630
1967	Aug. 23	18.82	31,300	1989	July 18	8.89	7,820	2006	June 14	6.31	3,480
1968	July 10	9.53	9,110	1990	Oct. 2	12.93	16,300				

SANTEE RIVER BASIN

02148090 SWIFT CREEK NEAR CAMDEN, SC

LOCATION. -- Lat 34°11′49″, long 80°28′58″ referenced to North American Datum of 1927, Kershaw County, SC, Hydrologic Unit 03050104, on County Road 786, 7.9 mi southeast of Camden.

DRAINAGE AREA. – 4.90 mi^2

GAGE. – Crest-stage gage. Gage datum is 205 feet above sea level above National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD. -- Maximum flow, 112 ft^3/s, Mar. 20, 2003, gage height, 7.14 ft.

STAGE-FLOW RELATION -- Defined by indirect measurement of peak flow.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1991	Oct. 24	6.94	93.0	1995	Feb. 18	5.13	76.8	1999	Apr. 30	4.08	53.0
1992	Feb. 25	4.62	65.0	1996	Jan. 19	3.45	38.0	2000	Jan. 24	3.54	40.4
1993	Jan. 08	5.65	88.0	1997	Jul. 24	2.84	25.4	2003	Mar. 20	7.14	112
1994	Mar. 02	5.66	88.0	1998	Jan. 27	5.18	78.4	2004	Sep. 28	3.10	30.6

SANTEE RIVER BASIN

02148300 COLONELS CREEK NEAR LEESBURG, SC

LOCATION. -- Lat 34º00'25", long 80º43'58" referenced to North American Datum of 1927, Richland County, Hydrologic Unit 03050104, at bridge on State Highway 262, 0.2 mi above Jumping Run Creek, 1.9 mi southwest of Leesburg.

DRAINAGE AREA. -- 38.1 mi^2.

GAGE. – Data collection platform. Datum of gage is 158 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Prior to February 2004, at same site, at different datum.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 261 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1967	Aug. 11	7.78	[1]---	1973	June 10	5.28	494	1979	Sept. 5	5.27	491
1968	Jan. 11	4.07	173	1974	Jan. 2	4.17	194	1980	Nov. 3	4.46	257
1969	Oct. 20	4.13	273	1975	Apr. 3	4.28	216	2005	July 3	<u>5.92</u>	185
1970	Mar. 22	4.13	186	1976	July 6	4.30	220	2006	June 15	6.25	262
1971	Mar. 3	5.06	428	1977	Dec. 12	4.56	285				
1972	Jan. 14	4.28	216	1978	Jan. 26	4.07	174				

[1] Flow published in WRI 82-1 of 1,350 ft^3/s was determined by a stage-flow rating exceeding 300 percent and may be unreliable.

SANTEE RIVER BASIN

02153500 BROAD RIVER NEAR GAFFNEY, S.C.

LOCATION.--Lat 35º05'20", long 81º34'20", referenced to North American Datum of 1927, Cherokee County, Hydrologic Unit 03050105, on right bank at downstream side of bridge on U.S. Highway 29, 0.3 mi upstream from Cherokee Creek, 4.4 mi downstream from Gaston Shoals Dam, 4.5 mi east of Gaffney, and at river mile 270.3.

DRAINAGE AREA.--1,490 mi^2, approximately.

GAGE.--Water-stage recorder. Datum of gage is 539.10 ft above National Geodetic Vertical Datum of 1929. July 12, 1896 to December 31, 1899, nonrecording gages at sites 1.1 mi upstream at different datum.

REMARKS.--Peaks prior to Jan. 1, 1900 are from graphs based on gage readings. Some regulation at medium and low flow by power plants above station. Capacity of reservoirs insufficient to affect monthly figures of runoff.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 64,200 ft^3/s and extended by computation of peak flow over Gaston Shoals Dam.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1897	Apr. 5	9.25	---	1954	Jan. 23	13.24	41,000	1972	Oct. 16	13.43	46,900
1898	Sept. 23	12.18	---	1955	Feb. 7	8.55	14,700	1973	Mar. 17	12.99	42,900
1899	Mar. 19	12.70	---	1956	Apr. 16	10.23	22,400	1974	Apr. 5	11.91	34,400
1939	Aug. 18	10.51	21,000	1957	Apr. 6	10.40	23,400	1975	Mar. 15	14.37	55,300
1940	Aug. 14	19.78	119,000	1958	Apr. 28	12.72	37,900	1976	Oct. 18	11.58	32,100
1941	July 17	11.43	26,000	1959	Sept. 30	12.77	38,600	1977	Oct. 10	17.24	84,900
1942	Feb. 17	10.70	21,800	1960	Feb. 6	12.63	37,200	1978	Nov. 7	12.39	38,100
1943	Jan. 28	12.39	38,400	1961	June 22	11.00	26,600	1980	July 21	12.33	37,600
1944	Mar. 20	9.82	21,700	1962	Dec. 13	11.31	28,400	1981	Oct. 1	7.56	10,500
1945	Sept. 18	15.35	61,600	1963	Mar. 13	13.03	41,800	1982	Jan. 4	11.84	33,900
1946	Jan. 7	13.38	43,400	1964	Apr. 8	11.44	31,100	1983	Feb. 3	9.98	21,900
1947	June 15	11.09	27,800	1965	Oct. 6	15.61	67,100	1984	Feb. 14	12.67	39,900
1948	Aug. 4	10.80	25,600	1966	Mar. 4	11.65	32,600	1985	Aug. 18	10.78	26,600
1949	Nov. 29	12.47	35,700	1967	Aug. 24	11.83	33,800	1986	Aug. 18	7.67	10,900
1950	Oct. 7	11.70	31,000	1968	Mar. 13	10.65	25,900	1987	Mar. 1	15.49	65,800
1951	Dec. 8	10.47	23,900	1969	Apr. 19	10.57	25,400	1988	Jan. 20	7.04	8,770
1952	Mar. 4	13.52	44,200	1970	Aug. 10	13.50	47,500	1989	Feb. 28	8.10	12,500
1953	Feb. 21	10.13	21,900	1971	Oct. 31	8.55	14,300	1990	Oct. 2	12.52	38,800

SANTEE RIVER BASIN

02153780 CLARKS FORK CREEK NEAR SMYRNA, SC

LOCATION. -- Lat 35°04′45″, long 81°23′17″ referenced to North American Datum of 1927, York County, SC, Hydrologic Unit 03050105, near right bank on downstream side of SC Hwy 55 bridge, 3.0 mi northeast of Smyrna and 10.1 mi northwest of York.

DRAINAGE AREA. – 24.1 mi^2 .

GAGE. – Crest-stage gage. Gage datum 565 feet above sea level National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 1,010 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1981	Sep. 07	9.66	940	1989	Mar. 23	8.61	619	1997	Apr. 28	10.97	1,190
1982	Dec. 31	11.29	1,340	1990	Oct. 01	11.79	1,580	1998	Apr. 09	11.05	1,260
1983	Mar. 27	10.54	1,110	1991	Oct. 12	12.71	2,310	1999	Dec. 25	6.23	266
1984	Dec. 06	11.37	1,360	1992	Jun. 14	10.64	1,100	2000	Mar. 20	10.67	1,080
1985	Aug. 17	13.22	2,950	1993	Mar. 24	11.24	1,270	2001	Mar. 29	9.06	707
1986	Nov. 21	11.13	1,240	1994	Sep. 01	10.57	1,080	2002	Jan. 23	5.01	153
1987	Mar. 01	11.83	1,610	1995	Aug. 27	14.07	4,670	2005	Mar. 28	10.99	1,160
1988	Nov. 27	7.73	454	1996	Feb. 02	9.79	889	2006	Oct. 08	8.01	511

SANTEE RIVER BASIN

02153800 BULLOCK CREEK NEAR SHARON, SC

LOCATION. -- Lat 34°57′13″, long 81°22′58″ referenced to North American Datum of 1927, York County, SC, Hydrologic Unit 03050105, on State Highway 211, 2.5 mi northwest of Sharon, and 3.0 mi southeast of Hickory Grove.

DRAINAGE AREA. – 84.3 mi^2 .

GAGE. – Crest-stage gage. Gage datum 460 feet above sea level National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 5,290 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1991	Oct. 12	17.36	9,840	1997	Jan. 09	11.27	817	2002	Jan. 23	8.43	298
1992	Jun. 04	14.30	2,480	1998	Apr. 09	14.28	2,460	2003	May 23	16.61	7,160
1993	Mar. 24	15.68	4,780	1999	Jan. 03	12.51	1,280	2004	Sep. 08	15.20	4,000
1994	Mar. 02	13.63	1,930	2000	Mar. 20	13.94	2,380	2005	Dec. 10	12.35	1,210
1995	Aug. 27	16.76	7,640	2001	Mar. 30	13.40	1,830	2006	Oct. 08	11.34	840
1996	Mar. 07	13.39	1,780								

SANTEE RIVER BASIN

02153840 BELLS CREEK NEAR SHARON, SC

LOCATION. -- Lat 34°53′09″, long 81°25′51″ referenced to North American Datum of 1927, York County, SC, Hydrologic Unit 03050105, on County Road 73, 7.2 mi southwest of Sharon, 12.0 mi west of McConnells, 4.5 mi upstream from confluence of Bullocks Creek and Broad River.

DRAINAGE AREA. – 5.96 mi^2 .

GAGE. – Crest-stage gage.

STAGE-FLOW RELATION -- Defined by indirect measurement of peak flow.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1991	Oct. 12	8.47	960	1996	Feb. 03	5.50	468	2003	Mar. 20	8.13	880
1992	Feb. 25	4.74	371	1997	Feb. 28	4.50		2004	Sep. 08	6.01	550
1993	Mar. 04	5.15	433	1998	Apr. 09	7.60	803	2005	Jul. 30	4.94	386
1994	Aug. 17	4.72	368	2000	Mar. 20	4.47	340	2006	Oct. 18	5.13	
1995	Jul. 03	7.77	844	2001	Mar. 29	4.93	400				

SANTEE RIVER BASIN

02154500 NORTH PACOLET RIVER AT FINGERVILLE, SC

LOCATION. -- Lat 35º07'15", long 81º59'10" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050105, on right bank at McMillin Mill, about 400 ft downstream from Obed Creek, 1.4 mi south of Fingerville, and at river mile 48.5.

DRAINAGE AREA. -- 116 mi^2 .

GAGE. -- Data collection platform. Datum of gage is 715.56 ft above National Geodetic Vertical Datum of 1929. From November 26, 1929, to November 24, 1933, recording gage at site about 400 ft downstream at datum 5.60 ft higher.

REMARKS. -- Some diurnal fluctuation at low and medium flow caused by mill above station.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 4,300 ft^3/s and extended on basis of peak flow over dam 2.0 mi above station.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1931	Dec. 7	--	872	1956	Apr. 16	7.88	1,690	1982	June 18	11.44	3,030
1932	Dec. 15	--	2,120	1957	Apr. 6	10.28	2,620	1983	Apr. 10	7.67	1,540
1933	Oct. 17	--	6,820	1958	Apr. 29	12.25	3,480	1984	Feb. 14	13.12	3,700
1934	Mar. 4	12.00	2,100	1959	May 26	18.64	6,680	1985	Aug. 18	10.46	2,640
1935	July 19	--	1,760	1960	Mar. 31	12.54	3,200	1986	Aug. 18	11.33	2,980
1936	Apr. 7	19.77	6,120	1961	June 22	14.80	4,330	1987	Mar. 1	18.76	6,350
1937	Oct. 17	21.23	7,290	1962	Dec. 13	13.08	3,480	1988	Jan. 20	5.65	731
1938	Oct. 19	17.48	5,400	1963	Mar. 13	14.45	4,010	1989	Mar. 24	6.04	869
1939	Aug. 19	10.65	2,480	1964	Aug. 10	9.41	2,440	1990	Feb. 17	12.08	3,280
1940	Aug. 14	27.13	12,500	1965	Oct. 5	25.60	11,200	1991	Mar. 30	11.50	3,050
1941	July 17	8.51	1,540	1966	Feb. 14	12.75	3,550	1992	June 12	7.54	1,470
1942	Feb. 17	11.35	2,700	1967	Aug. 24	15.19	4,480	1993	May 5	12.61	3,490
1943	Jan. 28	10.16	2,200	1968	Feb. 13	9.79	2,370	1994	Aug. 18	16.43	5,010
1944	Mar. 29	9.70	1,620	1969	Sept. 4	10.60	2,690	1995	Aug. 28	21.37	8,160
1945	Sept. 17	13.90	3,780	1970	Nov. 2	6.56	1,070	1996	Jan. 27	13.22	3,740
1946	Jan. 7	17.12	5,040	1971	Oct. 31	8.92	2,020	1997	Dec. 2	10.33	2,580
1947	June 15	12.30	3,110	1972	June 21	14.85	4,350	1998	Jan. 8	12.20	3,330
1948	Feb. 13	7.30	1,370	1973	May 24	14.77	4,320	1999	April 1	5.89	822
1949	Nov. 29	13.74	3,780	1974	Apr. 5	9.71	2,330	2000	Mar. 21	8.39	1,780
1950	Oct. 7	16.70	5,150	1975	Mar. 14	14.77	4,320	2001	Mar. 30	6.05	964
1951	Dec. 8	9.91	2,320	1976	Oct. 17	10.45	2,630	2002	Jan. 23	4.80	534
1952	Mar. 4	12.69	3,880	1977	Oct. 9	18.79	6,370	2003	Mar. 20	13.82	3,890
1951	--	--	--	1978	Jan. 26	9.32	2,180	2004	Sept. 8	17.60	5,740
1953	Feb. 21	10.01	2,360	1979	Sept. 30	12.73	3,540	2005	July 8	20.36	7,410
1954	Jan. 23	15.96	5,040	1980	--	--	--	2006	Aug. 12	6.51	1,280
1955	Feb. 7	8.28	1,840	1981	Oct. 1	5.27	608				

SANTEE RIVER BASIN

02154790 SOUTH PACOLET RIVER NEAR CAMPOBELLO, SC

LOCATION. -- Lat 35°06′23″, long 82°07′47″ referenced to North American Datum of 1927, Spartanburg County, SC, Hydrologic Unit 03050105, on downstream side of bridge on Alverson Road, 1.1 mi upstream of Lake William C. Bowen, and 1.3 mi southeast of Campobello.

DRAINAGE AREA. – 55.4 mi^2 .

GAGE. – Data collection platform. Elevation of gage is 825 ft above NGVD of 1929 (from topographic map). Prior to November 21, 1991, at same site at datum 2.00 ft lower.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 2,700 ft^3/s and graphically extended on logarithmic plotting paper

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1989	Jul. 08	5.31	680	1995	Aug. 27	11.33	5,170	2001	Jul. 26	7.36	806
1990	Oct. 01	7.37	1,320	1996	Jan. 27	9.46	2,280	2002	Jan. 23	6.41	478
1991	Mar. 29	9.43	2,190	1997	Dec. 01	9.02	1,820	2003	Mar. 20	10.15	3,290
1992	Feb. 25	7.936	1,010	1998	Jan. 08	9.48	2,310	2004	Sep. 08	10.22	3,400
1993	Mar. 27	8.34	1,150	1999	Apr. 01	7.08	669	2005	Jul. 07	10.43	3,730
1994	Jul. 28	10.57	3,830	2000	Mar. 20	8.89	1,780	2006	Jun. 26	8.28	1,310

SANTEE RIVER BASIN

021563931 TURKEY CREEK NEAR LOWRYS, SC

LOCATION. -- Lat 34°48′47″, long 81°22′10″ referenced to North American Datum of 1927, Chester County, SC, Hydrologic Unit 03050106, on State Highway 97, 11.5 mi northwest of Chester, and 7.5 mi west of Lowrys.

DRAINAGE AREA. – 81.5 mi^2 .

GAGE. – Crest-stage gage.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 3,830 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1991	Oct. 13	16.37	9,510	1997	Mar. 01	13.69	3,690	2002	Jan. 25	7.26	522
1992	Feb. 27	12.39	2,290	1998	Feb. 04	13.51	3,430	2003	Mar. 20	15.59	7,400
1993	Mar. 25	14.89	5,840	1999	Jan. 03	11.17	1,590	2004	Sep. 08	13.47	3,370
1994	Mar. 03	12.51	2,380	2000	Mar. 20	12.07	2,070	2005	Mar. 28	12.30	2,220
1995	Jun. 22	14.89	5,840	2001	Mar. 30	12.55	2,410	2006	Dec. 05	11.29	1,650
1996	Mar. 07	14.20	4,530								

SANTEE RIVER BASIN

02156500 BROAD RIVER NEAR CARLISLE, S.C.

LOCATION.--Lat 34º35'46", long 81º25'20" referenced to North American Datum of 1927, Union County, Hydrologic Unit 03050106, on right bank at downstream side of bridge on State Highway 72, 1.3 mi upstream from Sandy River, 2.0 mi downstream from Seaboard Coast Line Railroad bridge, 2.5 mi east of Carlisle, 5.0 mi downstream from Neal Shoals Dam, and at river mile 226.0.

DRAINAGE AREA.--2,790 mi^2, approximately.

REVISED RECORDS.--WSP 892: 1939 (M), drainage area.

GAGE.--Data collection platform. Datum of gage is 290.79 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Some regulation at low and medium flow by power plants above station. Capacity of reservoirs insufficient to affect monthly figures of runoff.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 65,800 ft^3/s and extended on the basis of peak flow over Neal Shoals Dam.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1939	Mar. 1	16.27	34,900	1962	Apr. 12	17.25	37,400	1985	Aug. 19	16.72	35,100
1940	Aug. 15	29.41	103,000	1963	Mar. 14	21.78	57,200	1986	Aug. 20	17.33	37,300
1941	July 18	17.06	37,600	1964	Apr. 8	23.90	69,500	1987	Mar. 2	25.77	72,100
1942	Feb. 18	18.42	42,200	1965	Oct. 18	25.82	79,900	1988	Jan. 21	9.15	13,400
1943	Jan. 29	18.96	44,500	1966	Mar. 5	18.89	45,600	1989	Mar. 24	12.35	22,000
1944	Mar. 20	19.58	46,900	1967	Aug. 24	20.23	51,200	1990	Oct. 2	21.66	54,600
1945	Sept. 19	25.72	78,500	1968	Mar. 14	14.57	29,700	1991	Oct. 14	26.60	78,200
1946	Jan. 8	20.11	49,200	1969	Apr. 20	15.01	31,000	1992	Apr. 22	13.52	25,500
1947	Jan. 21	17.21	37,900	1970	Aug. 12	17.48	39,900	1993	Mar. 25	19.12	44,500
1948	Feb. 14	16.20	34,600	1971	Mar. 3	15.05	31,200	1994	Aug. 19	18.94	43,700
1949	Nov. 29	22.81	62,200	1972	Oct. 17	19.31	47,200	1995	Jan. 16	24.44	65,800
1950	Oct. 8	19.32	44,200	1973	Feb. 3	21.54	57,700	1996	Feb. 4	17.20	36,800
1951	Dec. 9	13.65	27,000	1974	Apr. 6	17.61	40,400	1997	Mar. 1	13.75	26,200
1952	Mar. 5	22.43	57,700	1975	Mar. 15	23.75	63,100	1998	Mar. 10	18.30	41,100
1953	Feb. 22	15.77	33,200	1976	Oct. 19	14.95	31,000	1999	Jan. 24	8.56	12,100
1954	Jan. 24	20.63	49,200	1977	Oct. 10	31.51	123,000	2000	Mar. 21	13.26	25,400

1955	Apr. 15	13.79	27,500	1978	Jan. 27	19.72	46,900	2001	Mar. 30	11.01	18,900
1956	Apr. 17	14.99	30,900	1979	Feb. 26	20.00	47,800	2002	Jan. 26	6.38	7,760
1957	Apr. 7	13.24	25,900	1980	Mar. 29	17.28	37,600	2003	Mar. 21	24.96	69,400
1958	Apr. 29	20.12	48,000	1981	Oct. 2	10.09	15,600	2004	Sept. 10	25.33	71,200
1959	Dec. 30	14.21	28,700	1982	Jan. 5	17.89	39,700	2005	July 9	15.62	32,900
1960	Feb. 7	18.71	42,100	1983	Mar. 18	14.21	27,600	2006	Oct. 9	16.95	37,400
1961	Feb. 22	15.82	33,200	1984	Feb. 15	18.40	41,500				

SANTEE RIVER BASIN

02157000 NORTH TYGER RIVER NEAR FAIRMONT, SC

LOCATION. -- Lat 34º55'45", long 82º02'40" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050107, on left bank 80 ft downstream from Frey Creek, 2.2 mi north of Fairmont, and at river mile 57.9.

DRAINAGE AREA. – 44.4 mi^2 .

GAGE. – Water-stage recorders and concrete control. Datum of gage is 680 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 2,100 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1951	Dec. 7	8.38	1,510	1964	Apr. 8	8.57	1,640	1977	Oct. 9	11.30	2,420
1952	Dec. 21	10.55	2,280	1965	Oct. 5	11.64	2,560	1978	Nov. 6	12.70	3,050
1953	Feb. 21	4.91	722	1966	Mar. 4	9.72	1,930	1979	Feb. 26	6.21	1,100
1954	Jan. 22	7.15	1,170	1967	Aug. 24	4.44	748	1980	May 24	6.53	1,170
1955	May 22	8.68	1,650	1968	June 10	6.92	1,240	1981	June 3	3.17	493
1956	Apr. 16	9.10	1,790	1969	Apr. 19	9.99	2,000	1982	Jan. 4	8.30	1,580
1957	Apr. 5	3.06	466	1970	Feb. 16	3.05	470	1983	Mar. 27	3.51	562
1958	Nov. 19	8.18	1,480	1971	Feb. 23	4.86	832	1984	Feb. 14	6.80	1,220
1959	May 26	13.58	3,610	1972	June 21	9.89	1,970	1985	Aug. 17	3.57	574
1960	Sept. 7	9.13	1,790	1973	Sept. 14	10.35	2,100	1986	Nov. 1	4.43	746
1961	Feb. 21	9.26	1,820	1974	Jan. 1	4.51	762	1987	Mar. 1	9.09	1,770
1962	Dec. 12	8.08	1,410	1975	Mar. 13	10.10	2,030	1988	Jan. 20	2.69	397
1963	Mar. 6	12.48	3,090	1976	Oct. 18	9.13	1,780				

SANTEE RIVER BASIN

02157500 MIDDLE TYGER RIVER AT LYMAN, SC

LOCATION. -- Lat 34º56'35", long 82º08'00" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050107, on left bank 200 ft upstream from bridge on State Highway 292 at Lyman, 600 ft downstream from Southern Railway bridge, and 0.8 mi northeast of Duncan.

DRAINAGE AREA. – 68.3 mi^2, approximately.

GAGE. – Digital water-stage recorder prior to December 1967, crest-stage partial-record station thereafter. Datum of gage is 776.05 ft above National Geodetic Vertical Datum of 1929. Prior to February 16, 1965, graphic water-stage recorder at same site and datum.

REMARKS. -- Some regulation at low to medium flows by reservoir 5.7 mi above station.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 2,850 ft^3/s and extended on basis of computation of peak flow over dam.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1939	Aug. 18	9.28	2,730	1961	Aug. 25	7.82	2,240	1986	--	--	--
1940	Aug. 14	16.16	4,800	1962	Dec. 12	11.21	3,310	1987	Mar. 1	11.45	3,380
1941	July 18	4.89	945	1963	Mar. 6	12.56	3,730	1988	--	--	--
1942	Feb. 17	9.71	2,860	1964	Apr. 8	8.37	2,300	1989	--	--	--
1943	Jan. 28	8.34	2,380	1965	Oct. 5	12.12	3,590	1990	--	--	--
1944	Mar. 20	7.64	2,120	1966	Mar. 5	9.53	2,760	1991	Mar. 29	8.56	2,370
1945	July 16	8.08	2,310	1967	Aug. 24	7.88	2,110	1992	--	--	--
1946	Jan. 7	12.39	3,670	1971	May 13	5.51	1,150	1993	--	--	--
1947	Jan. 21	6.91	1,840	1972	June 21	10.64	3,140	1994	Aug. 17	11.90	3,520
1948	Aug. 5	11.16	3,310	1973	May 28	11.21	3,310	1995	Jan. 14	9.99	2,950
1949	Nov. 29	10.78	3,190	1974	Jan. 1	7.56	1,970	1996	Jan. 27	9.05	2,570
1950	Oct. 7	6.29	1,580	1975	Mar. 15	10.15	3,000	1997	--	--	--
1951	Dec. 8	6.53	1,660	1976	Oct. 18	7.30	1,870	1998	Jan. 8	8.08	2,180
1952	Mar. 23	10.42	3,070	1977	Oct. 9	11.80	3,490	1999	--	--	--
1953	Feb. 21	6.92	1,840	1978	Nov. 6	13.48	3,990	2000	--	--	--
1954	Jan. 23	8.74	2,520	1979	--	--	--	2001	Aug. 1	7.91	2,110
1955	Feb. 7	5.96	1,440	1980	May 20	8.27	2,260	2002	--	--	--
1956	Apr. 16	7.67	2,160	1981	--	--	--	2003	Mar. 20	11.62	3,440
1957	Apr. 6	6.58	1,710	1982	Feb. 3	9.54	2,770	2004	Sept. 7	8.95	2,530
1958	Apr. 29	7.20	1,960	1983	--	--	--	2005	July 7	12.98	3,850
1959	May 26	10.36	3,070	1984	Feb 14	9.36	2,690				
1960	Mar. 31	7.89	2,240	1985	Aug. 17	10.54	3,110				

SANTEE RIVER BASIN

02158000 NORTH TYGER RIVER NEAR MOORE, SC

LOCATION. -- Lat 34º48'10", long 81º57'57" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050107, on right bank at Ott Shoals, 2.0 mi upstream from Wards Creek, 2.6 mi southeast of Moore, and 5.3 mi upstream from confluence with South Tyger River.

DRAINAGE AREA. – 162 mi^2.

GAGE. – Digital water-stage recorder prior to January 4, 1968, crest-stage partial-record station from October 1970 to September 1978. Datum of gage is 564.79 ft above National Geodetic Vertical Datum of 1929. Prior to February 17, 1965, graphic water-stage recorder at same site and datum.

REMARKS. -- Some regulation at low flow by power plants above station.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 7,740 ft^3/s and extended by velocity-area studies**.**

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1935	Aug. 25	3.43	2,010	1949	Nov. 29	4.78	4,800	1963	Mar. 6	5.54	6,720
1936	Apr. 7	6.15	8,640	1950	Oct. 7	6.01	8,120	1964	Apr. 8	4.98	5,220
1937	Oct. 16	5.68	7,160	1951	Dec. 8	3.28	1,950	1965	Oct. 5	5.31	5,930
1938	Oct. 20	5.54	6,680	1952	Mar. 24	4.89	5,030	1966	Mar. 5	4.17	3,450
1939	Aug. 19	3.52	2,240	1953	Feb. 22	3.43	2,160	1967	Aug. 25	3.47	1,880
1940	Aug. 14	7.15	12,300	1954	Jan. 23	4.19	3,510	1971	Oct. 30	3.23	1,580
1941	July 17	2.53	1,080	1955	May 23	3.34	2,020	1972	June 21	4.96	4,900
1942	Feb. 18	4.23	3,610	1956	Apr. 16	3.81	2,750	1973	Sept. 15	4.94	4,850
1943	Jan. 29	4.48	4,130	1957	Apr. 7	2.92	1,460	1974	Jan. 1	3.50	1,950
1944	Mar. 21	3.89	2,930	1958	Nov. 19	3.80	2,750	1975	Mar. 15	5.08	5,240
1945	Sept. 18	4.00	3,120	1959	May 26	5.30	6,020	1976	Oct. 18	3.95	2,700
1946	Jan. 8	5.21	5,760	1960	Feb. 6	3.93	3,020	1977	Oct. 9	6.14	8,600
1947	Jan. 21	3.46	2,160	1961	Feb. 21	4.78	4,800	1978	Nov. 6	5.34	6,020
1948	Aug. 6	4.27	3,610	1962	Dec. 13	4.47	4,020				

SANTEE RIVER BASIN

02158500 SOUTH TYGER RIVER NEAR MOORE, SC

LOCATION. -- Lat 34º52'35", long 82º05'10" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050107, on left bank 0.4 mi upstream from bridge on State Highway 296, 1.2 mi downstream from Berry Shoals, 1.8 mi northeast of Reidville, and 4 mi upstream from Bens Creek.

DRAINAGE AREA. – 106 mi^2.

GAGE. – Digital water-stage recorder prior to December 5, 1968, crest-stage partial-record station from October 1970 to September 1978. Datum of gage is 626.28 ft above National Geodetic Vertical Datum of 1929. Prior to August 4, 1964, graphic water-stage recorder at same site and datum.

REMARKS. -- Some regulation at low and medium flow by power plants above station.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 5,600 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1935	Aug. 24	11.05	4,150	1949	Nov. 28	9.51	3,760	1963	Mar. 6	11.00	4,490
1936	Apr. 6	13.66	6,080	1950	Oct. 7	14.23	6,420	1964	Apr. 7	8.33	2,980
1937	Oct. 16	9.68	3,880	1951	Dec. 7	4.88	1,320	1965	Oct. 5	9.29	3,520
1938	Oct. 19	10.77	4,330	1952	Mar. 24	9.76	3,930	1966	Sept. 14	7.42	2,510
1939	Aug. 19	5.90	1,820	1953	Feb. 22	5.44	1,570	1967	Aug. 25	5.70	1,650
1940	Aug. 13	12.68	5,510	1954	Jan. 22	7.73	2,780	1971	Oct. 30	4.72	1,200
1941	July 19	4.17	982	1955	May 23	6.59	2,190	1972	Oct. 16	5.13	1,390
1942	Feb. 18	7.41	2,610	1956	Apr. 16	6.82	2,300	1973	Sept. 14	5.80	1,700
1943	Jan. 28	7.86	2,880	1957	Apr. 6	4.28	1,020	1974	Jan. 1	5.55	1,580
1944	Mar. 20	5.82	1,770	1958	Nov. 19	6.35	2,080	1975	Mar. 15	9.48	3,640
1945	Sept. 18	5.19	1,450	1959	May 26	4.94	1,320	1976	Oct. 18	8.62	3,140
1946	Jan. 7	9.52	3,760	1960	Mar. 31	6.08	1,870	1977	Oct. 9	11.32	4,740
1947	Jan. 21	5.29	1,520	1961	Feb. 21	7.97	2,840	1978	Nov. 6	7.88	2,740
1948	Aug. 5	5.06	1,420	1962	Dec. 13	8.16	2,950				

SANTEE RIVER BASIN

02159000 SOUTH TYGER RIVER NEAR WOODRUFF, SC

LOCATION. -- Lat 34º45'21", long 81º56'19" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050107, on left bank at Chesnee Shoals, 0.5 mi upstream from confluence with North Tyger River and 5.8 mi east of Woodruff.

DRAINAGE AREA. – 174 mi^2.

GAGE. – Water-stage recorder prior to September 1971, crest-stage partial-record station thereafter. Datum of gage is 508.35 ft above National Geodetic Vertical Datum of 1929.

REMARKS. -- Some regulation at low and medium flow by power plants above station.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 7,670 ft^3/s and extended by velocity-area studies.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1935	Aug. 25	4.89	2,260	1950	Oct. 7	9.25	8,490	1965	Oct. 16	6.32	4,280
1936	Apr. 6	9.78	9,510	1951	Dec. 8	3.91	1,040	1966	Mar. 5	5.61	3,220
1937	Oct. 16	8.83	8,080	1952	Mar. 24	6.72	4,740	1967	Aug. 25	--	1,800
1938	Oct. 20	5.85	3,660	1953	Feb. 23	4.62	1,800	1968	June 9	4.98	2,310
1939	Feb. 28	4.82	1,960	1954	Jan. 23	5.40	2,930	1969	Apr. 16	5.13	2,520
1940	Aug. 14	8.18	6,960	1955	May. 24	4.52	1,670	1970	Apr. 1	3.72	906
1941	Nov. 13	3.92	1,050	1956	Mar. 16	4.97	2,280	1971	Mar. 3	4.98	2,310
1942	June 10	5.33	2,910	1957	Apr. 7	3.80	950	1972	Oct. 17	5.12	2,510
1943	Jan. 28	5.90	3,540	1958	Nov. 19	5.20	2,640	1973	Sept. 15	4.62	1,850
1944	Mar. 20	5.30	2,640	1959	May 25	5.10	2,500	1974	Jan. 1	4.52	1,720
1945	Sept. 18	5.61	3,020	1960	Feb. 6	5.19	2,640	1975	Mar. 15	6.86	5,090
1946	Jan. 8	6.31	4,140	1961	Feb. 21	6.31	4,250	1976	Mar. 17	5.70	3,350
1947	Jan. 20	4.79	2,220	1962	Dec. 13	5.70	3,360	1977	Oct. 9	8.62	7,730
1948	Mar. 7	4.27	1,360	1963	Mar. 6	7.92	6,650	1978	Nov. 6	5.90	3,650
1949	Nov. 29	5.45	2,860	1964	Apr. 8	7.37	5,860				

SANTEE RIVER BASIN

02159500 TYGER RIVER NEAR WOODRUFF, SC

LOCATION. -- Lat 34º45'15", long 81º55'30" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050107, on left bank at upstream side of Nesbitts bridge on State Highway 49, 0.5 mi downstream from confluence of North Tyger and South Tyger Rivers and 6.5 mi east of Woodruff.

DRAINAGE AREA. – 351 mi^2.

GAGE. – Water-stage recorder. Datum of gage is 489.44 ft above National Geodetic Vertical Datum of 1929.

REMARKS. -- Some regulation at low and medium flow by power plants above station.

EXTREMES OUTSIDE PERIOD OF RECORD. – Flood on June 6, 1903, reached a stage of 20.4 ft, from floodmark set by local resident, at site 0.3 mi below gage; that in August 1928, 20.0 ft (present site); that in September 1929, 14.65 ft, from floodmarks (flow, 19,600 ft^3/s).

STAGE-FLOW RELATION -- Defined by current-meter measurements below 14,000 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1903	June 6	20.40	--	1937	Oct. 16	11.48	14,700	1947	Jan. 21	5.49	4,290
1928	Aug. --	20.00	--	1938	Oct. 20	9.30	10,600	1948	Aug. 6	5.98	4,800
1929	Sept. --	14.65	19,600	1939	Aug. 18	5.46	3,830	1949	Nov. 29	8.88	8,740
1930	Oct. 2	19.10	28,000	1940	Aug. 14	13.27	19,200	1950	Oct. 7	12.72	17,200
1931	May 22	5.05	2,430	1941	Nov. 13	4.50	2,220	1951	Dec. 8	5.17	3,000
1932	Jan. 8	6.01	4,350	1942	Feb. 18	6.11	5,450	1952	Mar. 24	8.97	10,000
1933	Oct. 17	7.60	7,840	1943	Jan. 28	7.59	7,780	1953	Feb. 22	5.40	3,710
1934	Mar. 5	5.57	3,540	1944	Mar. 20	6.40	5,270	1954	Jan. 23	6.56	5,990
1935	Aug. 25	5.99	4,350	1945	Sept. 18	7.39	6,580	1955	May 23	5.16	3,230
1936	Apr. 6	13.16	17,100	1946	Jan. 8	8.48	9,680	1956	Apr. 17	5.99	4,800

SANTEE RIVER BASIN

02160000 FAIRFOREST CREEK NEAR UNION, SC

LOCATION. -- Lat 34º40'45", long 81º41'25" referenced to North American Datum of 1927, Union County, Hydrologic Unit 03050107, on right bank at downstream side of bridge on State Highway 49, 0.3 mi downstream from Buffalo Creek, 4.3 mi southwest of Union, and at river mile 7.5.

DRAINAGE AREA. – 183 mi^2.

GAGE. – Water-stage recorder prior to September 1971. Crest-stage partial-record station thereafter. Datum of gage is 393.91 ft above National Geodetic Vertical Datum of 1929.

REMARKS. --Flow includes some water diverted from South Pacolet River Reservoir which is discharged into the stream after use.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 5,800 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1940	Aug. 14	7.15	6,200	1963	Mar. 7	7.37	6,640	1986	Nov. 1	6.81	5,520
1941	July 17	6.80	5,500	1964	Apr. 8	7.83	7,720	1987	Mar. 1	7.22	6,340
1942	Feb. 17	5.91	3,720	1965	Oct. 16	7.53	6,980	1988	Jan. 22	4.05	1,140
1943	July 9	6.08	4,060	1966	Mar. 4	5.69	3,380	1989	Mar. 25	4.56	1,610
1944	Mar. 20	6.69	5,280	1967	Aug. 24	6.42	4,740	1990	Oct. 2	6.32	4,540
1945	Sept. 18	6.94	5,780	1968	Jan. 11	5.60	3,250	1991	Oct. 13	8.94	10,900
1946	Jan. 8	5.25	2,720	1969	Sept. 4	6.85	5,600	1992	Mar. 8	4.45	1,450
1947	Jan. 20	5.75	3,480	1970	Mar. 22	4.43	1,640	1993	Oct. 10	5.33	2,660
1948	Mar. 7	5.07	2,460	1971	Mar. 3	6.33	4,560	1994	June 7	6.54	4,980
1949	Nov. 29	7.61	7,180	1972	June 22	6.04	3,980	1995	Aug. 28	7.63	7,220
1950	Oct. 8	6.42	4,740	1973	Apr. 1	7.46	6,820	1996	--	--	--
1951	Oct. 20	3.90	1,200	1974	Jan. 1	5.75	3,400	1997	--	--	--
1952	Mar. 4	6.56	5,020	1975	Mar. 15	6.94	5,780	1998	Mar. 8	6.73	5,360
1953	May 2	5.52	3,130	1976	Oct. 18	4.98	2,150	1999	Oct. 5	3.46	722
1954	Jan. 17	5.77	3,500	1977	Oct. 9	9.43	11,700	2000	Mar. 22	3.34	638
1955	Feb. 6	5.13	2,540	1978	Jan. 27	5.86	3,620	2001	Mar. 31	5.23	2,510
1956	Mar. 17	5.55	3,180	1979	Apr. 14	6.71	5,320	2002	Sept. 17	6.88	5,660
1957	Apr. 9	3.77	1,010	1980	Mar. 29	6.07	4,040	2003	Mar. 22	6.80	5,500
1958	Nov. 19	5.91	3,720	1981	Oct. 1	4.90	2,050	2004	Sept. 8	6.45	4,800
1959	Sept. 30	5.98	3,860	1982	Jan. 4	5.57	3,050	2005	Mar. 28	5.19	2,460
1960	Feb. 7	5.40	2,950	1983	Mar. 18	5.36	2,700	2006	Oct. 8	7.55	7,030
1961	Feb. 22	6.53	4,960	1984	Dec. 7	5.81	3,500				
1962	Apr. 12	5.78	3,520	1985	Aug. 17	6.50	4,900				

SANTEE RIVER BASIN

02160105 TYGER RIVER NEAR DELTA, SC

LOCATION. -- Lat 34º32'07", long 81º32'54" referenced to North American Datum of 1927, Union County, Hydrologic Unit 03050107, on right bank at upstream side of bridge on State Highway 72 and 121, 0.9 mi downstream from Seaboard Coast Line Railroad, 0.8 mi southeast of Delta, and at river mile 9.0.

DRAINAGE AREA. – 759 mi^2.

GAGE. – Water-stage recorder. Elevation of gage is 300 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

STAGE-FLOW RELATION -- Defined by current-meter measurements below 16,500 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1974	Jan. 2	14.88	7,700	1985	Aug. 19	16.35	9,790	1996	Feb. 3	16.54	10,100
1975	Mar. 15	20.36	17,500	1986	Nov. 22	17.62	11,700	1997	July 25	16.43	9,940
1976	Mar. 17	15.69	8,900	1987	Mar. 2	20.25	17,200	1998	Mar. 10	17.99	12,500
1977	Oct. 11	26.31	37,500	1988	Jan. 21	11.00	3,680	1999	Feb. 3	11.25	3,870
1978	Jan. 27	17.74	11,900	1989	July 17	14.15	6,880	2000	Mar. 22	13.71	6,340
1979	Apr. 14	18.55	13,300	1990	Oct. 2	17.95	12,200	2001	Mar. 31	12.36	4,850
1980	Mar. 29	18.39	13,000	1991	Oct. 14	24.01	28,500	2002	Sept. 17	11.94	4,450
1981	Oct. 1	13.55	6,190	1992	Feb. 28	13.88	6,550	2003	Mar. 22	19.14	14,700
1982	Feb. 5	14.71	7,520	1993	Nov. 27	16.01	9,310	2004	Sept. 8	16.54	10,100
1983	Mar. 18	14.69	7,540	1994	Aug. 19	15.86	9,100	2005	Mar. 30	15.77	8,980
1984	May 8	16.24	9,630	1995	Aug. 29	23.29	26,300	2006	Oct. 9	17.59	11,800

SANTEE RIVER BASIN

02160326 ENOREE RIVER AT PELHAM, SC

LOCATION. -- Lat 34°51′23″, long 82°13′35″ referenced to North American Datum of 1927, Spartanburg County, SC, Hydrologic Unit 03050108, near left bank, on downstream side of bridge on S.C. Highway 14, 0.5 mi downstream from Brushy Creek, at Pelham, and at mile 81.2.

DRAINAGE AREA. – 84.2 mi^2.

GAGE. – Data collection platform. Elevation of gage is 730 ft above NGVD of 1929 (from topographic map).

STAGE-FLOW RELATION -- Defined by current-meter measurements below 2,500 ft^3/s and extended based on indirect-flow computations.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1994	Aug. 17	13.81	3,790	1999	Apr. 01	7.15	885	2004	Sep. 08	13.06	3,380
1995	Aug. 27	22.98	11,300	2000	Mar. 20	10.25	2,040	2005	Jul. 07	15.61	5,000
1996	Jan. 27	10.81	2,250	2001	Jul. 25	8.99	1,540	2006	Jun. 26	10.73	2,240
1997	Feb. 28	10.90	2,290	2002	Sep. 15	12.66	3,160				
1998	Jan. 08	11.78	2,710	2003	Mar. 20	14.50	4,230				

SANTEE RIVER BASIN

02160390 ENOREE RIVER NEAR WOODRUFF, SC

LOCATION. -- Lat 34°41′00″, long 82°02′24″ referenced to North American Datum of 1927, Spartanburg County, SC, Hydrologic Unit 03050108, on downstream side of bridge on S.C. Highway 202, 0.7 mi downstream from Durbin Creek, and 4.0 mi south of Woodruff, and at mi 58.7.

DRAINAGE AREA. – 249 mi^2.

GAGE. – Data collection platform. Elevation of gage is 542 ft above NGVD of 1929 (from topographic map).

STAGE-FLOW RELATION -- Defined by current-meter measurements below 8,180 ft^3/s and extended based on indirect-flow computations.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1994	Aug. 18	14.89	4,580	1999	Feb. 01	10.60	2,750	2004	Sep. 28	16.31	7,510
1995	Aug. 27	29.90	52,200	2000	Oct. 11	15.46	5,720	2005	Jul. 08	16.16	7,510
1996	Feb. 03	14.32	4,730	2001	Sep. 05	10.97	3,240	2006	Oct. 07	10.94	3,440
1997	Mar. 01	14.57	4,910	2002	Sep. 16	16.69	6,900				
1998	Mar. 09	16.02	6,020	2003	Mar. 21	17.72	8,920				

SANTEE RIVER BASIN

02160500 ENOREE RIVER AT ENOREE, SC

LOCATION. -- Lat 34º36'38", long 81º54'35" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050108, on left bank 60 ft upstream from bridge on State Highway 49, 0.75 mi upstream from Warrior Creek, 4.0 mi southeast of Enoree, and at river mile 47.7.

DRAINAGE AREA. – 307 mi^2.

GAGE. – Water-stage recorder prior to September 1976. Crest-stage partial-record station thereafter. Datum of gage is 448.13 ft above National Geodetic Vertical Datum of 1929. Prior to November 20, 1929, nonrecording gage at same site and datum.

REMARKS. -- Some regulation at low and medium flow by power plants above station.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 20,200 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1930	Oct. 2	10.50	30,000	1952	Mar. 29	5.82	8,960	1973	Sept. 14	6.49	11,100
1931	May 22	3.76	3,100	1953	Feb. 22	4.29	4,110	1974	Jan. 2	4.48	4,060
1932	Dec. 4	5.29	7,100	1954	Jan. 17	5.00	6,120	1975	Mar. 14	6.40	10,700
1933	Oct. 17	6.04	9,500	1955	Feb. 7	4.23	4,010	1976	Oct. 19	4.69	4,540
1934	June 5	4.58	5,400	1956	Mar. 17	4.86	5,670	1977	Oct. 9	7.09	13,700
1935	Aug. 25	5.70	8,430	1957	Mar. 1	3.53	2,350	1978	Jan. 27	5.22	6,130
1936	Apr. 7	7.86	17,200	1958	Nov. 19	5.12	6,430	1979	Apr. 26	5.50	7,140
1937	Oct. 16	7.14	13,800	1959	May 25	4.19	3,810	1980	Mar. 29	4.92	5,160
1938	Oct. 20	5.86	8,960	1960	Feb. 6	4.91	5,970	1981	Oct. 1	3.80	2,780
1939	Aug. 18	4.35	4,270	1961	Feb. 22	5.70	8,600	1982	Jan. 5	5.62	7,600
1940	Aug. 14	6.86	12,800	1962	Dec. 13	5.52	7,740	1983	Mar. 18	4.19	3,420
1941	July 10	3.68	2,690	1963	Mar. 7	6.76	12,600	1984	May 7	5.23	6,170
1942	Feb. 17	4.82	5,520	1964	Apr. 8	6.95	13,200	1985	Feb. 4	4.09	3,210
1943	Jan. 29	5.52	7,740	1965	Oct. 16	5.57	7,980	1986	Nov. 22	4.06	3,150
1944	Mar. 20	5.43	7,570	1966	Mar. 5	5.30	7,070	1987	Mar. 1	7.04	13,500
1945	Sept. 18	5.11	6,430	1967	Feb. 18	3.99	3,250	1988	Jan. 22	3.58	2,170
1946	Jan. 7	5.85	8,960	1968	June 8	4.50	4,650	1989	May 11	5.77	8,180
1947	Jan. 20	4.96	5,970	1969	Jan. 21	5.17	5,940	1990	Oct. 2	5.10	5,720
1948	May 28	4.30	4,140	1970	Mar. 22	3.61	2,080	1991	Oct. 13	5.87	8,580
1949	Nov. 29	6.18	10,200	1971	Mar. 3	5.05	5,530	1992	Mar. 8	4.35	3,770
1950	Oct. 8	6.93	13,000	1972	June 21	5.91	8,740	1993	Oct. 10	5.34	6,530
1951	Dec. 8	3.44	1,960								

SANTEE RIVER BASIN

02160700 ENOREE RIVER AT WHITMIRE, SC

LOCATION. -- Lat 34º30'33", long 81º35'54" referenced to North American Datum of 1927, Union County, Hydrologic Unit 03050108, on left bank, at upstream side of bridge on U.S. Highway 176, 0.4 mi downstream from Seaboard Coast Line Railroad, 0.5 mi northeast of Whitmire, and at river mile 19.2.

DRAINAGE AREA. -- 444 mi^2.

GAGE. -- Data collection platform. Datum of gage is 300.00 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 24,700 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1974	Jan. 3	24.11	3,980	1985	Feb. 4	22.93	3,420	1996	Feb. 4	25.98	5,580
1975	Mar. 15	28.92	10,800	1986	Nov. 22	24.58	4,690	1997	July 25	29.73	10,900
1976	Mar. 18	24.76	4,860	1987	Mar. 2	27.86	8,760	1998	Mar. 10	27.19	7,020
1977	Oct. 10	32.58	19,700	1988	Jan. 22	21.41	2,530	1999	Feb. 3	22.62	2,970
1978	Jan. 27	26.20	6,540	1989	Mar. 25	23.96	4,140	2000	Mar. 22	24.94	4,560
1979	Apr. 15	26.45	6,790	1990	Oct. 2	26.98	7,470	2001	Mar. 31	23.57	3,540
1980	Mar. 29	26.43	6,760	1991	Oct. 13	29.67	12,300	2002	Sept. 18	24.94	4,550
1981	Oct. 2	21.54	2,510	1992	Feb. 28	23.94	4,130	2003	Mar. 22	28.37	8,570
1982	Jan. 5	26.23	6,560	1993	Nov. 27	25.70	5,920	2004	Sept. 30	26.83	6,590
1983	Mar. 28	23.36	3,710	1994	Aug. 19	24.94	5,040	2005	July 9	25.57	5,160
1984	May 8	25.70	5,920	1995	Aug. 28	37.32	31,200	2006	Oct. 9	25.77	5,360

SANTEE RIVER BASIN

02161000 BROAD RIVER AT ALSTON, S.C.

LOCATION.--Lat 34º14'35", long 81º19'11" referenced to North American Datum of 1927, Fairfield County, Hydrologic Unit 03050106, on left bank at Southern Railway Alston-Peak trestle, 1.2 mi downstream from Parr Shoals Dam, and at river mile 200.2.

DRAINAGE AREA.--4,790 mi^2.

REVISED RECORDS.--WRD SC-82-1: 1982 (M).

GAGE.--Data collection platform. Datum of gage is 211.91 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1896 to Dec. 31, 1907, nonrecording gage at same site at different datum.

REMARKS.--Records for the 1897-1908 water years are poor. Regulation at low and medium flow by power plant above station.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 72,000 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1897	Feb. 7	22.13	85,800	1983	Mar. 18	16.78	44,900	1996	Feb. 4	19.17	55,600
1898	Sept. 24	14.80	40,500	1984	Feb. 16	18.85	54,100	1997	Apr. 28	15.27	38,500
1899	Feb. 28	18.30	60,800	1985	Aug. 19	17.39	47,500	1998	Feb. 5	20.36	61,900
1900	Apr. 22	23.40	95,100	1986	Nov. 23	17.28	47,000	1999	Jan. 25	13.08	29,800
1901	May 23	24.80	106,000	1987	Mar. 3	25.90	108,000	2000	Mar. 21	15.64	40,100
1902	Dec. 31	24.70	105,000	1988	Jan. 22	12.36	27,100	2001	Mar. 30	14.18	34,100
1903	June 7	29.02	140,000	1989	Mar. 24	16.25	42,600	2002	Apr. 2	12.01	25,800
1904	Aug. 29	14.00	36,800	1990	Oct. 3	22.71	79,500	2003	Mar. 22	24.67	96,600
1905	Feb. 21	16.60	50,000	1991	Oct. 14	26.94	119,000	2004	Sept. 10	24.37	93,600
1906	Dec. 21	19.40	67,900	1992	Apr. 23	15.58	39,800	2005	Mar. 29	17.27	47,000
1907	June 2	12.50	30,900	1993	Mar. 26	18.42	52,100	2006	Oct. 8	17.99	50,200
1981	Feb. 12	16.70	44,500	1994	Aug. 19	18.42	52,100				
1982	Jan. 5	19.95	59,400	1995	Aug. 30	24.91	99,100				

SANTEE RIVER BASIN

02161500 BROAD RIVER AT RICHTEX, S.C.

LOCATION.--Lat 34º11'05", long 81º11'48" referenced to North American Datum of 1927, Richland County, Hydrologic Unit 03050106, on right bank 0.8 mi west of Richtex, 1.2 mi upstream from Little River, 10.2 mi downstream from Parr Shoals Dam, and at river mile 191.2.

DRAINAGE AREA.--4,850 mi^2, approximately.

REVISED RECORDS.--WSP 757: 1930 (M). WSP 972: Drainage area. WSP 1383: 1929 (M), 1933.

GAGE.--Water-stage recorder. Datum of gage is 184.84 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Regulation at low and medium flow by power plant above station.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 82,800 ft^3/s and extended on basis of computation of peak flow over Parr Shoals Dam.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1926	Jan. 20	12.01	40,300	1946	Jan. 9	13.86	59,200	1966	Mar. 6	14.79	65,300
1927	Feb. 25	9.14	28,400	1947	Jan. 21	13.72	57,800	1967	Aug. 25	16.09	74,500
1928	Aug. 17	30.10	222,000	1948	Feb. 14	12.40	49,400	1968	Jan. 12	11.90	46,200
1929	Sept. 28	18.32	88,200	1949	Nov. 30	18.59	95,700	1969	Apr. 19	12.91	52,700
1930	Oct. 3	30.70	228,000	1950	Oct. 9	12.75	52,000	1970	Aug. 12	10.97	40,600
1931	Dec. 7	7.81	23,000	1951	Dec. 9	9.18	30,600	1971	Mar. 4	13.73	58,000
1932	Jan. 9	14.18	51,200	1952	Mar. 6	17.39	84,700	1972	June 23	14.18	61,600
1933	Oct. 18	19.72	101,000	1953	Feb. 23	11.15	42,000	1973	Feb. 4	16.04	74,100
1934	Mar. 29	10.48	34,400	1954	Jan. 24	14.68	64,700	1974	Apr. 6	12.11	47,500
1935	Oct. 12	17.86	84,600	1955	Apr. 15	11.36	43,200	1975	Mar. 16	18.52	94,900
1936	Apr. 8	24.96	157,000	1956	Mar. 18	11.24	42,000	1976	Oct. 20	10.03	35,200
1937	Oct. 18	16.12	72,400	1957	Apr. 7	9.35	31,800	1977	Oct. 11	23.67	146,000
1938	Oct. 21	13.53	55,800	1958	Nov. 21	13.35	55,900	1978	Jan. 27	14.79	64,500
1939	Mar. 2	13.12	53,400	1959	Dec. 30	9.31	31,200	1979	Feb. 26	15.80	72,300
1940	Aug. 16	21.08	120,000	1960	Oct. 1	----[a]	55,900	1980	Mar. 30	14.74	64,200
1941	July 7	12.41	49,400	1961	Feb. 25	13.50	56,600	1981	Oct. 1	12.07	46,700
1942	Feb. 18	12.99	53,300	1962	Jan. 7	13.42	55,900	1982	Jan. 5	14.43	62,100
1943	Jan. 30	13.63	57,200	1963	Mar. 8	16.18	75,300	1983	Mar. 19	12.41	48,400

1944	Mar. 21	17.40	84,700	1964	Apr. 9	19.00	99,500
1945	Sept. 19	18.68	96,600	1965	Oct. 18	19.25	102,000

[a] Gage height not maximum for the year.

SANTEE RIVER BASIN

02162010 CEDAR CREEK NEAR BLYTHEWOOD, SC

LOCATION. -- Lat 34º11'44", long 81º06'13" referenced to North American Datum of 1927, Richland County, Hydrologic Unit 03050106, on right bank, at downstream side of bridge on State Road 59, 0.2 mi above Williams Branch, 8.0 mi southwest of Blythewood, and at river mile 6.9.

DRAINAGE AREA. – 48.9 mi^2.

GAGE. – Water-stage recorder. Elevation of gage is 240 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

STAGE-FLOW RELATION -- Defined by current-meter measurements below 4,300 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1967	Aug. 23	9.34	1,890	1977	Mar. 13	15.97	3,990	1987	Jan. 19	13.53	2,550
1968	July 4	18.42	4,870	1978	May 9	14.01	3,250	1988	Apr. 11	6.23	689
1969	Apr. 16	16.30	4,060	1979	Jan. 23	15.03	3,560	1989	Mar. 24	12.95	2,480
1970	Mar. 22	11.29	2,300	1980	Mar. 29	13.76	3,110	1990	Oct. 2	12.07	2,150
1971	Mar. 3	12.81	2,830	1981	Feb. 11	12.34	2,630	1991	Oct. 23	16.25	3,920
1972	Jan. 11	8.55	1,460	1982	Jan. 1	14.17	3,260	1992	Feb. 25	7.42	812
1973	Feb. 3	16.03	3,960	1983	Mar. 17	16.22	4,000	1993	Nov. 26	13.14	2,560
1974	Apr. 5	9.14	1,640	1984	--	--	--	1994	Mar. 2	8.01	943
1975	July 15	13.26	2,990	1985	June 30	5.28	436	1995	Dec. 23	16.91	4,250
1976	Mar. 16	12.24	2,630	1986	Mar. 19	8.86	1,360	1996	Mar. 7	12.34	2,240

SANTEE RIVER BASIN

02162350 MIDDLE SALUDA RIVER NEAR CLEVELAND, S.C.

LOCATION.--Lat 35º07'12", long 82º32'16", referenced to North American Datum of 1927, Greenville County, Hydrologic Unit 03050109, on right bank, downstream side of bridge at State Road 41, 3.9 mi north of Cleveland, and 5.0 mi east of Caesars Head.

DRAINAGE AREA.--21.0 mi^2.

GAGE.--Data collection platform. Elevation of gage is 1,078 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

STAGE-FLOW RELATION.--Defined by current-meter measurements below 1,110 ft^3/s and graphically extended on basis of contracted-opening measurement of peak flow.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1981	Mar. 30	4.44	458	1991	Mar. 29	8.13	2,380	2001	May 21	4.25	402
1982	May 31	5.68	934	1992	Aug. 28	5.50	925	2002	Sept. 27	3.83	302
1983	Jan. 21	8.71	2,820	1993	Mar. 23	7.98	2,370	2003	July 2	5.55	917
1984	May 3	5.07	678	1994	Aug. 17	9.40	3,480	2004	---	---	---
1985	Aug. 17	6.73	1,470	1995	Aug. 27	7.12	1,790	2005	---	---	---
1986	June 11	11.21	5,190	1996	Nov. 11	6.65	1,510	2006	June 26	8.31	2,570
1987	Dec. 3	8.94	3,000	1997	Dec. 1	7.66	2,140				
1988	Apr. 4	5.79	984	1998	Jan. 7	9.33	3,420				
1989	June 16	4.95	633	1999	Apr. 1	4.54	520				
1990	Mar. 17	7.44	1,900	2000	Mar. 20	4.20	411				

SANTEE RIVER BASIN

02162500 SALUDA RIVER NEAR GREENVILLE, S.C.

LOCATION.--Lat 34º50'32", long 82º28'51" referenced to North American Datum of 1927, Pickens County, Hydrologic Unit 03050109, on right bank 700 ft upstream from bridge on State Road 124, 1.6 mi downstream from Saluda Lake Dam, 2.4 mi upstream from Georges Creek, 4.6 mi west of City Hall in Greenville, and at river mile 132.0.

DRAINAGE AREA.--295 mi^2.

GAGE.--Water-stage recorder until 1978, crest-stage partial-record station from October 1980 to January 1990, and data collection platform from February 1990 to current year. Elevation of gage is 797.48 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Some regulation at low and medium flow by the power plant at Saluda Lake. Capacity of reservoirs insufficient to affect monthly figures of runoff. Some flow is diverted above station for City of Greenville water supply during water year. City of Greenville began diverting water from Saluda River (Table Rock Reservoir) in 1930; supplemented by North Saluda Reservoir in 1961. Sewage effluent discharged into the Reedy River about 500 ft below station 02164000.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 8,350 ft^3/s and extended on basis of computation of peak flow over the dam at Saluda Lake.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1942	Feb. 17	11.63	5,980	1963	Mar. 6	10.43	5,260	1987	Mar. 2	11.60	6,430
1943	Dec. 30	11.01	5,620	1964	Apr. 8	9.57	4,760	1988	Aug. 5	5.47	2,240
1944	Mar. 30	8.37	4,060	1965	Oct. 5	18.14	10,100	1989	June 23	5.41	2,180
1945	Mar. 27	6.26	2,740	1966	Feb. 14	10.62	5,390	1990	Mar. 17	14.25	7,790
1946	Jan. 8	14.48	7,720	1967	Aug. 24	14.19	7,530	1991	Mar. 30	6.34	2,900
1947	Jan. 20	7.42	3,460	1968	Mar. 13	7.46	3,500	1992	Feb. 26	7.80	4,000
1948	Aug. 5	6.87	3,140	1969	Apr. 18	9.23	4,770	1993	Mar. 24	8.55	4,530
1949	July 13	12.12	6,280	1970	Aug. 8	5.95	2,580	1994	Aug. 18	14.78	8,080
1950	Oct. 7	19.38	11,000	1971	Oct. 30	5.54	2,290	1995	Aug. 27	15.59	8,550
1951	Dec. 8	6.76	3,080	1972	June 21	9.86	5,380	1996	Jan. 27	10.70	5,920
1952	Mar. 23	10.94	5,560	1973	May 28	12.63	6,960	1997	Dec. 2	8.75	4,670
1953	Feb. 22	8.87	4,360	1974	Jan. 1	7.56	3,830	1998	Jan. 9	12.28	6,790
1954	Jan. 23	15.05	8,040	1975	Mar. 14	13.78	7,540	1999	Apr. 1	5.38	2,140
1955	Feb. 7	7.85	3,700	1976	May 30	8.01	4,160	2000	Mar. 20	5.62	2,370
1956	Apr. 16	7.38	3,460	1977	Mar. 30	11.38	6,310	2001	Sept. 24	5.00	1,730

1957	Apr. 6	9.62	4,780	1978	Jan. 26	9.15	4,950	2002	Jan. 23	4.18	1,060
1958	Apr. 29	6.65	2,970	1981	Oct. 1	5.11	1,900	2003	Mar. 20	9.43	5,130
1959	June 1	7.65	3,580	1982	Feb. 3	8.32	4,370	2004	Sept. 9	15.07	9,050
1960	Mar. 31	7.56	3,520	1984	Dec. 11	8.43	4,450	2005	July 7	12.03	6,980
1961	June 23	15.43	8,300	1985	Aug. 17	7.38	3,680	2006	Jun. 27	7.85	3,910
1962	Dec. 12	12.04	6,220	1986	Nov. 30	5.23	2,020				

SANTEE RIVER BASIN

02163000 SALUDA RIVER NEAR PELZER, S.C.

LOCATION.--Lat 34º40'05", long 82º27'55" referenced to North American Datum of 1927, Anderson County, Hydrologic Unit 03050109, on right bank, 0.4 mi downstream from Hurricane Creek, 1.9 mi north of Pelzer, and at river mile 114.2.

DRAINAGE AREA.--405 mi^2.

GAGE.--Crest-stage partial-record station 1972-93. Elevation of gage is 727.75 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Some regulation at low and medium flow by a power plant above the station.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 11,300 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1930	Oct. 2	6.88	9,400	1952	Mar. 24	7.40	8,370	1974	Apr. 5	5.10	4,500
1931	May 22	3.90	2,750	1953	Feb. 22	5.82	5,720	1975	Mar. 15	7.72	8,720
1932	Dec. 15	5.08	4,900	1954	Jan. 24	7.89	9,220	1976	Jan. 28	5.62	5,290
1933	Oct. 17	6.39	7,990	1955	Feb. 7	5.28	4,920	1977	Mar. 30	7.80	8,860
1934	Mar. 5	5.80	6,460	1956	Apr. 16	5.88	5,880	1978	---	---	---
1935	Jan. 10	5.54	5,760	1957	Apr. 6	5.75	5,720	1979	Apr. 26	6.57	6,810
1936	Apr. 7	10.26	13,300	1958	Apr. 29	5.25	4,760	1980	Jan. 18	5.92	5,770
1937	Jan. 3	8.00	9,390	1959	June 1	4.97	4,440	1981	Oct. 1	6.09	6,040
1938	Oct. 19	8.54	10,200	1960	Mar. 31	5.43	5,080	1982	Feb. 3	6.20	6,220
1939	Aug. 20	6.24	6,360	1961	June 23	7.87	9,220	1983	---	---	---
1940	Aug. 14	8.31	9,920	1962	Dec. 13	8.11	9,560	1984	Dec. 12	5.60	5,260
1941	July 9	3.76	2,540	1963	Mar. 6	8.53	10,200	1985	Aug. 17	5.03	4,400
1942	Feb. 17	6.66	7,180	1964	Apr. 8	8.60	10,200	1986	Nov. 30	3.85	2,640
1943	Jan. 28	6.49	6,840	1965	Oct. 6	9.63	12,000	1987	Mar. 1	7.50	8,350
1944	Mar. 20	5.78	5,720	1966	Mar. 4	6.62	6,890	1988	Jan. 20	4.26	3,240
1945	Mar. 27	4.57	3,720	1967	Aug. 25	7.46	8,280	1989	June 20	3.98	2,820
1946	Jan. 7	8.63	10,400	1968	Dec. 12	5.32	4,830	1990	Mar. 18	8.38	9,850
1947	Jan. 20	5.75	5,720	1969	Apr. 18	7.86	8,960	1991	Mar. 31	4.95	4,280
1948	Aug. 6	4.28	3,340	1970	Aug. 9	4.00	2,850	1992	Feb. 26	5.72	5,450

1949	Nov. 29	7.37	8,270	1971	Mar. 3	4.52	3,630	1993	Mar. 27	5.68	5,390
1950	Oct. 7	10.53	13,600	1972	June 21	6.24	6,280				
1951	Dec. 8	4.76	4,120	1973	May 29	6.16	6,160				

SANTEE RIVER BASIN

02163500 SALUDA RIVER NEAR WARE SHOALS, S.C.

LOCATION.--Lat 34º23'30", long 82º13'25", referenced to North American Datum of 1927, Greenwood County, Hydrologic Unit 03050109, on downstream side of U.S. Highway 25 bridge, 1.4 mi southeast of Ware Shoals, 1.8 mi downstream from Ware Shoals Dam, 5.7 mi upstream from Turkey Creek, and at river mile 84.4.

DRAINAGE AREA.--580 mi^2.

GAGE.--Data collection platform. Elevation of gage is 447 ft above National Geodetic Vertical Datum of 1929. Prior to October 1, 1997, at site 0.7 mi downstream at datum 1.0 ft higher.

REMARKS.--Some regulation at low and medium flow by power plants upstream. Capacity of reservoirs insufficient to affect monthly figures of runoff. City of Greenville began diverting water from Saluda River (Table Rock Reservoir) in 1930; supplemented by North Saluda Reservoir in 1961.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 16,100 ft^3/s and extended by indirect computation of peak flow over dam.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1939	Aug. 18	14.29	10,500	1962	Dec. 13	18.52	13,600	1985	Aug. 18	9.08	4,290
1940	Aug. 13	20.48	20,600	1963	Mar. 6	21.12	17,600	1986	Nov. 30	7.25	3,270
1941	July 7	9.27	5,010	1964	Apr. 8	20.63	16,700	1987	Mar. 2	15.67	9,840
1942	Mar. 21	13.87	8,300	1965	Oct. 5	18.17	13,000	1988	Jan. 21	7.69	3,490
1943	Jan. 18	18.18	15,300	1966	Mar. 4	16.06	10,300	1989	Mar. 24	7.94	3,620
1944	Mar. 20	16.45	11,700	1967	Aug. 25	---	12,000	1990	Mar. 18	17.03	12,000
1945	Sept. 13	10.99	5,970	1968	July 10	18.16	12,900	1991	Mar. 31	9.25	4,740
1946	Jan. 7	17.71	14,300	1969	Jan. 20	17.06	11,500	1992	Feb. 26	11.48	6,380
1947	Jan. 20	13.25	7,880	1970	Mar. 22	7.04	2,840	1993	Nov. 26	13.44	8,130
1948	July 16	10.48	5,410	1971	Mar. 3	16.38	10,700	1994	Aug. 19	14.66	9,360
1949	Nov. 29	19.12	16,500	1972	Jan. 10	15.96	10,200	1995	Aug. 27	22.95	20,900
1950	Oct. 8	18.45	14,900	1973	Sept. 14	22.85	20,700	1996	May 25	16.00	10,700
1951	Dec. 8	9.11	4,740	1974	Jan. 1	14.36	8,460	1997	Mar. 1	14.80	9,500
1952	Mar. 24	19.20	14,100	1975	Sept. 18	17.42	12,000	1998	Apr. 17	19.91	14,300
1953	Feb. 21	13.59	8,180	1976	Mar. 16	13.87	7,980	1999	Feb. 2	8.27	3,500
1954	Jan. 24	15.34	9,700	1977	Oct. 9	16.47	10,800	2000	Oct. 11	12.88	7,130
1955	Feb. 7	12.38	7,090	1978	Jan. 26	15.92	10,100	2001	July 27	9.11	4,210

1956	Sept. 26	14.61	9,080	1979	Feb. 25	15.05	9,150	2002	Sept. 16	9.03	4,150
1957	Apr. 7	11.27	5,830	1980	Mar. 28	14.36	8,460	2003	Mar. 21	18.07	13,100
1958	Nov. 19	16.48	10,400	1981	Oct. 1	6.02	2,660	2004	Sept. 9	17.18	11,400
1959	June 2	9.92	5,070	1982	Jan. 4	15.38	9,510	2005	July 8	16.53	10,500
1960	Oct. 11	11.37	5,970	1983	Apr. 10	9.24	4,390	2006	June 28	10.38	5,130
1961	Feb. 22	17.91	12,600	1984	Dec. 6	14.81	8,910				

SANTEE RIVER BASIN

02165000 REEDY RIVER NEAR WARE SHOALS, S.C.

LOCATION.--Lat 34º25'02", long 82º09'10" referenced to North American Datum of 1927, Laurens County, Hydrologic Unit 03050109, on downstream side of State Road 36 bridge, 5.5 mi northeast of Ware Shoals, 6.0 mi downstream from Boyd Mill Dam, and at river mile 8.7.

DRAINAGE AREA.--236 mi^2.

REVISED RECORDS.--WSP 892: 1939. WSP 922: Drainage area. WSP 1723: 1940, 1943, 1948-49, 1952(M). WSP 1904: 1940, 1943, 1946, 1949, 1952. WDR-SC-77-1: Drainage area. WDR-SC-78-1: Drainage area.

GAGE.--Data collection platform. Datum of gage is 453.86 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1977, at site 4.1 mi upstream at datum 26.76 ft higher.

REMARKS.--Some regulation at low and medium flow by power plants above station. Capacity of reservoirs insufficient to affect monthly figures of runoff. Diversion into basin by City of Greenville above station 02163500.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 9,990 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1940	Aug. 14	13.32	9,410	1962	Dec. 13	10.97	7,800	1984	Dec. 7	12.55	4,370
1941	July 17	4.40	2,380	1963	Mar. 7	14.92	10,600	1985	Feb. 2	8.84	2,280
1942	Feb. 18	6.50	4,270	1964	Apr. 9	11.84	8,390	1986	Nov. 30	7.56	1,560
1943	Jan. 19	9.69	6,960	1965	Oct. 6	7.54	5,320	1987	Mar. 2	13.96	5,080
1944	Mar. 21	7.41	4,840	1966	Mar. 5	6.94	4,830	1989	Mar. 25	8.86	2,290
1945	Sept. 17	4.64	2,580	1967	Jan. 9	4.45	2,370	1990	Mar. 18	14.51	5,350
1946	Jan. 8	10.44	7,380	1968	July 10	8.31	5,920	1991	Oct. 24	9.34	2,600
1947	Jan. 21	5.48	3,470	1969	Apr. 20	7.22	5,150	1992	Feb. 27	9.83	2,890
1948	Mar. 8	4.74	2,680	1970	Mar. 23	3.58	1,600	1993	Dec. 18	11.47	3,780
1949	Nov. 29	10.64	7,520	1971	Mar. 3	5.66	3,820	1994	Aug. 18	12.31	4,250
1950	Oct. 8	7.56	5,370	1972	June 22	11.20	7,940	1995	Aug. 28	18.71	9,980
1951	Sept. 8	4.28	2,220	1973	Sept. 14	15.40	11,000	1996	Mar. 7	12.72	4,530
1952	Mar. 5	8.60	6,120	1974	Jan. 2	5.63	3,790	1997	Mar. 2	12.90	4,640
1953	Feb. 22	5.31	3,200	1975	Mar. 14	11.38	8,070	1998	Apr. 17	15.26	6,200
1954	Jan. 17	7.12	4,960	1976	Oct. 19	5.58	3,740	1999	Feb. 2	8.26	1,900

1955	Feb. 8	5.02	2,960	1977	Oct. 9	9.67	6,870	2000	Oct. 12	13.31	4,880
1956	Sept. 27	6.29	3,970	1978	Oct. 27	12.90	4,020	2001	Mar. 31	8.50	2,050
1957	Apr. 6	3.87	1,830	1979	Apr. 14	13.71	4,950	2002	Sept. 17	14.79	2,900
1958	Nov. 20	7.88	5,600	1980	Mar. 29	12.23	4,210	2003	Mar. 21	17.91	----
1959	Sept. 9	4.15	2,130	1981	Feb. 12	7.64	1,390	2004	Sept. 29	21.17	----
1960	Oct. 11	5.76	3,620	1982	Jan. 5	13.86	5,120				
1961	Feb. 22	11.18	7,940	1983	Mar. 28	8.60	2,100				

SANTEE RIVER BASIN

02165200 SOUTH RABON CREEK NEAR GRAY COURT, S.C.

LOCATION.--Lat 34º31'12", long 82º09'26" referenced to North American Datum of 1927, Laurens County, Hydrologic Unit 03050109, at left bank, 125 ft upstream from U.S. Highway 76, 2.5 mi upstream from North Rabon Creek and 7.0 mi southwest of Gray Court.

DRAINAGE AREA.--29.5 mi^2.

GAGE.--Data collection platform. Datum of gage is 547.37 ft above National Geodetic Vertical Datum of 1929. Prior to May 1990, water-stage recorder at datum 1.00 ft higher.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 2,020 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1968	Jan. 10	3.41	803	1978	Jan. 26	3.77	1,020	1997	July 24	6.14	1,750
1969	Jan. 20	4.06	998	1979	Sept. 30	1.93	282	1998	Apr. 17	6.40	1,890
1970	Mar. 22	2.04	379	1980	Apr. 15	3.49	874	1999	Feb. 2	2.69	289
1971	Mar. 3	4.19	1,190	1981	Oct. 1	1.70	219	2000	Mar. 20	3.12	411
1972	Jan. 11	4.31	1,240	1991	Oct. 12	3.28	384	2001	Mar. 29	2.82	324
1973	Sept. 14	9.86	4,100	1992	Mar. 6	3.13	339	2002	Jan. 25	2.71	300
1974	Jan. 1	2.91	684	1993	Nov. 26	3.81	603	2003	Mar. 20	4.22	786
1975	Mar. 14	5.17	1,660	1994	Aug. 17	3.46	475	2004	Sept. 28	6.39	1,890
1976	Mar. 16	3.30	780	1995	Aug. 27	8.31	2,900	2005	Mar. 28	3.12	414
1977	Oct. 9	4.60	1,490	1996	Mar. 6	4.10	720	2006	Oct. 8	2.50	240

SANTEE RIVER BASIN

02166970 NINETY-SIX CREEK NEAR NINETY-SIX, S.C.

LOCATION.--Lat 34º07'57", long 81º59'48" referenced to North American Datum of 1927, Greenwood County, Hydrologic Unit 03050109, near left bank, at downstream side of bridge on State Road 288 at, 3.3 mi southeast of Ninety-Six and 10.1 mi southeast of Greenwood.

DRAINAGE AREA.--17.4 mi^2.

GAGE.--Data collection platform. Elevation of gage is 425 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

STAGE-FLOW RELATION.--Defined by current-meter measurements below 930 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1981	Feb. 11	9.90	980	1988	Apr. 12	7.05	317	1995	Dec. 22	10.09	929
1982	Jan. 4	10.24	1,090	1989	July 17	11.07	1,210	1996	Feb. 3	10.42	1,020
1983	Apr. 8	10.28	1,100	1990	Feb. 19	9.46	770	1997	Mar. 1	9.92	884
1984	Dec. 6	9.77	953	1991	Oct. 12	11.66	1,410	1998	Mar. 9	10.27	978
1985	Feb. 6	9.62	809	1992	Mar. 7	9.77	846	1999	Feb. 1	9.13	694
1986	Nov. 22	9.33	740	1993	Feb. 8	9.90	879	2000	Feb. 14	8.59	541
1987	Mar. 1	8.96	657	1994	Jun. 29	15.35	---	2001	Mar. 29	8.94	613

SANTEE RIVER BASIN

02167450 LITTLE RIVER NEAR SILVERSTREET, SC

LOCATION. -- Lat 34°12′34″, long 81°45′48″ referenced to North American Datum of 1927, Newberry County, SC, Hydrologic Unit 03050109, near center span on downstream side of bridge on US Highway 34, 3.4 mi downstream from Mud Lick Creek, 2.8 mi upstream from mouth, 2.9 mi west of Silverstreet.

DRAINAGE AREA. – 230 mi^2.

GAGE. – Data collection platform. Elevation of gage is 360 ft above NGVD of 1929 (from topographic map).

STAGE-FLOW RELATION -- Defined by current-meter measurements below 5,100 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1991	Mar. 31	11.42	2,570	1997	Mar. 02	12.83	3,550	2002	Apr. 01	9.55	1,290
1992	Mar. 07	8.73	1,150	1998	Mar. 09	14.51	5,860	2003	Apr. 19	15.73	8,760
1993	Nov. 27	13.58	4,180	1999	Feb. 02	9.47	1,210	2004	Sep. 30	10.73	1,820
1994	Jun. 05	15.60	8,400	2000	Sep. 24	12.27	2,890	2005	Feb. 23	11.39	2,100
1995	Dec. 23	15.08	7,080	2001	Mar. 22	11.50	2,300	2006	Oct. 09	10.02	1,500
1996	Feb. 03	15.07	7,060								

SANTEE RIVER BASIN

02167582 BUSH RIVER NEAR PROSPERITY, SC

LOCATION. -- Lat 34°10′07″, long 81°36′38″ referenced to North American Datum of 1927, Newberry County, Hydrologic Unit 03050109, on downstream side of highway bridge, on County Road 244, 5.2 mi southwest of Prosperity, and 7.2 mi south of the center of Newberry.

DRAINAGE AREA. – 115 mi^2.

GAGE. – Data collection platform. Elevation of gage is 360 ft above NGVD of 1929 (from topographic map).

STAGE-FLOW RELATION -- Defined by current-meter measurements below 4,940 ft^3/s and graphically extended on logarithmic plotting paper

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1991	Mar. 29	14.15	3,410	1997	Jul. 24	12.01	2,300	2002	Aug. 27	8.83	1,380
1992	Apr. 21	9.77	1,630	1998	Feb. 04	14.51	3,690	2003	Mar. 20	15.41	4,620
1993	Oct. 08	13.56	3,070	1999	Feb. 01	9.42	1,530	2004	Sep. 08	11.74	2,190
1994	Jun. 29	13.08	2,840	2000	Jan. 24	9.78	1,640	2005	Jun. 02	14.68	3,830
1995	Jan. 15	16.06	5,570	2001	Mar. 29	9.41	1,510	2006	Oct. 08	12.14	2,370
1996	Feb. 03	13.01	2,800								

SANTEE RIVER BASIN

02169550 CONGAREE CREEK AT CAYCE, S.C.

LOCATION.--Lat 33º56'15", long 81º04'40" referenced from to North American Datum of 1927, Lexington County, Hydrologic Unit 03050110, on left bank 20 ft downstream from bridge on U.S. Highway 21 at Cayce, 2.1 mi upstream from Sixmile Creek, and at river mile 5.4.

DRAINAGE AREA.--122 mi^2.

GAGE.--Water-stage recorder. Datum of gage is 128.98 ft above National Geodetic Vertical Datum of 1929 (South Carolina Highway Department benchmark). Prior to Jan. 20, 1960, nonrecording gage at same site and datum.

REMARKS.—Some flow diverted by City of Cayce for municipal supply.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 1,560 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1960	Oct. 1	5.92	1,840	1967	Aug. 25	4.77	932	1974	Jan. 2	4.19	565
1961	Aug. 5	4.81	1,050	1968	Jan. 11	4.18	596	1975	July 15	4.77	932
1962	Feb. 23	4.55	912	1969	Apr. 17	4.63	848	1976	July 6	4.58	818
1963	Jan. 21	4.14	660	1970	Aug. 12	4.55	800	1977	Dec. 13	4.49	764
1964	Aug. 30	4.84	1,090	1971	Mar. 4	5.09	1,140	1978	Jan. 26	4.27	640
1965	Oct. 16	5.61	1,630	1972	Jan. 11	4.29	650	1979	Feb. 25	4.99	1,070
1966	Mar. 4	4.18	596	1973	June 23	4.98	1,070	1980	Mar. 29	4.29	650

SANTEE RIVER BASIN

02169630 BIG BEAVER CREEK NEAR ST. MATTHEWS, S.C.

LOCATION.--Lat 33º44'12", long 80º57'30" referenced to North American Datum of 1927, Calhoun County, Hydrologic Unit 03050110, at center, downstream side of box culvert on U.S. Highway 21, 0.1 mi downstream from Rock Branch, 11.6 mi northwest of St. Matthews, and at river mile 8.2.

DRAINAGE AREA.--10.1 mi^2.

GAGE.--Water-stage recorder and data collection platform. Datum of gage is 164.21 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 207 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1967	Aug. 23	3.53	58	1976	Jan. 27	3.33	52	1985	Feb. 6	3.21	74
1968	June 9	---	240	1977	June 20	3.33	54	1986	Nov. 22	3.57	98
1969	Apr. 16	3.88	97	1978	June 6	4.05	112	1987	June 19	3.32	87
1970	Mar. 22	4.02	118	1979	Sept. 5	4.73	272	1988	June 26	3.15	77
1971	July 29	6.66	[1]1,360	1980	Mar. 13	3.66	68	1989	Sept. 22	3.19	75
1972	Aug. 24	3.97	101	1981	Aug. 17	3.79	95	1990	Dec. 8	2.55	48
1973	Feb. 2	4.29	157	1982	Dec. 31	3.59	63	1991	Oct. 23	4.45	192
1974	Aug. 6	3.71	73	1983	Mar. 17	3.66	88	1992	Aug. 19	3.37	92
1975	July 24	4.10	120	1984	May 30	4.34	180	1993	Jan. 8	4.20	162

[1]Flow was determined by a stage-flow rating extension exceeding 600 percent and may be unreliable.

SANTEE RIVER BASIN

02169960 LAKE MARION TRIBUTARY NEAR VANCE, S.C.

LOCATION.--Lat 33º27'26", long 80º26'32", referenced to North American Datum of 1927, Orangeburg County, Hydrologic Unit 03050111, on upstream side of culvert on State Highway 6, 1.4 mile upstream from Lake Marion and about 2.0 mi northeast of Vance.

DRAINAGE AREA.--2.12 mi^2.

GAGE.--Crest-stage partial-record station.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 151 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1977	---	3.20	---	1987	Jan. 1	3.75	63.0	1997	June 27	3.17	34.0
1978	---	---	---	1988	---	---	---	1998	Feb. 5	4.05	81.0
1979	Sept. 5	5.05	141	1989	Sept. 22	3.83	67.8	1999	July 1	3.22	36.0
1980	Mar. 13	3.85	69.0	1990	May 5	4.71	121	2000	Jan. 27	3.06	28.0
1981	---	---	---	1991	Oct. 11	5.44	167	2001	June 18	3.02	26.0
1982	Jan. 1	3.17	34.0	1992	Aug. 19	3.40	45.0	2002	Sept. 26	4.39	101
1983	Mar. 17	4.79	126	1993	Jan. 9	3.19	34.0	2003	Sept 9	3.71	60.6
1984	Nov. 15	3.98	77.0	1994	Aug. 23	2.94	22.0	2004	Sept 28	3.86	69
1985	May 23	3.36	43.0	1995	Aug. 26	3.72	61.2	2005	Aug. 23	8.06	
1986	Aug. 20	3.75	63.0	1996	Jan. 27	2.99	25.0	2006	---	---	---

EDISTO RIVER BASIN

02172500 SOUTH FORK EDISTO RIVER NEAR MONTMORENCI, S.C.

LOCATION.--Lat 33º34'35", long 81º30'50", referenced to North American Datum of 1927, Aiken County, Hydrologic Unit 03050204, near center of span on downstream side of bridge on State Highway 302, 0.4 mi upstream from Cedar Creek, 1.0 mi upstream from Shaw Creek, and 7.6 mi northeast of Montmorenci.

DRAINAGE AREA.--198 mi^2.

GAGE.--Water-stage recorder prior to September 1966. Crest-stage partial-record station thereafter. Datum of gage is 250.18 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Oct. 29, 1954, wire-weight gage at same site and datum.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 4,490 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1940	Aug. 15	8.81	2,460	1957	May 14	6.90	750	1978	Jan. 28	8.75	2,360
1941	July 19	8.81	2,460	1958	Apr. 18	7.82	1,560	1979	Feb. 24	8.45	2,040
1942	Mar. 10	7.88	1,650	1959	May 10	8.33	1,990	1980	Mar. 13	8.18	1,780
1943	Mar. 23	7.98	1,740	1960	Oct. 1	9.57	3,120	1981	Feb. 18	6.78	738
1944	Mar. 24	8.71	2,370	1961	Feb. 26	9.15	2,690	1982	Jan. 6	7.98	1,600
1945	Apr. 27	6.97	898	1962	Feb. 24	8.83	2,540	1983	Apr. 11	9.36	3,210
1946	Apr. 19	6.73	898	1963	Jan. 22	7.46	1,160	1984	Feb. 29	7.50	1,190
1947	Oct. 10	7.47	1,320	1964	Aug. 31	10.24	5,010	1985	Feb. 7	8.28	1,870
1948	Mar. 9	7.62	1,400	1965	Dec. 28	8.85	2,470	1986	Nov. 22	7.62	1,290
1949	Aug. 30	8.52	2,180	1966	June 12	8.00	1,620	1987	Mar. 1	7.25	1,020
1950	Sept. 9	6.86	685	1972	Jan. 14	8.20	1,780	1988	Sept. 9	6.79	744
1951	Apr. 5	6.71	615	1973	Feb. 2	7.73	1,380	1989	July 5	7.34	1,080
1952	Mar. 6	8.21	2,040	1974	Jan. 3	7.13	948	1990	May 5	6.91	816
1953	May 8	7.62	1,400	1975	July 17	9.03	2,700	1991	Mar. 29	8.46	2,050
1954	Dec. 15	7.07	858	1976	June 29	7.92	1,550	1992	Feb. 26	6.86	786
1955	Apr. 16	8.16	1,790	1977	Dec. 19	8.53	2,120	1993	Jan. 8	8.70	2,300
1956	Apr. 13	6.75	755								

EDISTO RIVER BASIN

02173000 SOUTH FORK EDISTO RIVER NEAR DENMARK, S.C.

LOCATION.--Lat 33º23'35", long 81º08'00" referenced to North American Datum of 1927, Bamberg-Orangeburg County Line, Hydrologic Unit 03050204, on left bank at downstream side of bridge on U.S. Highway 321, 360 ft downstream from Seaboard Coast Line Railroad bridge, 1.8 mi downstream from Little River, 4.8 mi north of Denmark, and at river mile 136.6.

DRAINAGE AREA.--720 mi^2, approximately (measured on topographic and highway planning survey maps)

GAGE.--Continuous water-stage recorder prior to September 1971; crest-stage partial-record station 1972 to 1980; continuous recorder thereafter. Datum of gage is 155.68 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Oct. 27, 1931, nonrecording gage at same site and datum.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 7,020 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1930	Oct. --	11.70	17,100[b]	1957	Mar. 27	6.70	1,030	1983	Apr. 13	7.80	2,870
1932	Aug. 12	8.47	2,930	1958	Apr. 17	8.00	3,210	1984	May 8	7.90	3,050
1933	Nov. 4	8.07	2,290	1959	May 14	7.70	2,810	1985	Feb. 8	7.68	2,850
1934	June 5	8.51	2,850	1960	Apr. 6	8.75	5,150	1986	---	---	---
1935	Aug. 22	8.36	2,640	1961	Apr. 17	8.22	3,780	1987	Jan. 24	7.73	2,650
1936	Apr. 11	10.91	13,500	1962	Feb. 27	7.80	3,110	1988	Jan. 24	6.42	904
1937	Oct. 14	8.03	2,260	1963	Jan. 22	7.67	2,710	1989	Apr. 12	6.87	1,310
1938	Apr. 10	8.20	2,470	1964	Sept. 2	9.41	7,350	1990	Dec. 15	6.88	1,320
1939	Mar. 3	9.05	4,860	1965	Oct. 20	8.18	3,610	1991	Oct. 25	7.86	2,770
1940	Aug. 19	7.92	2,060	1966	Mar. 5	8.28	3,820	1992	Aug. 23	6.93	1,440
1941	July 22	7.91	2,060	1967	Aug. 28	7.91	3,070	1993	Jan. 10	8.32	3,790
1942	Dec. 26	8.06	2,840	1968	June 13	7.46	2,490	1994	Mar. 3	7.17	1,660
1943	Mar. 24	7.62	2,080	1969	Apr. 20	8.10	3,460	1995	Feb. 19	8.47	4,190
1944	Mar. 25	8.24	3,220	1970	Apr. 1	7.58	2,480	1996	Mar. 12	7.45	2,060
1945	Sept. 19	8.32	3,310	1971	Mar. 5	8.64	4,820	1997	Feb. 16	6.93	1,740
1946	Jan. 1	7.40	1,740	1972	Jan. 18	7.74	2,750	1998	May 9	8.71	4,890
1947	Aug. 15	---[a]	2,040	1973	Feb. 3	8.01	3,270	1999	Jan. 25	6.87	1,310
1948	Feb. 14	8.38	4,010	1974	Feb. 19	7.36	2,130	2000	Jan. 30	7.07	1,540
1949	Oct. 5	8.30	3,810	1975	July 19	8.08	3,420	2001	Mar. 21	6.59	1,040

1950	Mar. 9	6.89	1,210	1976	June 30	7.19	1,880	2002	Feb. 15	6.02	724
1951	Apr. 2	6.97	1,320	1977	Dec. 19	7.84	2,940	2003	June 20	7.35	2,380
1952	Mar. 26	7.59	2,390	1978	Jan. 28	7.63	2,560	2004	Feb. 28	6.64	1,380
1953	Sept. 29	7.56	2,600	1979	Feb. 24	8.03	3,310	2005	Apr. 2	7.08	1,770
1954	Dec. 16	7.25	1,750	1980	---	---	---	2006	Jan. 4	6.56	1,020
1955	Apr. 20	7.19	1,640	1981	Feb. 18	6.98	1,560				
1956	Feb. 8	6.91	1,350	1982	Jan. 6	7.41	2,200				

[a] Gage height not the maximum for the year.

[b] Flow is a historic peak.

EDISTO RIVER BASIN

02173030 SOUTH FORK EDISTO RIVER NEAR COPE, S.C.

LOCATION.-- Lat 33°21′32″, long 81°03′35″ referenced to North American Datum of 1927, Bamberg County, SC, Hydrologic Unit 03050204, on downstream side of trestle on old Seaboard Coastline Railroad, at South Carolina Electric and Gas Company Cope Power Plant, 4.6 mi north-northwest of Bamberg, and at mile 130.9.

DRAINAGE AREA.--757 mi^2.

GAGE.-- Data collection platform. Datum of gage is 139.23 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.-- Defined by current-meter measurements below 5,240 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1992	Aug. 18	9.70	2,470	1997	Feb. 18	9.46	1,920	2002	Feb. 16	8.62	726
1993	Jan. 13	10.72	6,190	1998	May 08	10.86	7,610	2003	Jun. 20	9.97	3,380
1994	Mar. 04	9.85	2,870	1999	Jan. 26	9.44	1,880	2004	Feb. 27	9.44	1,880
1995	Feb. 19	10.78	6,500	2000	Jan. 31	9.62	2,270	2005	Apr. 02	9.70	1,830
1996	Mar. 12	9.90	3,010	2001	Mar. 23	9.22	1,460	2006	Jan. 03	9.19	1,210

EDISTO RIVER BASIN

02173051 SOUTH FORK EDISTO RIVER NEAR BAMBERG, S.C.

LOCATION.-- Lat 33°20′13″, long 81°01′08″ referenced to North American Datum of 1927, Bamberg County, SC, Hydrologic Unit 03050204, on downstream side of upstream bridge, on U.S. Highway 301/601, 3.0 mi north of Bamberg, and at mile 127.2.

DRAINAGE AREA.--807 mi^2.

GAGE.-- Data collection platform. Elevation of gage is 140 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.-- Defined by current-meter measurements below 5,510 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1992	Aug. 18	11.48	2,790	1997	Jun. 29	11.06	2,210	2002	Feb. 11	9.56	836
1993	Jan. 13	13.16	6,720	1998	May 09	13.71	8,640	2003	Mar. 21	12.03	3,980
1994	Mar. 03	11.51	2,840	1999	Jan. 26	10.92	1,820	2004	Feb. 27	11.08	2,170
1995	Feb. 19	13.31	7,260	2000	Jan. 31	11.18	2,120	2005	Apr. 03	11.03	2,240
1996	Mar. 13	11.56	2,900	2001	Mar. 22	10.56	1,750	2006	Jan. 04	10.43	1,460

EDISTO RIVER BASIN

02173500 NORTH FORK EDISTO RIVER AT ORANGEBURG, S.C.

LOCATION.--Lat 33º29'00", long 80º52'25" referenced to North American Datum of 1927, Bamberg County, Hydrologic Unit 03050203, on left bank under bridge on U.S. Highway 301 at Orangeburg, 0.5 mi upstream from Seaboard Coast Line Railroad bridge, 1.5 mi downstream from Caw Caw Swamp and at river mile 22.1.

DRAINAGE AREA.--683 mi^2.

REVISED RECORDS.--WSP 1032: Drainage area.

GAGE.--Data collection platform. Datum of gage is 149.02 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Feb. 23, 1939, nonrecording gage at same site and datum.

REMARKS.--Some flow diverted by City of Orangeburg for municipal supply.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 5,230 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1928	Sept. --	14.70	10,000[b]	1961	Apr. 17	9.61	3,340	1984	May 30	10.00	3,720
1939	Mar. 3	9.98	3,910	1962	Feb. 24	9.21	2,770	1985	Feb. 8	8.78	2,380
1940	Aug. 19	8.59	2,340	1963	Jan. 22	9.26	2,880	1986	Nov. 23	8.23	1,940
1941	June 29	11.00	5,210	1964	Aug. 31	11.34	5,410	1987	Jan. 24	8.88	2,470
1942	Dec. 26	8.96	2,670	1965	Oct. 6	11.05	5,080	1988	Mar. 13	6.50	1,050
1943	Mar. 24	8.20	1,930	1966	Mar 6	9.79	3,450	1989	Apr. 12	7.16	1,310
1944	Mar. 25	8.90	2,620	1967	Aug. 29	9.00	2,570	1990	Oct. 2	7.47	1,460
1945	Sept. 18	14.28	9,500	1968	June 12	8.65	2,240	1991	July 31	9.53	3,190
1946	Jan. 1	7.90	1,670	1969	Apr. 21	8.60	2,200	1993	Jan. 9	11.15	5,210
1947	Apr. 18	8.16	1,880	1970	Apr. 2	8.71	2,300	1994	Mar. 3	8.18	1,910
1948	Sept. 7	10.25	4,170	1971	Mar. 5	11.64	5,850	1995	Aug. 27	11.29	5,390
1949	Aug. 29	10.47	4,560	1972	Jan. 16	9.40	2,990	1996	Mar. 12	8.24	1,950
1950	Sept. 10	8.03	1,800	1973	June 13	10.01	3,730	1997	Feb. 17	7.43	1,440
1951	Apr. 10	7.50	1,370	1974	Aug. 11	8.14	1,880	1998	Feb. 6	9.35	2,960
1952	Mar. 25	8.54	2,410	1975	July 21	8.94	2,530	1999	Jan. 26	7.48	1,460
1953	Sept. 29	8.43	2,160	1976	July 1	9.19	2,760	2000	Jan. 27	7.72	1,600
1954	Apr. 10	7.79	1,550	1977	Dec. 17	9.02	2,600	2001	June 18	6.96	1,220

1955	Apr. 20	7.78	1,420	1978	Jan. 26	9.22	2,790	2002	Feb. 8	4.85	604
1956	Feb. 8	7.44	1,160	1979	Sept. 6	11.56	5,720	2003	Mar. 21	8.90	2,490
1957	June 17	7.62	1,250	1980	Mar. 31	9.23	2,800	2004	Feb. 28	7.19	1,220
1958	May 1	9.73	3,340	1981	Oct. 2	7.38	1,410	2005	Apr. 2	7.40	1,400
1959	May 14	8.80	2,570	1982	Jan. 6	8.10	1,850	2006	Jan. 4	6.72	1,010
1960	Apr. 6	10.36	4,240	1983	Apr. 13	9.04	2,610				

[b] Flow is a historic peak.

EDISTO RIVER BASIN

02174000 EDISTO RIVER NEAR BRANCHVILLE, S.C.

LOCATION.--Lat 33º10'35", long 80º48'05" referenced to North American Datum of 1927, Orangeburg County, Hydrologic Unit 03050205, on right bank 400 ft downstream from bridge on U.S. Highway 21, 4.7 mi downstream from Brier Branch, 5.2 mi south of Branchville, and at river mile 100.0.

DRAINAGE AREA.--1,720 mi^2, approximately.

GAGE.--Water-stage recorder prior to October 1995; crest-stage partial-record station thereafter. Datum of gage is 80.02 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to May 19, 1949, at datum 2.00 ft higher.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 13,800 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1928	Sept. --	14.50	25,700[b]	1966	Mar. 8	10.06	8,910	1987	Mar. 4	8.90	5,900
1946	Jan. 4	7.75	4,100	1967	Sept. 1	7.69	4,260	1988	Mar. 17	5.62	2,150
1947	Apr. 18	8.23	4,870	1968	June 16	8.10	4,240	1989	Apr. 16	7.45	3,640
1948	Apr. 4	9.95	9,140	1969	May 21	8.86	5,630	1990	Oct. 5	8.06	4,400
1949	Oct. 6	10.21	10,000	1970	Apr. 3	9.17	6,380	1991	Aug. 5	9.22	6,620
1950	Mar. 12	6.22	2,540	1971	Mar. 8	10.68	11,100	1992	Aug. 20	7.98	4,270
1951	Apr. 3	7.36	3,640	1972	Feb. 6	9.09	6,480	1993	Jan. 13	10.87	14,000
1952	Mar. 29	8.47	5,350	1973	June 17	10.12	9,120	1994	Mar. 6	8.47	5,090
1953	Mar. 3	8.27	4,950	1974	Feb. 20	8.57	5,440	1995	Feb. 21	10.34	9,860
1954	Oct. 3	6.79	3,030	1975	July 22	8.88	6,060	1996	Mar. 15	8.11	4,480
1955	Apr. 24	6.43	2,690	1976	June 30	9.08	6,460	1997	Feb. 26	7.64	3,860
1956	Feb. 11	---[a]	3,030	1977	Dec. 20	8.73	5,760	1998	---	---	---
1957	Mar. 31	5.63	2,200	1978	Jan. 28	9.64	7,750	1999	Feb. 6	7.40	3,590
1958	Apr. 19	---[a]	8,050	1979	Sept. 8	9.81	8,210	2000	Feb. 2	7.98	4,280
1959	Mar. 9	8.36	5,150	1980	Mar. 16	9.62	7,730	2001	Mar. 18	6.90	3,060
1960	Apr. 8	10.93	12,600	1981	Feb. 22	6.95	3,200	2002	Apr. 6	4.00	1,430
1961	Apr. 19	9.97	9,190	1982	Jan. 9	8.14	4,700	2003	Mar. 23	9.64	7,690
1962	Mar. 3	9.04	6,490	1983	Apr. 16	8.91	6,120	2004	Feb. 21	8.14	4,530
1963	Jan. 26	8.97	6,490	1984	May 9	10.02	8,770	2005	Apr. 4	7.64	3,860
1964	Sept. 3	11.44	14,600	1985	Feb. 11	8.61	5,350	2006	Jan. 10	6.73	2,910

1965	Oct. 19	10.57	10,700	1986	Nov. 24	8.82	5,730

[a] Gage height not maximum for the year.

[b] Flow is a historic peak.

EDISTO RIVER BASIN

02174250 COW CASTLE NEAR BOWMAN, S.C.

LOCATION.--Lat 33º22'43", long 80º42'00" referenced to North American Datum of 1927, Orangeburg County, Hydrologic Unit 03050206, at bridge on county road, 1.1 mi upstream from Buck Branch and 3.2 mi northwest of Bowman.

DRAINAGE AREA.--23.4 mi^2.

GAGE.--Data collection platform. Elevation of gage is 125 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

STAGE-FLOW RELATION.--Defined by current-meter measurements below 833 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1971	Mar. 4	6.36	466	1979	Sept. 4	7.37	[1]2,340	2001	Mar. 15	4.78	174
1972	Feb. 4	5.64	188	1980	Mar. 13	6.34	493	2002	Sept. 26	2.30	40
1973	June 12	6.83	1,290	1981	July 2	5.32	207	2003	Mar. 16	7.11	1,270
1974	Feb. 17	5.95	278	1996	Dec. 19	5.02	187	2004	Feb. 27	5.49	385
1975	Feb. 20	5.76	267	1997	Feb. 15	4.02	116	2005	Mar. 28	4.95	261
1976	July 7	5.87	292	1998	Feb. 4	6.33	594	2006	Mar. 21	3.74	120
1977	Mar. 22	5.92	306	1999	May 1	4.84	179				
1978	Jan. 26	6.25	430	2000	Jan. 25	5.39	248				

[1]Flow was determined by a stage-flow rating exceeding 280 percent and may be unreliable.

EDISTO RIVER BASIN

02175000 EDISTO RIVER NEAR GIVHANS, S.C.

LOCATION.--Lat 33º01'40", long 80º23'30" referenced to North American Datum of 1927, Dorchester County, Hydrologic Unit 03050205, on left bank at downstream side of bridge on State Highway 61, 2.3 mi downstream from Four Hole Swamp, 2.8 mi west of Givhans, and at river mile 59.9.

DRAINAGE AREA.--2,730 mi^2, approximately.

REVISED RECORDS.--WSP 1032: Drainage area. WSP 1303: 1939 (monthly and yearly runoff).

GAGE.--Data collection platform. Datum of gage is 20.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Some flow diverted above station for municipal and industrial water supply.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 24,800 ft^3/s.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1904	Aug. --	17.00	---	1959	Mar. 9	13.90	14,100	1984	May 12	13.92	14,300
1919	July 31	14.00	---	1960	Apr. 11	14.29	14,600	1985	Feb. 17	9.94	5,200
1924	Sept. --	15.50	---	1961	Apr. 20	14.05	14,100	1986	Dec. 19	12.60	9,940
1925	Feb. --	17.50	24,900[b]	1962	Mar. 6	12.41	10,200	1987	Mar. 8	12.70	10,200
1928	Sept. 11	15.70	19,500[b]	1963	Jan. 29	11.80	8,060	1988	Sept. 18	7.78	3,150
1939	Mar. 6	14.68	16,900	1964	July 29	15.12	19,800	1989	Apr. 19	10.34	5,770
1940	Aug. 15	13.03	12,600	1965	Oct. 21	15.14	19,900	1990	Oct. 10	11.11	6,830
1941	July 5	12.64	10,800	1966	Mar. 11	13.63	13,100	1991	Feb. 5	13.59	13,000
1942	Dec. 30	13.48	13,100	1967	Jan. 13	9.83	4,910	1992	Aug. 26	11.71	7,920
1943	Mar. 30	11.32	8,010	1968	June 20	10.07	5,250	1993	Jan. 15	15.58	22,700
1944	Mar. 30	13.44	13,100	1969	May 26	12.93	10,800	1994	Mar. 10	10.96	6,580
1945	Sept. 21	17.28	24,300	1970	Apr. 6	13.07	11,200	1995	Feb. 25	13.70	13,400
1946	Jan. 24	11.58	8,940	1971	Mar. 11	13.90	14,200	1996	Mar. 21	10.66	6,150
1947	Apr. 22	11.38	8,540	1972	Feb. 7	13.10	11,300	1997	Feb. 26	9.99	5,250
1948	Apr. 6	14.38	15,200	1973	June 14	15.84	24,500	1998	Feb. 9	14.42	16,300
1949	Dec. 3	14.62	15,800	1974	Feb. 22	12.56	9,800	1999	Feb. 6	9.49	4,700
1950	Sept. 12	8.66	4,090	1975	Feb. 26	12.52	9,690	2000	Feb. 2	11.20	6,980
1951	Apr. 9	9.21	4,790	1976	July 8	12.63	9,980	2001	Mar. 18	9.99	5,250
1952	Apr. 2	11.27	7,950	1977	Dec. 19	12.06	8,610	2002	Sept. 3	6.05	2,000

1953	Mar. 7	12.26	10,400	1978	Feb. 2	12.80	10,400	2003	Mar. 23	14.42	16,300
1954	Jan. 6	7.91	3,610	1979	Sept. 9	15.51	22,400	2004	Feb. 21	11.16	6,910
1955	Sept. 16	8.81	4,540	1980	Mar. 19	13.99	14,700	2005	Apr. 4	10.16	5,470
1956	Feb. 14	9.54	5,440	1981	Feb. 26	7.61	3,030	2006	Mar. 6	7.72	3,090
1957	May 21	7.89	3,610	1982	Jan. 9	11.46	7,490				
1958	Apr. 22	13.13	12,000	1983	Mar. 22	13.84	14,000				

[b] Flow is a historic peak.

COMBAHEE RIVER BASIN

02175500 SALKEHATCHIE RIVER NEAR MILEY, S.C.

LOCATION.--Lat 32º59'20", long 81º03'10" referenced to North American Datum of 1927, Hampton County, Hydrologic Unit 03050207, on right bank 90 ft downstream from bridge on U.S. Highway 601, 2.4 mi downstream from Savannah Creek, 3.1 mi upstream from Hampton and Branchville Railroad bridge, 3.1 mi northwest of Miley, and at river mile 68.0.

DRAINAGE AREA.--341 mi^2.

GAGE.--Data collection platform. Datum of gage is 64.35 ft above National Geodetic Vertical Datum of 1929. Dec. 6, 1957, to Jan. 22, 1971, nonrecording gage at same site and datum. Prior to Dec. 6, 1957, nonrecording gage at bridge 90 ft upstream at same datum.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 2,700 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1952	Mar. 28	4.02	905	1971	Mar. 4	4.48	1,570	1990	Oct. 6	4.32	1,110
1953	Sept. 30	4.04	950	1972	Feb. 4	---	2,000	1991	Aug. 4	5.39	3,120
1954	May 15	3.87	860	1973	June 20	4.93	2,240	1992	June 14	4.31	1,290
1955	Apr. 15	4.02	950	1974	Feb. 18	4.53	1,650	1993	Oct. 9	5.79	4,360
1956	May 6	3.99	774	1975	July 20	5.00	2,350	1994	July 1	4.21	1,090
1957	Mar. 26	3.68	732	1976	July 7	4.83	2,100	1995	Aug. 27	5.33	2,970
1958	Apr. 17	4.21	1,140	1977	Mar. 24	4.34	1,480	1996	Mar. 20	4.09	973
1959	Mar. 7	4.61	1,600	1978	Jan. 28	4.63	1,800	1997	Jan. 31	4.23	1,090
1960	Apr. 6	4.94	1,880	1979	Sept. 6	5.34	3,050	1998	Mar. 11	5.29	2,870
1961	Apr. 17	4.48	1,390	1980	Mar. 13	5.44	3,300	1999	July 16	4.01	899
1962	Mar. 15	4.33	1,200	1981	Oct. 2	3.88	771	2000	Sept. 26	5.21	2,690
1963	Jan. 23	4.24	1,100	1982	Jan. 5	4.17	1,110	2001	July 5	3.78	683
1964	Sept. 2	4.99	2,340	1983	Feb. 17	4.19	1,140	2002	Feb. 12	3.41	440
1965	Oct. 17	5.06	2,230	1984	May 9	4.90	2,200	2003	Aug. 9	5.09	2,430
1966	Mar. 6	5.00	2,200	1985	Feb. 9	4.07	985	2004	Feb. 27	4.60	1,570
1967	Mar. 13	4.60	1,740	1986	Dec. 14	5.35	2,850	2005	Mar. 30	4.19	1,040
1968	June 13	4.32	1,340	1987	Mar. 2	4.77	1,840	2006	July 29	3.52	577
1969	May 20	4.90	2,200	1988	Sept. 12	4.19	1,070				
1970	Apr. 2	4.57	1,700	1989	Apr. 14	3.98	869				

COMBAHEE RIVER BASIN

02176000 COMBAHEE RIVER NEAR YEMASSEE, S.C.

LOCATION.--Lat 32º42'25", long 80º49'35" referenced to North American Datum of 1927, Hampton County, Hydrologic Unit 03050208, near left bank on downstream side of pile bent on bridge on U.S. Highway 17A, 0.2 mi upstream from Atlantic Coast Line Railroad bridge, 1.8 mi northeast of Yemassee, and 5 mi downstream from Black Creek.

DRAINAGE AREA.--1,100 mi^2.

GAGE.--Recording prior to June 30, 1957; crest-stage partial-record station thereafter. Datum of gage is at National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 3,910 ft^3/s and extended on the basis of velocity-area studies.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1952	Feb. 19	7.51	3,530	1957	June 6	6.71	2,150	1962	Mar. 17	8.50	5,630
1953	Mar. 8	7.32	3,110	1958	Apr. 19	9.22	7,930	1963	Jan. 25	8.39	5,410
1954	May 18	7.51	3,530	1959	Mar. 7	10.16	9,850	1964	July 22	10.87	11,700
1955	Apr. 18	8.18	5,330	1960	Nov. 2	10.80	11,400	1965	Oct. 16	10.62	10,900
1956	Feb. 10	7.96	4,680	1961	Apr. 20	9.22	7,350	1966	Mar. 8	9.29	7,600

BROAD RIVER BASIN

02176500 COOSAWHATCHIE RIVER NEAR HAMPTON, S.C.

LOCATION.--Lat 32º50'10", long 81º07'55" referenced to North American Datum of 1927, Hampton County, Hydrologic Unit 03050208, near left bank on downstream side of bridge on U.S. Highway 601, 1.6 mi downstream from Black Creek, 2.5 mi southwest of Hampton, and at river mile 33.6.

DRAINAGE AREA.--203 mi^2.

GAGE.--Data collection platform. Datum of gage is 50.30 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 26, 1954, nonrecording gage at same site and datum.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 6,380 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1952	Feb. 16	5.20	1,780	1971	Mar. 4	5.16	1,530	1990	Jan. 8	5.06	1,440
1953	Mar. 24	5.78	2,750	1972	Feb. 4	5.23	1,660	1991	Aug. 3	6.03	2,800
1954	May 16	5.45	2,360	1973	June 14	5.47	1,940	1992	Apr. 22	4.69	1,040
1955	Apr. 15	5.05	1,430	1974	Feb. 9	5.11	1,520	1993	Oct. 10	7.92	8,910
1956	Feb. 7	4.98	1,390	1975	July 19	5.61	2,150	1994	Mar. 3	4.67	1,360
1957	May 31	4.26	649	1976	July 7	5.29	1,760	1995	Aug. 26	6.65	5,120
1958	Apr. 16	5.07	1,400	1977	Mar. 8	4.57	1,030	1996	May 1	4.92	1,770
1959	Mar. 6	5.87	2,950	1978	Jan. 27	5.03	1,460	1997	Feb. 16	4.82	1,590
1960	Jan. 31	5.48	2,150	1979	Sept. 6	5.66	2,210	1998	Mar. 9	5.78	3,230
1961	Apr. 17	5.16	1,580	1980	Mar. 14	7.09	4,800	1999	Feb. 3	4.14	740
1962	Mar. 12	---[a]	1,250	1981	Apr. 3	4.09	585	2000	Mar. 22	3.77	424
1963	June 29	5.61	2,190	1982	July 18	4.55	989	2001	Mar. 16	4.12	722
1964	Aug. 30	6.21	3,720	1983	Mar. 8	5.18	1,620	2002	Feb. 10	3.14	121
1965	Oct. 16	6.27	3,880	1984	July 31	4.84	1,190	2003	Mar. 22	5.35	2,440
1966	Mar. 5	5.65	2,370	1985	Aug. 31	4.65	1,000	2004	Feb. 27	5.18	2,170
1967	Aug. 12	4.53	974	1986	Nov. 23	5.80	2,440	2005	Mar. 28	5.68	3,040
1968	June 9	3.89	416	1987	Mar. 2	5.50	2,030	2006	Feb. 27	3.89	518
1969	Sept. 2	8.39	8,160	1988	Sept. 10	4.85	1,200				
1970	Mar. 31	5.66	2,120	1989	Sept. 23	4.86	1,210				

[a] Gage height not maximum for the year.

SAVANNAH RIVER BASIN

02177000 CHATTOOGA RIVER NEAR CLAYTON, GA

LOCATION. --Lat 34°48′50″, long 83°18′22″ referenced to North American Datum of 1927, Oconee County, SC, Hydrologic Unit 03060102, on left bank 150 feet downstream from bridge on US 76, 2.8 miles upstream from Stekoa Creek, 7.0 miles southeast of Clayton, 9.0 miles downstream from Warwoman Creek, and 9.0 miles upstream from confluence with Tallulah River.

DRAINAGE AREA. – 207 mi^2.

GAGE. – Data-collection platform. Datum of gage is 1,165.60 feet above National Geodetic Vertical Datum (NGVD) of 1929. May 1907 to June 1908, a non-recording gage was located at site 400 feet upstream at different datum.

REVISED RECORDS.--WSP 1383: 1940-41, Drainage area.

REMARKS. – Stage records for 1915, 1928, and 1929 from Georgia Power Company. Flow records for 1917-27 estimated on basis of records for U.S. Geological Survey gage on Chattooga River near Tallulah Falls, Ga. (02178000); drainage area, 256 mi^2.

STAGE-FLOW RELATION. -- Defined for period after 2003 by current-meter measurements below 17,000 ft^3/s, and graphically extended on logarithmic plotting paper. Prior to 2003, defined by current-meter measurements below 4,700 ft^3/s, and extended above on basis of slope-area measurements at 15,700 and 29,000 ft^3/s.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1915	Oct. 15	8.25	12,600	1956	Apr. 16	5.30	5,820	1981	May 27	4.41	4,120
1917	Mar. 24		14,000	1957	Apr. 05	5.34	5,820	1982	Feb. 03	4.89	5,000
1918	Jan. 28		5,900	1958	Nov. 19	5.20	5,620	1983	Feb. 02	6.27	7,910
1919	Dec. 22		16,000	1959	May 31	5.17	5,620	1984	Feb. 13	4.79	4,810
1920	Dec. 09		8,200	1960	Oct. 09	5.60	6,440	1985	Aug. 17	4.75	4,740
1921	Feb. 10		4,100	1961	Feb. 25	6.00	7,310	1986	Nov. 01	4.81	4,850
1922	Jan. 21		6,200	1962	Dec. 12	7.01	9,660	1987	Nov. 26	7.34	10,400
1923	Dec. 17		5,300	1963	Mar. 06	5.10	5,420	1988	Jan. 20	4.85	4,920
1924	Sep. 20		9,200	1964	Sep. 29	7.08	9,880	1989	Jul. 04	5.00	5,200
1925	Dec. 08		3,900	1965	Oct. 04	13.20	27,200	1990	Feb. 16	7.59	11,000
1926	Jan. 18		6,200	1966	Feb. 13	8.50	13,400	1991	Mar. 29	5.30	5,800
1927	Dec. 26		3,600	1967	Jun. 04,	9.27	15,400	1992	Aug. 28	6.64	8,770
1928	Aug. 15	10.90	20,100	1968	Mar. 12	5.25	5,620	1993	Nov. 22	5.46	6,130
1929	Sep. 26	7.70	11,400	1969	Jun. 15	9.00	14,700	1994	Aug. 17	9.99	17,500
1940	Aug. 30	13.80	29,000	1970	Nov. 02	4.15	3,480	1995	Jan. 15	5.52	6,250
1941	Jul. 07	6.10	7,530	1971	Feb. 22	3.91	3,290	1996	Jan. 27	7.36	10,500
1942	Feb. 17	5.75	6,870	1972	Dec. 07	6.06	7,440	1997	Dec. 01	7.05	9,760
1943	Dec. 29	5.80	6,870	1973	May 28	10.74	19,600	1998	Jan. 08	8.24	12,600
1944	Mar. 19	4.25	3,840	1974	Dec. 26	5.58	6,400	1999	Apr. 01	4.19	3,760
1945	Apr. 17	3.70	2,930	1975	Sep. 24	5.55	6,340	2000	Nov. 26	4.18	3,750
1946	Feb. 10	5.70	6,650	1976	May 15	10.37	18,500	2001	Sep. 24	3.26	2,350
1947	Jan. 20	5.57	6,440	1977	Mar. 13	8.25	13,000	2002	Sep. 27	4.88	4,980
1948	Jul. 12	8.11	12,400	1978	Jan. 26	6.24	7,850	2003	Sep. 23	5.25	5,690

1949	Jun. 16	8.66	13,900	1979	Mar. 04	9.03	14,800	2004	Sep. 17	11.21	33,300
1950	Mar. 13	4.73	4,740	1980	Nov. 02	7.52	10,900	2005	Jun. 12	6.76	10,700
1951	Dec. 07	5.02	5,220					2006	Nov. 29	4.66	4,690
1952	Mar. 11	8.50	13,400								
1953	Feb. 21	5.40	6,020								
1954	Jan. 22	5.50	6,230								
1955	Feb. 06	5.30	5,820								

SAVANNAH RIVER BASIN

02184500 WHITEWATER RIVER AT JOCASSEE, S.C.

LOCATION.--Lat 34º58'19", long 82º56'24" referenced to North American Datum of 1927, Oconee County, Hydrologic Unit 03060101, on right bank at highway bridge at Jocassee, 0.8 mi upstream from confluence with Toxaway River.

DRAINAGE AREA.--47.3 mi^2.

GAGE.--Water-stage recorder. Datum of gage is 777.79 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 1,540 ft^3/s and extended on the basis of indirect computations of peak flow using the width contraction method.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1952	Mar. 11	11.17	5,280	1958	Dec. 20	---	2,410	1964	Sept. 29	12.48	5,990
1953	Feb. 21	6.53	2,820	1959	May 31	---	1,990	1965	Oct. 4	14.30	6,900
1954	Jan. 22	6.38	2,730	1960	Oct. 9	---	2,340	1966	Oct. 1	11.20	5,350
1955	Feb. 6	---	2,260	1961	Feb. 25	6.65	2,890	1967	June 4	9.76	4,630
1956	Apr. 15	5.10	1,950	1962	Dec. 12	7.00	3,100				
1957	Apr. 4	6.31	2,710	1963	Mar. 6	5.78	2,370				

SAVANNAH RIVER BASIN

02185000 KEOWEE RIVER NEAR JOCASSEE, S.C.

LOCATION.--Lat 34º57'21", long 82º54'41" referenced to North American Datum of 1927, Oconee County, Hydrologic Unit 03060101, on right bank 0.6 mi downstream from bridge on State Highway 11, 1.8 mi southeast of Jocassee, and 2.6 mi upstream from Eastatoe Creek.

DRAINAGE AREA.--148 mi^2.

GAGE.--Water-stage recorder. Datum of gage is 737.43 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 8,480 ft^3/s and extended on the basis of indirect computations of peak flow using the slope-area method.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1950	Sept. 1	11.46	11,800	1956	Apr. 16	6.74	5,780	1962	Dec. 12	10.45	10,400
1951	Dec. 7	8.29	7,700	1957	Apr. 4	9.03	8,540	1963	Mar. 6	---[a]	6,620
1952	Mar. 11	16.23	16,200	1958	Dec. 20	7.08	6,260	1964	Sept. 29	17.84	17,700
1953	Feb. 21	10.03	9,840	1959	Apr. 12	6.85	5,900	1965	Oct. 4	22.03	21,000
1954	Jan. 22	9.49	9,190	1960	Feb. 5	6.52	5,540	1966	Mar. 13	16.07	16,100
1955	Feb. 6	7.77	7,100	1961	Feb. 25	9.67	9,450	1967	June 4	14.12	14,100

[a] Gage height is not the maximum for the year.

SAVANNAH RIVER BASIN

02185200 LITTLE RIVER NEAR WALHALLA, S.C.

LOCATION.--Lat 34º50'11", long 82º58'48" referenced to North American Datum of 1927, Oconee County, Hydrologic Unit 03060101, at downstream side of bridge on county Road 24, 0.5 mi downstream from Oconee Creek, 3.5 mi south of Salem and 6.5 mi northeast of Walhalla.

DRAINAGE AREA.--72.0 mi^2.

GAGE.--Data collection platform. Datum of gage is 807.63 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 3,060 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1967	June 4	12.29	[1]12,800	1981	Mar. 30	2.96	860	1995	Feb. 16	5.54	3,150
1968	---	6.29	4,400	1982	Feb. 3	6.31	3,750	1996	Jan. 27	8.26	[1]6,290
1969	Aug. 22	5.42	3,340	1983	May 20	4.19	1,750	1997	Dec. 1	6.87	4,510
1970	Nov. 1	3.38	1,260	1984	---	---	---	1998	Jan. 7	7.21	4,910
1971	Jan. 5	3.37	1,260	1985	Aug. 17	5.90	3,400	1999	Feb. 1	3.91	1,530
1972	Dec. 7	5.73	3,300	1986	Nov. 1	6.43	3,980	2000	Nov. 26	4.19	1,760
1973	May 28	11.39	[1]12,300	1987	Nov. 26	7.97	5,890	2001	Jan. 19	2.69	698
1974	Dec. 26	4.56	2,050	1988	Jan. 20	4.08	1,660	2002	Sept. 15	2.77	733
1975	Mar. 14	6.45	4,160	1989	July 3	6.98	4,630	2003	July 2	7.02	4,690
1976	May 29	10.30	[1]10,100	1990	Oct. 1	7.03	4,690	2004	Sept. 8	8.99	7,340
1977	Mar. 30	7.55	5,700	1991	May 28	4.46	1,980	2005	---	---	---
1978	Jan. 25	6.66	4,450	1992	Aug. 22	7.26	4,970	2006	June 27	---	---
1979	June 8	7.39	4,950	1993	Nov. 25	5.05	2,520				
1980	Nov. 2	7.22	4,750	1994	Aug. 17	8.53	[1]6,660				

[1]Flows were determined from a stage-flow relation that exceeds the highest measured flow by greater than 100 percent and therefore, may be unreliable.

SAVANNAH RIVER BASIN

02185500 SENECA RIVER NEAR NEWRY, S.C.

LOCATION.--Lat 34º44'09", long 82º52'19" referenced to North American Datum of 1927, Oconee County, Hydrologic Unit 03060101, on left bank 800 ft downstream from Lawrence Bridge, 0.7 mi upstream from Sixmile Creek, and 2.2 mi east of Newry.

DRAINAGE AREA.--455 mi^2.

GAGE.--Water-stage recorder. Datum of gage is 625.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Some regulation at low flow by a power plant above the station. Stage-flow relations affected by backwater from construction of Hartwell Reservoir subsequent to Apr. 21, 1961.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 19,300 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1940	Aug. 13	24.60	25,200	1948	Aug. 4	19.09	17,500	1955	Feb. 6	---[a]	17,500
1941	July 7	13.27	10,400	1949	Nov. 29	20.54	19,000	1956	Apr. 16	17.32	14,900
1942	Feb. 17	20.28	18,900	1950	Oct. 7	22.69	21,100	1957	Apr. 5	20.32	18,300
1943	Dec. 29	---[a]	17,100	1951	Dec. 7	15.97	13,000	1958	Nov. 19	13.72	10,800
1944	Mar. 20	17.01	14,900	1952	Mar. 11	23.16	22,000	1959	Apr. 12	17.01	14,400
1945	Feb. 22	8.25	5,530	1953	Feb. 21	18.89	16,300	1960	Mar. 30	15.92	13,300
1946	Jan. 7	21.32	20,300	1954	Jan. 22	---[a]	19,700	1961	June 22	20.94	20,200
1947	Jan. 20	16.26	13,900								

[a] Gage height not maximum for year.

SAVANNAH RIVER BASIN

02186000 TWELVEMILE CREEK NEAR LIBERTY, S.C.

LOCATION.--Lat 34º48'05", long 82º44'55" referenced to North American Datum of 1927, Pickens County, Hydrologic Unit 03060101, on left bank 40 ft downstream from bridge on State Road 137, 0.8 mi downstream from Rices Creek, and 3.4 mi west of Liberty.

DRAINAGE AREA.--106 mi^2.

GAGE.--Data collection platform. Datum of gage is 822.18 ft above National Geodetic Vertical Datum of 1929 (levels by Natural Resources Conservation Service). Crest-stage partial-record station from October 2001 to September 2004 at same datum.

REMARKS.--Storm runoff at gage affected by several small flood-detention reservoirs on tributary streams.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 4,640 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1955	Feb. 7	9.60	2,880	1990	Mar. 17	11.37	4,660	2000	Mar. 20	6.67	1,850
1956	Apr. 16	9.37	2,760	1991	May 16	7.98	2,240	2001	Jan. 19	5.60	1,370
1957	Apr. 5	9.80	2,930	1992	Feb. 26	8.20	2,920	2002	Mar. 31	4.60	919
1958	July 9	6.56	1,380	1993	Dec. 17	8.47	3,110	2003	Mar. 20	9.41	3,300
1959	June 1	9.30	2,710	1994	Aug. 17	13.10	6,450	2004	Sept. 8	13.08	6,430
1960	Mar. 31	8.71	2,490	1995	Aug. 27	11.66	5,000	2005	Dec. 10	10.31	3,870
1961	June 22	10.81	4,040	1996	Jan. 27	10.10	3,720	2006	June 27	14.78	8,260
1962	Dec. 12	12.23	5,360	1997	Feb. 28	9.85	3,560				
1963	Mar. 6	11.38	4,680	1998	Jan. 8	13.46	6,800				
1964	Jan. 25	9.59	3,300	1999	Apr. 1	5.68	1,420				

SAVANNAH RIVER BASIN

02186645 CONEROSS CREEK NEAR SENECA, S.C.

LOCATION.-- Lat 34°38'57", long 82°59'30", Oconee County, Hydrologic Unit 03060101, on right bank 30 ft downstream of bridge on County Road 63, and 3.0 miles southwest of Seneca.

DRAINAGE AREA.--65.4 mi^2.

GAGE.—Data collection platform. Elevation of gage is 740 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

STAGE-FLOW RELATION.-- Defined by current-meter measurements below 3,250 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1989	Jul. 04	11.68	1,942	1994	Aug. 17	15.26	3,590	1999	Oct. 08	11.22	1,770
1990	Mar. 17	14.31	3,107	1995	Aug. 27	14.38	3,140	2000	Oct. 11	12.46	2,210
1991	Aug. 12	10.18	1,404	1996	Oct. 05	14.31	3,110	2001	Jan. 19	7.78	743
1992	Aug. 22	12.58	2,310	1997	Feb. 28	11.75	1,970	2002	Sep. 15	10.93	1,600
1993	Apr. 09	12.15	2,130	1998	Jan. 08	14.29	3,100	2003	Mar. 20	14.86	3,370

SAVANNAH RIVER BASIN

02187000 SENECA RIVER NEAR ANDERSON, S.C.

LOCATION.--Lat 34º29'10", long 82º49'45" referenced to North American Datum of 1927, Anderson County, Hydrologic Unit 03060101, on right bank, 0.25 mi downstream from bridge on State Highway 80, 1.9 mi downstream from Deep Creek, 4.2 mi upstream from confluence with Tugaloo River, and 10 mi west of Anderson.

DRAINAGE AREA.--1,030 mi^2.

GAGE.--Water-stage recorder. Elevation of gage is 520 ft. above National Geodetic Vertical Datum of 1929 (from U.S. Army Corps of Engineers profile). May 28, 1928, to January 23, 1929, staff gage and January 24, 1929 to October 12, 1933, water-stage recorder at site 15 ft downstream at same datum.

REMARKS.--During the period of record, there was some regulation at low flow by power plants above station. The site was inundated by Hartwell Lake in 1960. This station was inadvertently not included in the regression analysis.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 18,000 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1928	Aug. 17	25.75	81,100	1939	Aug. 19	15.68	33,300	1950	Oct. 8	13.51	24,300
1929	Mar. 5	14.72	25,900	1940	Aug. 14	18.30	45,600	1951	Oct. 21	10.31	13,900
1930	Oct. 2	13.90	23,100	1941	July 7	10.13	13,300	1952	Mar. 12	15.37	32,000
1931	Nov. 17	8.20	7,800	1942	Feb. 17	15.25	31,100	1953	Feb. 22	13.21	23,200
1932	Dec. 15	12.14	17,500	1943	Dec. 30	12.54	20,800	1954	Jan. 23	13.26	23,600
1933	Oct. 18	17.73	37,600	1944	Mar. 20	13.05	22,600	1955	Feb. 7	11.74	18,400
1934	Mar. 5	12.16	19,800	1945	Mar. 27	8.30	8,850	1956	Apr. 17	11.69	18,000
1935	Jan. 10	12.24	19,800	1946	Jan. 7	17.26	40,600	1957	Apr. 6	12.89	22,200
1936	Apr. 7	19.04	49,200	1947	Jan. 21	11.76	18,400	1958	Nov. 20	9.88	12,800
1937	Oct. 1	20.07	55,200	1948	Aug. 5	10.84	15,300	1959	Apr. 13	11.00	15,300
1938	Oct. 20	14.42	27,900	1949	Nov. 29	15.11	30,700				

SAVANNAH RIVER BASIN

02187910 ROCKY RIVER NEAR STARR, S.C.

LOCATION.-- Lat 34°22′59″, long 82°34′39″ referenced to North American Datum of 1927, Anderson County, SC, Hydrologic Unit 03060103, at downstream side of bridge on State Road 244, 0.5 mi upstream from Beaver Creek, 2.5 mi upstream of Secession Lake, and 6.7 mi east of Starr.

DRAINAGE AREA.--111 mi^2.

GAGE.— Data collection platform. Elevation of gage is 570 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

STAGE-FLOW RELATION.-- Defined by current-meter measurements below 4,350 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1989	Jun. 21	7.03	537	1995	Aug. 28	16.63	5,100	2002	Jan. 26	10.22	1,120
1990	Mar. 18	15.55	4,040	1997	Feb. 28	11.40	1,520	2003	Mar. 21	13.51	2,530
1991	Aug. 12	11.53	1,590	1998	Apr. 18	17.70	6,260	2004	Sep. 27	16.61	5,080
1992	Sep. 06	10.86	1,260	1999	Apr. 01	9.52	949	2005	Mar. 28	12.90	2,220
1993	Dec. 17	14.18	2,93	2000	Mar. 21	12.29	1,930	2006	Jun. 27	9.76	1,000
1994	Aug. 17	13.33	2,350	2001	Mar. 16	7.94	634				

SAVANNAH RIVER BASIN

02192500 LITTLE RIVER NEAR MOUNT CARMEL, S.C.

LOCATION.--Lat 34º04'17", long 82º30'03" referenced to North American Datum of 1927, McCormick County, Hydraulic Unit 03060103, on downstream side of bridge, on State Road 40 (Island Ford Road), 2.9 mi upstream from Calhoun Creek, and 4.6 mi north of Mount Carmel.

DRAINAGE AREA.--217 mi^2.

GAGE.--Data collection platform. Datum of gage is 355.03 ft above National Geodetic Vertical Datum of 1929. December 1939 to October 16, 1987, at site 850 ft downstream at datum 1.06 ft lower.

REMARKS.--Revised Record: WSP 1433: 1948.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 12,300 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1940	Aug. 14	29.60	20,800	1963	Apr. 30	15.84	4,410	1986	---	---	---
1941	July 17	22.23	9,020	1964	Mar. 27	23.11	10,000	1987	Mar. 1	16.89	5,010
1942	Mar. 22	19.18	6,400	1965	Mar. 25	19.76	6,800	1988	Jan. 20	4.48	390
1943	Jan. 19	20.37	7,310	1966	Mar. 5	18.96	6,230	1989	July 17	18.39	5,880
1944	Mar. 20	20.90	8,020	1967	Aug. 25	11.79	2,390	1990	Oct. 2	20.97	7,810
1945	Apr. 26	16.88	5,020	1968	Jan. 11	16.70	4,900	1991	Aug. 13	16.18	4,590
1946	Dec. 25	13.00	3,210	1969	Jan. 21	19.61	6,690	1992	Mar. 7	13.29	3,260
1947	Jan. 20	17.35	5,300	1970	Mar. 22	10.63	1,950	1993	Mar. 4	16.08	4,540
1948	Nov. 11	12.81	3,130	1971	Mar. 3	22.64	9,500	1994	June 29	19.33	6,500
1949	Nov. 29	22.55	9,350	1972	Jan. 11	18.99	6,260	1995	Aug. 27	26.46	14,800
1950	July 25	8.74	1,760	1973	Apr. 1	23.60	10,600	1996	Mar. 7	20.00	6,990
1951	Apr. 2	7.55	1,440	1974	Jan. 10	14.62	3,760	1997	Mar. 1	17.47	5,300
1952	Mar. 4	19.47	6,610	1975	Mar. 13	22.86	9,750	1998	Feb. 5	20.74	7,610
1953	May 1	12.68	2,970	1976	Mar. 17	17.58	5,390	1999	Feb. 1	10.72	2,310
1954	Jan. 17	13.93	3,490	1977	Oct. 9	13.01	2,960	2000	Mar. 20	12.95	3,130
1955	Feb. 7	15.64	4,310	1978	Oct. 26	16.51	4,800	2001	Mar. 30	12.28	2,860
1956	Mar. 17	14.34	3,450	1979	Apr. 13	18.25	5,790	2002	Feb. 7	7.68	1,410
1957	Apr. 5	9.23	1,900	1980	---	---	---	2003	Mar. 7	18.83	6,150
1958	Nov. 19	18.20	5,760	1981	Oct. 1	12.50	2,700	2004	Sept. 8	16.40	4,700

1959	Sept. 7	17.57	5,400	1982	Jan. 4	15.68	4,740	2005	June 2	13.81	3,470
1960	Jan. 31	15.60	4,300	1983	---	---	---	2006	Dec. 5	5.99	957
1961	Mar. 9	14.92	3,970	1984	Jan. 11	15.50	4,240				
1962	Feb. 23	15.86	4,580	1985	Feb. 6	12.51	2,710				

SAVANNAH RIVER BASIN

02196000 STEVENS CREEK NEAR MODOC, S.C.

LOCATION.--Lat 33º43'45", long 82º10'55" referenced to North American Datum of 1927, Edgefield County, Hydrologic Unit 03060107, on left bank 15 ft upstream from bridge on State Highway 23, 1.4 mi east of Modoc, and 3.2 mi downstream from Turkey Creek.

DRAINAGE AREA.--545 mi^2 (from topographic and highway planning survey maps).

GAGE.--Data collection platform. Datum of gage is 196.34 ft above National Geodetic Vertical Datum of 1929 (levels by Southeastern Power Administration). Prior to September 6, 1999, present site at datum 1.00 ft higher. October 15, 1929, to Sept. 30, 1931, nonrecording gage at site 1,100 ft upstream at different datum.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 26,200 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1931	Apr. 1	---	5,550[b]	1960	Jan. 31	29.07	16,100	1986	Oct. 4	21.41	7,950
1940	Aug. 14	41.08	35,100	1961	Feb. 25	31.26	19,000	1987	Jan. 23	24.25	10,400
1941	June 25	---[a]	6,000	1962	Jan. 7	32.57	20,900	1988	Sept. 9	15.93	4,760
1942	Mar. 22	29.64	16,800	1963	Mar. 13	23.44	10,100	1989	Mar. 24	25.54	11,600
1943	Jan. 19	---[a]	18,700	1964	Aug. 31	38.89	30,900	1990	Feb. 19	23.32	9,540
1944	Mar. 21	35.88	26,200	1965	Dec. 27	32.90	20,700	1991	Oct. 12	37.50	27,800
1945	Apr. 25	20.10	7,220	1966	Mar. 5	27.13	13,200	1992	Mar. 7	23.53	9,720
1946	Dec. 26	25.27	11,800	1967	May 23	20.28	7,020	1993	Nov. 27	28.45	14,700
1947	Mar. 8	24.41	11,000	1968	Jan. 11	28.15	14,400	1994	June 28	30.49	17,300
1948	Feb. 10	27.36	14,200	1969	Apr. 16	34.25	22,700	1995	Jan. 15	25.76	11,800
1949	Nov. 29	30.27	17,700	1970	Mar. 22	24.66	10,800	1996	Mar. 8	26.66	12,700
1950	Mar. 7	14.50	4,060	1971	Mar. 3	32.47	20,100	1997	Feb. 15	24.41	10,500
1951	Apr. 3	19.66	6,760	1972	Jan. 12	27.07	13,200	1998	Mar. 9	30.92	17,900
1952	Mar. 5	30.59	18,200	1973	Apr. 1	27.92	14,100	1999	Feb. 2	20.98	7,640
1953	Feb. 15	21.51	8,360	1974	Apr. 5	27.28	13,400	2000	Jan. 25	21.67	7,420
1954	Jan. 16	14.47	4,110	1975	Mar. 3	30.16	16,900	2001	Mar. 15	20.36	6,570
1955	Apr. 15	24.75	11,300	1976	Mar. 17	25.97	12,100	2002	Sept. 18	16.03	4,390
1956	Apr. 12	22.74	9,430	1977	Oct. 9	30.87	17,800	2003	Mar. 21	31.00	16,700
1957	May 5	20.32	7,330	1978	May 9	25.94	12,000	2004	Sept. 28	13.28	3,370
1958	Apr. 16	28.87	15,900	1984	Jan. 11	24.18	10,300	2005	Mar. 28	22.29	7,860

1959	Mar. 6	20.60	7,600	1985	Feb. 6	26.31	12,400	2006	Feb. 26	12.32	3,070

[a] Gage height not maximum for year.

[b] Flow is a historic peak.

SAVANNAH RIVER BASIN

02196250 HORN CREEK NEAR COLLIERS, S.C.

LOCATION.--Lat 33º42'55", long 81º56'23" referenced to North American Datum of 1927, Edgefield County, Hydrologic Unit 03060107, on State Road 76 bridge, 5.1 mi south of Edgefield and 3.5 mi northeast of Ropers Crossroads.

DRAINAGE AREA.--13.9 mi^2.

GAGE.--Water-stage recorder. Elevation of gage is 320 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

STAGE-FLOW RELATION.--Defined by current-meter measurements below 760 ft^3/s and graphically extended on the basis of step-backwater computations.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1981	Feb. 11	7.51	521	1986	Oct. 2	15.29	3,680	1991	Oct. 12	14.80	2,900
1982	Dec. 31	10.83	945	1987	Jan. 19	8.64	663	1992	Aug. 22	7.45	514
1983	Apr. 8	13.37	1,440	1988	Feb. 4	4.31	144	1993	Jan. 8	8.62	661
1984	Feb. 13	10.49	905	1989	Mar. 20	5.60	234	1994	Oct. 30	6.82	438
1985	Feb. 5	7.80	556	1990	Dec. 8	5.38	272				

SAVANNAH RIVER BASIN

02196689 LITTLE HORSE CREEK NEAR GRANITEVILLE, S.C.

LOCATION.-- Lat 33°33′49″, long 81°52′27″ referenced to North American Datum of 1927, Aiken County, SC, Hydrologic Unit 03060106, on County Road 104, 0.5 mi downstream from Hightower Creek, 1.0 mi upstream of Sudlow Lake, and 3.8 mi west of Graniteville.

DRAINAGE AREA.—26.6 mi^2.

GAGE.— Crest-stage gage. Gage datum is 210 ft above National Geodetic Vertical Datum of 1929.

STAGE-FLOW RELATION.-- Defined by current-meter measurements below 617 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1990	May 05	3.99	179	1995	Oct. 10	4.00	180	2004	Oct. 29	3.11	184
1991	Oct. 12	6.48	593	1996	Mar. 07	6.22	505	2005	Mar. 28	4.56	3512
1992	Aug. 14	3.58	151	1997	Jan. 09	3.03	108	2006	Jun. 02	2.84	154
1993	Jan. 08	4.46	221	1998	Mar. 08	4.70	243				
1994	Oct. 30	3.50	145	1999	Feb. 01	2.91	119				

SAVANNAH RIVER BASIN

02197300 UPPER THREE RUNS NEAR NEW ELLENTON, S.C.

LOCATION.--Lat 33º23'05", long 81º37'00" referenced to North American Datum of 1927, Aiken County, Hydrologic Unit 03060106, on downstream side of bridge on U.S. Highway 278, 0.4 mi upstream from Johnson Fork Creek, and 4.6 mi southeast of New Ellenton.

DRAINAGE AREA.--87.0 mi^2.

GAGE.--Water-stage recorder. Datum of gage is 174.70 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1989 to Dec. 23, 1996, at site 1.0 mi downstream at different datum.

REMARKS.—Log-Pearson Type III analysis done using station skew. Station not included in the regional regression.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 411 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1967	Aug. 24	---	320	1979	Apr. 26	7.36	341	1991	Oct. 23	8.80	820
1968	June 9	6.07	237	1980	Mar. 13	7.77	400	1992	Aug. 20	8.67	742
1969	Sept. 19	6.91	301	1981	Feb. 11	7.10	308	1993	Jan. 8	7.95	421
1970	Mar. 30	6.83	303	1982	Jan. 1	7.57	364	1994	Oct. 30	7.44	302
1971	Aug. 17	8.00	420	1983	Mar. 6	7.32	331	1995	Aug. 26	7.92	412
1972	Aug. 17	7.52	372	1984	May 4	8.13	466	1996	Sept. 11	7.07	240
1973	June 13	8.37	472	1985	Feb. 6	7.75	400	1997	Feb. 15	7.17	242
1974	Feb. 7	6.60	260	1986	Nov. 22	7.50	360	1998	Sept. 3	8.50	596
1975	July 15	7.34	341	1987	Mar. 1	7.60	370	1999	Jan. 24	7.33	252
1976	May 29	7.96	429	1988	Sept. 9	6.86	278	2000	Sept. 23	7.54	291
1977	Mar. 22	7.07	304	1989	July 5	7.21	301	2001	May 29	7.56	296
1978	Jan. 25	7.38	344	1990	July 26	6.79	202	2002	Feb. 7	6.53	164

SAVANNAH RIVER BASIN

02197310 UPPER THREE RUNS ABOVE ROAD C AT SAVANNAH RIVER PLANT, S.C.

LOCATION.--Lat 33º17'08", long 81º41'40" referenced to North American Datum of 1927, Aiken County, Hydrologic Unit 03060106, on right bank, 100 ft upstream of Savannah River Site (SRS) Road C, 2.0 mi east of SRS Road 2, at Savannah River Site, 6 mi southeast of New Ellenton.

DRAINAGE AREA.--176 mi^2.

GAGE.--Data collection platform. Datum of gage is 121.5 ft above National Geodetic Vertical Datum of 1929 (Global Positioning System).

REMARKS.-- Log-Pearson Type III analysis done using station skew. Station not included in the regional regression.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 1,900 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1975	July 16	5.74	700	1985	Feb. 6	6.25	962	1995	Feb. 18	6.78	1,240
1976	May 29	6.47	1,010	1986	June 11	5.96	802	1996	Mar. 7	5.94	519
1977	Mar. 23	5.51	613	1987	Mar. 1	6.12	891	1997	Feb. 15	6.20	565
1978	Jan. 26	6.04	850	1988	Sept. 10	4.98	460	1998	---	---	---
1979	Feb. 25	6.21	950	1989	Apr. 11	5.51	613	1999	---	---	---
1980	Mar. 13	6.10	880	1990	Aug. 22	6.08	869	2000	Sept. 23	6.05	539
1981	June 8	5.42	582	1991	Oct. 12	7.87	2,040	2001	July 4	5.68	473
1982	Jan. 1	5.73	696	1992	Aug. 21	6.47	1,010	2002	Feb. 8	5.13	381
1983	Mar. 7	5.59	641	1993	Jan. 8	6.81	1,280				
1984	May 5	6.08	840	1994	Mar. 3	5.97	826				

SAVANNAH RIVER BASIN

02197315 UPPER THREE RUNS AT ROAD A AT SAVANNAH RIVER PLANT, S.C.

LOCATION.--Lat 33º14'20", long 81º44'42" referenced to North American Datum of 1927, Aiken County, Hydrologic Unit 03060106, near right bank, on downstream side of bridge at Savannah River Site Road A, 2.0 mi south of Savannah River Site Road 2, at Savannah River Site.

DRAINAGE AREA.--203 mi^2.

GAGE.--Data collection platform. Elevation of gage is 90 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

REMARKS.--Data affected by backwater from the Savannah River. No log-Pearson Type III analysis done.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 1,000 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1975	July 16	5.74	626	1985	Feb. 7	6.09	893	1995	Feb. 18	6.35	1,010
1976	May 29	6.76	1,230	1986	Nov. 23	5.80	780	1996	Mar. 8	5.27	638
1977	Mar. 23	5.62	717	1987	Mar. 1	6.03	869	1997	Feb. 15	5.58	709
[1]1978	---	---	---	1988	Sept. 11	4.49	428	1998	Mar. 9	6.33	1,200
1979	Feb. 25	6.33	730	1989	Apr. 11	5.23	592	1999	Jan. 25	5.38	717
1980	Mar. 14	6.23	951	1990	Aug. 22	5.15	572	2000	Sept. 23	5.17	645
1981	Feb. 12	5.33	620	1991	Oct. 12	7.89	---	2001	July 5	4.54	460
1982	Jan. 2	5.83	793	1992	Aug. 14	6.17	926	2002	Feb. 8	4.31	394
1983	Apr. 11	6.36	1,010	1993	Jan. 9	6.50	---				
1984	May 5	6.01	861	1994	Mar. 3	5.48	667				

[1]No record for period of Jan. 10, 1978 to Oct. 26, 1978 because gage was removed for construction of new bridge.

SAVANNAH RIVER BASIN

02197410 MILLER CREEK TRIBUTARY NEAR BALDOC, S.C.

LOCATION.--Lat 33º04'08", long 81º24'26" referenced to North American Datum of 1927, Allendale County, Hydrologic Unit 03060106, on State Highway 125, 0.6 mi upstream from Miller Creek, and 1.1 mi southeast of Baldoc.

DRAINAGE AREA.--7.82 mi^2.

GAGE.--Crest-stage partial-record station.

STAGE-FLOW RELATION.--Defined by indirect measurement of peak flow.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1977	Mar. 20	4.55	300	1986	Dec. 13	5.40	540	1995	Oct. 14	4.02	185
1978	Jan. 25	4.75	337	1987	Mar. 1	4.08	215	1996	---	---	---
1979	Sept. 5	5.84	548	1988	Sept. 9	4.29	270	1997	---	---	---
1980	Mar. 13	6.05	590	1989	Oct. 8	4.69	326	1998	Mar. 10	5.19	404
1981	Apr. 1	3.74	156	1990	Oct. 7	4.22	312	1999	---	---	---
1982	Jan. 1	4.16	229	1991	Aug. 4	5.52	485	2000	---	---	---
1983	Feb. 17	3.87	178	1992	Apr. 23	4.12	165	2001	Mar. 18	3.82	---
1984	Aug. 20	4.31	256	1993	Oct. 11	6.19	617				
1985	May 23	3.88	180	1994	Mar. 5	3.63	144				

Appendix B

Development of Generalized Skew Coefficient

By Andrea M. Gruber and Dr. Jery R. Stedinger, Cornell University, Ithaca, New York

Tasker and Stedinger (1986) developed a weighted least-squares (WLS) procedure for estimating generalized skew coefficients based on sample skew coefficients corresponding to the logarithms of peak-flow data. They illustrated how a regional analysis of skewness estimators must take into account the precision of the skewness estimator for each gaged station, which depends on the length of record for each station. More recently, Reis and others (2005) and Gruber and others (2007) developed a Bayesian generalized least-squares (GLS) regression model. While WLS regression accounts for the precision of the regional model and the effect of record length on the variance of skewness estimators, GLS regression also considers the cross-correlation of the skewness estimators, which is an important distinction. The new Bayesian GLS regression procedures have other advantages, including a description of the precision of the estimated model error variance, a pseudo-analysis of variance, and better diagnostic statistics.

The basic GLS model for generalized skew when k explanatory variables are included is as follows:

$$g = X\beta + \varepsilon, \qquad \text{(B1)}$$

where

- g is a (n x 1) vector of the estimated station skew coefficients for every station,
- X is a (n x m) matrix of k basin characteristics with a column of ones corresponding to a constant in the model, $m = k+1$,
- β is a (m x 1) vector of model coefficients, and
- ε is the (n x 1) vector of model and sampling errors where $E[\varepsilon] = 0$ and Λ is the covariance matrix $E[\varepsilon \varepsilon^T]$.

Following Reis and others (2005), the matrix Λ can be written as $\sigma_\delta^2 I + \Sigma(g)$ wherein σ_δ^2 is the model error variance describing the precision with which the proposed model $X\beta$ can predict the true skews, which are denoted γ_i, and the matrix $\Sigma(g)$ contains the sampling variances and covariances of the skewness estimators g_i. The GLS estimator of β is:

$$\hat{\beta} = \left(X^T \Lambda^{-1} X\right)^{-1} X^T \Lambda^{-1} g. \qquad \text{(B2)}$$

One wants to find a model with a small value of σ_δ^2, where the value of $\Sigma(g)$ is determined by the length of record at each gaged station and the cross-correlation of the concurrent flows.

A critical step in GLS analysis is estimation of the cross correlation of the skewness estimators g_i. Martins and Stedinger (2002) used Monte Carlo experiments to derive a relation between the cross-correlation of the skew-coefficient estimators at two stations i and j as a function of the cross-correlation of concurrent annual maximum flows, ρ_{ij}:

$$\hat{\rho}\left(g_i, g_j\right) = Sign\left(\rho_{ij}\right) cf_{ij} \left|\rho_{ij}\right|^{\kappa}, \qquad \text{(B3)}$$

where

- $\rho(g_i, g_j)$ is the cross-correlation of the skew-coefficient estimators at two stations i and j,
- g_i and g_j are the station skew coefficients for sites i and j,
- ρ_{ij} is the cross-correlation of concurrent annual maximum flows for two gaged stations,

  $$cf_{ij} = n_{ij} / \sqrt{\left(n_{ij} + n_i\right)\left(n_{ij} + n_j\right)},$$
- n_{ij} is the length of the period of concurrent record,
- n_i and n_j are the numbers of non-concurrent observations corresponding to sites i and j, respectively, and
- κ is a constant between 2.8 and 3.3.

The factor cf_{ij} accounts for the sample-size difference between stations and the concurrent record lengths.

Data Compilation

The annual peak-flow data from 489 gaged stations compiled for this Bayesian GLS regression study of generalized skew are located in seven States in the southeastern United States. As shown in table B1, most stations are in Georgia, North Carolina, and South Carolina. The locations of the streamgages employed in the study are shown in figure B1. Symbols indicate to which of nine U.S. Environmental

Protection Agency (USEPA) ecoregions each gage was assigned: Blue Ridge, Central Appalachians, Middle Atlantic Coastal Plain, Piedmont, Ridge and Valley, Sand Hills, South-eastern Plains, Southern Coastal Plain, and South-western Appalachians (U.S. Environmental Protection Agency, 2007).

Table B1. Number of streamgaging stations, by State, used in the study.

State	Number of gaged stations
Alabama	25
Florida	19
Georgia	169
North Carolina	127
South Carolina	38
Tennessee	64
Virginia	47

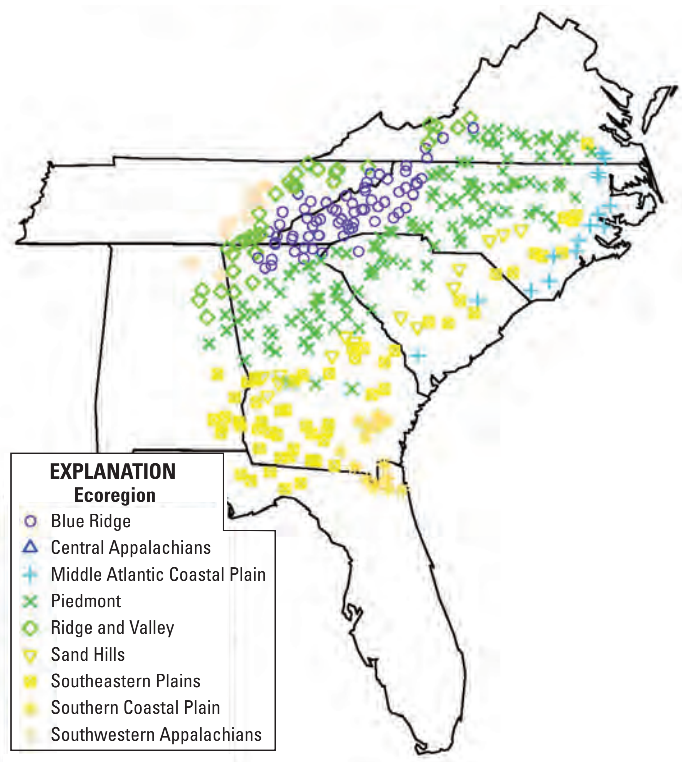


Figure B1. Locations of streamgaging stations used in the generalized skew study (courtesy of Timothy A. Cohn, U.S. Geological Survey, Office of Surface Water).

The following 20 basin characteristics were computed for the stations and considered in the current study: drainage area, basin perimeter, mean basin slope, basin shape factor, main channel length, main channel slope, minimum basin elevation, maximum basin elevation, mean basin elevation, percentage of basin that is impervious, percentage of basin that is forested, mean annual precipitation, 2-year 24-hour precipitation, 10-year 24-hour precipitation, 25-year 24-hour precipitation, 50-year 24-hour precipitation, 100-year 24-hour precipitation, soil drainage index, hydrologic soil index, and drainage density.

Analysis of pairs of gaged stations with concurrent records greater than 30 years revealed many station pairs with very large cross-correlations. Cross-correlations at 13 pairs of stations were in excess of 0.98. Among 489 stations, 38 pairs had 30 concurrent years of flows and a sample correlation greater than 0.95. These results indicate a physical redundancy. A normalized distance *ND* was defined to be (B4)

$$ND = \frac{D_{ij}}{\left[A_i A_j\right]^{1/4}},$$

where

D_{ij} is the distance between centroids of basin *i* and basin *j*, and

A_i and A_j are the drainage areas for basin *i* and basin *j*.

The fourth root is required to make *ND* dimensionless. The drainage area ratio (*DAR*) is

$$DAR = Max\left[\frac{A_i}{A_j}, \frac{A_j}{A_i}\right]. \quad \text{(B5)}$$

Simple examples indicate that station pairs with *ND* less than (<) 0.5 and *DAR* <5 are likely to be physically nested, and observed cross-correlations are consistent with this hypothesis. A screening analysis of all 489 gaged stations flagged station pairs with *ND* <0.5 and *DAR* <5 as redundant pair stations. If the station with the smaller drainage area had 30 years or more of record, the station with the larger drainage area was removed from the analysis. Similarly, if the smaller station had less than 30 years of record and the record length of the smaller station was greater than the record length of the larger station by 5 or more years, the station with the larger drainage area was removed from the analysis. Otherwise, the station with the smaller drainage area was removed.

Of the 489 gaged stations, 92 stations were removed from the analysis because of redundancy. In addition, 59 stations had censored data (observations recorded at less than a recording threshold), so these stations were not used in the analysis. Thus, in addition to the 92 redundant stations removed from the study, some of which also had censored data, 55 stations were removed because they contained censored data, leaving a total of 342 stations that were used in the generalized skew coefficient study.

Cross Correlation of Concurrent Flows

As stated in Bulletin 17B (Interagency Advisory Committee on Water Data, 1982), the log-Pearson Type III distribution is recommended to define annual flood series. This distribution is characterized by three parameters—the mean, the standard deviation, and the skew. Reis and others (2005) illustrate how regional regression models can be developed for generalized skew estimators that can be used in conjunction with station skews to produce a weighted skew estimator as noted in Bulletin 17B. The GLS regression framework requires that the correlations among skew estimators be specified to reflect the sampling characteristics of the estimators. As noted above, Martins and Stedinger (2002) provided approximations for the cross-correlation of the skewness estimators as a function of the cross-correlation of concurrent annual peak flows used to compute the skewness coefficients and characteristics of the record lengths.

A relation was derived between the cross-correlation of the concurrent annual peak flows ρ_{ij} and covariates, including the distance between the centroids D_{ij} of two basins. A number of different functional forms were explored using these different covariates. The adopted model for the cross-correlations of concurrent annual peak flows at two stations as a function of the distance between the centroids is

$$\rho_{ij} = \frac{\exp\left(2Z_{ij}\right)-1}{\exp\left(2Z_{ij}\right)+1}, \qquad \text{(B6)}$$

where

$$Z_{ij} = 0.136 + \exp\left(0.290 - 0.042 D_{ij}^{0.609}\right).$$

Based on 1,317 station pairs with at least 70 concurrent years of record, a regression analysis indicated that this model is as accurate as having 150 years of concurrent annual peak flows to estimate a cross-correlation. For the current study, the distance between centroids of the drainage basins is used instead of the distance between gaged stations, which generally has been employed in other studies. The distance between the centroids is thought to be a better measure of separation.

Bayesian GLS Regression

After identifying and screening redundant gaged stations and developing a model of the cross-correlations of annual peak flows, Bayesian GLS regression was used on the remaining 342 gaged stations to identify the best regional estimators of the generalized skew coefficients. The results for the three best Bayesian GLS skew regression models and the constant Bayesian GLS skew regression model for the 342 stations are listed in table B2. Model B-GLS C is the constant model; model B-GLS 1 includes a constant and an indicator for the Blue Ridge ecoregion; model B-GLS 2 includes a constant and an indicator for the Middle Atlantic Coastal Plain eco-region; and model B-GLS 3 includes a constant and an indicator for both the Blue Ridge and Middle Atlantic Coastal Plain ecoregions.

Table B2. Summary statistics for the Bayesian GLS models for generalized skew coefficient.

[σ_δ^2, model error variance; *ASV*, average sampling variance; AVP_{new}, average variance of prediction for a new site; pseudo R^2, coefficient of determination appropriate for generalized least-squares regression; standard errors and Bayesian p-values, in percent (%), are in parentheses; —, not applicable]

Model	Coefficients			σ_δ^2	*ASV*	AVP_{new}	Pseudo R^2
	Constant	Blue Ridge ecoregion	Middle Atlantic Coastal Plain ecoregion				
B-GLS C	–0.019 (0.063)	—	—	0.139 (0.021)	0.004	0.143	0.0%
B-GLS 1	0.003 (0.063)	0.003 (0.001) (0.6%)	—	0.134 (0.021)	0.006	0.140	3.3%
B-GLS 2	–0.021 (0.063)	—	0.005 (0.002) (0.3%)	0.134 (0.021)	0.005	0.139	3.6%
B-GLS 3	0.003 (0.063)	0.003 (0.001) (0.3%)	0.005 (0.002) (0.2%)	0.129 (0.034)	0.007	0.136	6.9%

None of the available explanatory variables was of much value in explaining the variation of skew from site to site. The indicators for the Blue Ridge and Middle Atlantic Coastal Plain had only marginal values, with a pseudo R^2 together of only 6.9 percent. The pseudo R^2 values describe the fraction of the variability in the true skews explained by each model (Gruber and others, 2007). A constant model does not explain any variability so the pseudo R^2 is equal to 0.0 percent. Analysis of the spatial pattern of the sample skews did not reveal any pattern that appeared to be statistically significant. Figure B2 displays the data in a way that would allow one to see the relations between the sample skew estimators, physiographic province, and drainage area. No relations are evident, which reaffirms the conclusions of the statistical analysis.

The generalized skew model recommended by the current study is the constant model with a generalized skew coefficient equal to –0.019 and corresponding mean square error (MSE) of prediction that is equal to 0.143. Because the generalized skew regression model is constant, the variance of prediction also is constant.

As shown in table B2, the posterior mean of the model error variance, σ_δ^2, for the constant model is 0.139 with a standard error of 0.021. This standard error of the model error variance is much smaller than those obtained in previous Bayesian GLS studies because of the large number of stations used in the current study. The constant model has an average variance of prediction (AVP) at a new station equal to 0.143. Setting this AVP equal to the mean square error of a biased sample skewness estimator yields an effective record length (ERL) of about 39 years. The AVP corresponds to the MSE given in Bulletin 17B to describe the precision of the generalized skew. The low AVP is a substantial improvement over the skew map value with a MSE of 0.302 in Bulletin 17B (Interagency Advisory Committee on Water Data, 1982) and a corresponding effective record length of 17 years.

The use of B-GLS is important. A sensitivity analysis revealed that Bayesian weighted least-squares (B-WLS) would have overestimated the precision (sampling error variance) of the estimated constant skew by a factor of 5.4. Thus, to neglect the cross-correlation of the skewness estimators would have resulted in a major distortion in the estimated precision of the overall average skew and the differences among ecoregions. On average, the variance of the sample station skewness estimators (g) was more than twice as large as the variance (σ_δ^2) of the regional model errors.

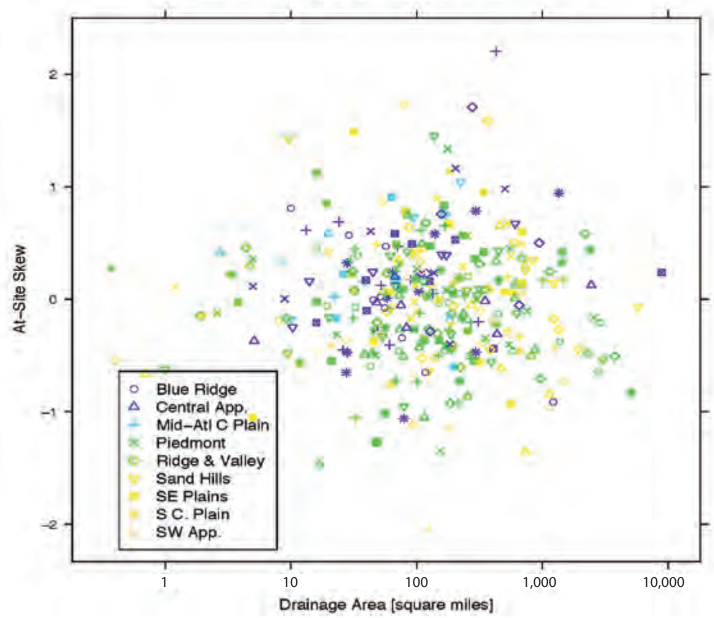


Figure B2. Relation of station skews to basin drainage area by U.S. Environmental Protection Agency ecoregion (courtesy of Timothy A. Cohn, U.S. Geological Survey, Office of Surface Water).

Conclusions

Based on a Bayesian generalized least-squares analysis of the selected 342 stations, a constant generalized skew was selected for the Southeast described by the following equation:

$$\hat{\gamma} = -0.019 \quad \text{(B7)}$$

with a MSE of 0.143. More complicated models were evaluated but resulted in very modest improvements in accuracy. Thus, the more complicated models did not seem justified in view of the increased complexity. The constant model with a MSE of 0.143 is a definite improvement when compared with the Bulletin 17B skew map which reported a MSE of 0.302. Much of the difference occurs because the GLS analysis correctly reflects the difference between the sampling error in station skew coefficient estimators and the precision of the regional model (Hardison, 1971; Stedinger and Tasker, 1985; and Tasker and Stedinger, 1986).

References

Gruber, A.M., Dirceu, S.R., Jr., and Stedinger, J.R., 2007, Models of regional skew based on Bayesian GLS regression, Paper 40927-3285, *in* Kabbes, K.C., ed., World Environmental and Water Resources Congress 2007—Restoring our natural habitat, Proceedings, May 15–18, 2007, Tampa, FL: Portland, OR, Book News, Inc.

Hardison, C.H., 1971, Prediction error of regression estimates of streamflow characteristics at ungaged sites: U.S. Geological Survey Professional Paper 750–C, p. 228–236.

Interagency Advisory Committee on Water Data, 1982, Guidelines for determining flood flow frequency, Bulletin 17B of the Hydrology Subcommittee, U.S. Geological Survey, Office of Water Data Coordination, 28 p., 14 app., 1 pl.

Martins, E.S., and Stedinger, J.R., 2002, Cross-correlation among estimators of shape: Water Resources Research, v. 38, no. 11.

Reis, D.S., Jr., Stedinger, J.R., and Martins, E.S., 2005, Bayesian generalized least squares regression with application to log Pearson type 3 regional skew estimation: Water Resources Research, v. 41, W10419.

Stedinger, J.R., and Tasker, G.D., 1985, Regional hydrologic analysis 1. Ordinary, weighted, and generalized least squares compared: Water Resources Research, v. 21, no. 9, p. 1421–1432 [with correction, in Stedinger and Tasker, 1986, Water Resources Research, v. 22, no. 5, p. 844].

Stedinger, J.R., and Tasker, G.D., 1986, Regional hydrologic analysis, 2—Model-error estimators, estimation of sigma and log-Pearson Type 3 distributions: Water Resources Research, v. 22, no. 10, p. 1487–1499.

Tasker, G.D., and Stedinger, J.R., 1986, Estimating generalized skew with weighted least squares regression: Journal of Water Resources Planning and Management, v. 112, no. 2, p. 225–237.

U.S. Environmental Protection Agency, 2007, Ecoregions of the United States; accessed July 24, 2008, at http://www.epa.gov/wed/pages/ecoregions.htm.

Appendix C

Water-year peak-flow and stage data at selected gaging stations in South Carolina on regulated streams through 2006

The following tables contain peak-flow data for streamflow gaging stations in South Carolina. The tables contain a brief description of the gage location, type of gage, gage datum (if known), drainage area in square miles, period of record, extreme flows of record, a description of how the stage-flow relation was obtained, historical data, hydrologic unit number[1], and explanatory remarks where appropiate.

The tables of peak stages, peak flows, and date of peaks show only the water-year maximums. Underlined data in these tables signify the following:

1. An underlined entry in the "Water year" column indicates discontinuous record.
2. An underlined entry in the "Gage height" column indicates a change in gage datum and means that the gage heights above and below the line are not comparable.
3. Underlined entries in the "Date" and "Flow" columns indicate a change in the site location that significantly affects the stage-Flow relation.

Abbreviations and acronyms:

lat	latitude
º	degrees
'	minutes
"	seconds
long	longitude
ft	feet
mi	mile
mi^2	square miles
ft^3/s	cubic feet per second
---	data not available
a	peak stage occurred at a different time than the peak flow
b	historic peak
WSP	water-supply paper

Water year is the 12-month period beginning October 1 and ending on September 30 of any given year, and designated by the calendar year in which the water year ends. For example, October 1, 2005, to September 30, 2006, is the 2006 water year.

Reference

Eidson, J.P., Lacy, C.M., Nance, Luke, Hansen, W.F., Lowery, M.A., and Hurley, N.M., Jr., 2005, Development of a 10- and 12-digit hydrologic unit code numbering system for South Carolina, 2005: U.S. Department of Agriculture, Natural Resources Conservation Service, 38 p. + 1 pl.

[1] The hydrologic unit number is determined from a set of maps developed by the U.S. Geological Survey that depict the approved boundaries of river-basin units of the United States and documented by Eidson and others (2005). These maps and associated codes provide a standardized base for use by water-resources orga nizations in locating, storing, retrieving, and exchanging hydrologic data; indexing and inventorying of hydrologic data and information; cataloging of water-data acquisition activities; and a variety of other applications.

PEE DEE RIVER BASIN

02130500 JUNIPER CREEK NEAR CHERAW, S.C.

LOCATION.--Lat 34º39'00", long 79º54'00" referenced to North American Datum of 1927, Chesterfield County, Hydrologic Unit 03040201, at left end of Eureka Lake Dam, 1.5 mi upstream from mouth and 3.5 mi south of Cheraw.

DRAINAGE AREA.--64 mi^2, approximately.

GAGE. -- Recording. Elevation of gage is 90 ft above National Geodetic Vertical Datum of 1929 (from Corps of Engineers maps.)

STAGE-FLOW RELATION -- Defined by current-meter measurements below 810 ft^3/s and graphically extended on logarithmic plotting paper and using a computation of flow over dam at 3,910 ft^3/s.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1941	July 15	1.33	395	1947	Oct. 10	1.32	369	1953	June 9	2.30	880
1942	Aug. 20	1.22	332	1948	Feb. 15	1.41	430	1954	Dec. 15	1.20	316
1943	Jan. 20	1.12	295	1949	May 2	1.50	459	1955	Oct. 17	1.01	235
1944	Mar. 22	1.10	286	1950	Nov. 3	1.00	224	1956	Sept. 15	--	360
1945	Sept. 18	5.71	3,910	1951	Sept. 8	1.34	392	1957	Sept. 12	1.20	316
1946	May 5	1.30	410	1952	Sept. 1	2.05	778	1958	July 22	1.92	712

PEE DEE RIVER BASIN

02130561 PEE DEE RIVER NEAR BENNETTSVILLE, S.C.

LOCATION.--Lat 34º36'22", long 79º47'19" referenced to North American Datum of 1927, Marlboro County, Hydrologic Unit 03040201, near the intake structure at Weyerhauser Industries, 8.5 mi west of Bennettsville, and at mile 153.0.

DRAINAGE AREA.—7,600 mi^2, approximately.

GAGE. – Data collection platform. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Willamette Industries).

REMARKS.—Flow regulated by powerplants above station (combined usable capacity of reservoirs approximately 30,800,000,000 ft^3/s).

STAGE-FLOW RELATION -- Defined by current-meter measurements below 88,200 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1992	Apr. 24	86.16	70,200	1997	Jul. 26	86.56	73,600	2002	Jan. 25	70.98	18,000
1993	Mar. 27	86.27	71,100	1998	Mar. 21	86.89	76,400	2003	Apr. 12	89.94	124,000
1994	Mar. 31	84.44	57,600	1999	Jan. 25	82.79	45,500	2004	Sep. 10	86.44	72,500
1995	Feb. 19	85.76	66,900	2000	Oct. 01	79.87	35,200	2005	Oct. 01	85.65	66,100
1996	Jan. 29	83.89	53,800	2001	Mar. 31	76.36	25,800	2006	Dec. 17	77.75	29,500

PEE DEE BASIN

02130910 BLACK CREEK NEAR HARTSVILLE, SC

LOCATION. -- Lat 34º23'50", long 80º09'00" referenced to North American Datum of 1927, Darlington County, Hydrologic Unit 03040201, on right bank 50 feet upstream of bridge on State Road 23, 1,000 ft downstream from dam at H. B. Robinson Steam Electric Plant, 2.1 mi upstream from Beaverdam Creek, 4.6 mi west of Hartsville, and at river mile 49.9.

DRAINAGE AREA. --173 mi^2.

GAGE. -- Data collection platform. Datum of gage is 177.48 ft above National Geodetic Vertical Datum of 1929. Prior to January 12, 2000, at a site 75 feet downstream at same datum.

REMARKS. -- Some regulation by storage in Lake Robinson above station.

STAGE-FLOW RELATION -- Defined by current-meter measurements below 2,200 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1961	Feb. 25	8.82	1,060	1977	Mar. 25	7.67	770	1993	Jan. 9	8.46	1,020
1962	Mar. 14	7.93	860	1978	Jan. 26	7.69	776	1994	Mar. 2	7.34	570
1963	Jan. 22	8.10	950	1979	Feb. 27	8.59	1,170	1995	Feb. 17	8.43	1,030
1964	Mar. 18	8.17	896	1980	Mar. 31	8.57	1,160	1996	Mar. 12	6.65	442
1965	Oct. 19	8.23	924	1981	Aug. 6	6.99	510	1997	July 26	8.17	929
1966	Mar. 7	7.60	668	1982	Jan. 7	8.94	1,360	1998	Jan. 9	9.13	1,470
1967	Aug. 26	7.67	692	1983	Mar. 20	8.47	984	1999	Jan. 24	7.97	887
1968	Jan. 12	7.85	760	1984	Dec. 7	7.86	741	2000	Jan. 25	7.46	693
1969	June 24	7.93	792	1985	Feb. 11	7.72	686	2001	Mar. 24	6.18	329
1970	Mar. 23	7.21	505	1986	Nov. 22	7.11	481	2002	Jan. 29	5.23	226
1971	Aug. 18	10.08	2,010	1987	Mar. 3	8.56	1,160	2003	Apr. 13	8.18	863
1972	Jan. 14	8.21	915	1988	Jan. 25	6.24	347	2004	Sept. 9	11.36	2,930
1973	June 22	8.34	988	1989	Mar. 28	7.20	605	2005	Aug. 4	7.16	552
1974	Aug. 9	7.40	624	1990	Oct. 5	8.44	661	2006	June 17	7.93	733
1975	July 17	9.52	1,740	1991	Oct. 13	12.35	4,450				
1976	June 27	6.97	541	1992	Aug. 22	6.63	370				

PEE DEE BASIN

02131000 PEE DEE RIVER AT PEE DEE, SC

LOCATION. -- Lat 34º12'15", long 79º32'55" referenced to North American Datum of 1927, Marion County, Hydrologic Unit 03040201, at upstream side of upstream bridge on U.S. Highway 76 at Pee Dee, 0.2 mi downstream from Seaboard Coast Line Railroad bridge, 8.2 mi downstream from Black Creek, and at river mile 100.2.

DRAINAGE AREA. -- 8,830 mi^2, approximately.

GAGE. -- Data collection platform. Datum of gage is 24.73 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1947, at site 1.6 mi downstream at datum 1.27 ft lower.

REMARKS. -- Flow regulated by six power plants above station. Combined usable capacity of reservoirs approximately 30,800,000,000 ft^3.

STAGE-FLOW RELATION. -- Defined by current-meter measurements below 102,000 ft^3/s and extended on basis of flow measurement of 221,000 ft^3/s at Cheraw, SC**.**

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1939	Mar. 6	25.61	66,700	1962	Jan. 14	22.98	39,300	1985	Aug. 29	21.74	29,600
1940	Aug. 22	22.35	35,300	1963	Mar. 20	24.54	53,400	1986	Nov. 28	21.99	30,900
1941	Apr. 9	19.32	17,400	1964	Apr. 14	23.95	47,600	1987	Mar. 7	29.06	96,500
1942	Mar. 15	22.26	34,400	1965	Oct. 23	26.01	62,100	1988	Jan. 20	19.48	20,100
1943	Feb. 3	22.31	34,400	1966	Mar. 10	25.28	57,000	1989	Mar. 30	24.45	47,500
1944	Mar. 26	24.32	57,800	1967	Aug. 29	20.84	26,300	1990	Oct. 9	26.53	50,300
1945	Sept. 22	33.30	220,000	1968	Jan. 19	23.01	36,900	1991	Oct. 30	26.73	51,600
1946	Jan. 4	23.76	45,400	1969	Feb. 27	21.78	32,500	1992	Apr. 29	23.88	36,100
1947	Jan. 26	22.16	30,900	1970	Aug. 19	21.69	31,800	1993	Apr. 1	25.98	47,000
1948	Feb. 19	26.23	69,300	1971	Mar. 10	23.98	47,900	1994	Mar. 9	22.97	32,100
1949	Dec. 5	24.12	47,800	1972	June 29	24.09	47,200	1995	Feb. 23	25.49	37,500
1950	Nov. 7	21.22	25,600	1973	Apr. 6	26.97	74,600	1996	Feb. 7	22.80	29,200
1951	Apr. 14	20.36	21,600	1974	Apr. 12	22.45	35,800	1997	May 6	24.03	32,900
1952	Mar. 10	25.95	62,600	1975	Mar. 20	27.81	85,300	1998	Mar. 25	25.52	43,600
1953	Feb. 28	23.54	39,700	1976	June 26	20.49	23,100	1999	Jan. 29	21.50	22,600
1954	Jan. 29	25.76	60,500	1977	Dec. 20	22.56	36,500	2000	Feb. 5	21.11	21,600
1955	Apr. 21	22.44	32,200	1978	Feb. 1	26.58	70,000	2001	Apr. 3	19.40	17,900
1956	Mar. 22	20.46	22,000	1979	Mar. 2	29.03	102,600	2002	Jan. 26	17.28	15,900
1957	Apr. 13	21.58	30,000	1980	Apr. 2	24.11	42,600	2003	Apr. 15	29.46	101,000
1958	Dec. 1	24.58	52,600	1981	July 3	18.72	19,000	2004	Sept. 14	24.86	38,200
1959	Apr. 26	21.44	28,800	1982	Jan. 9	22.75	34,100	2005	Oct. 5	23.77	31,600
1960	Apr. 10	26.28	70,400	1983	Mar. 25	24.59	46,000	2006	Dec. 19	19.44	19,200
1961	Mar. 3	23.86	46,300	1984	Apr. 4	26.55	65,200				

SANTEE RIVER BASIN

02146000 CATAWBA RIVER NEAR ROCK HILL, S.C.

LOCATION.--Lat 34º59'05", long 80º58'27" referenced to North American Datum of 1927, York County, Hydrologic Unit 03050103, on right bank, at downstream side of bridge on U.S. Highway 21, 3.5 mi downstream from Lake Wylie Dam, 5.0 mi northeast of Rock Hill, 7.5 mi upstream from Sugar Creek, and at river mile 137.6.

DRAINAGE AREA.--3,050 mi^2, approximately.

REVISED RECORDS.--WSP 1303: 1895-1903; WSP 1333: 1942-43(m), 1953(m). WSP 1623: 1942-51 (yearly runoff).

GAGE.--Data collection platform. Datum of gage is 485.82 ft above National Geodetic Vertical Datum of 1929. Sept. 23, 1895 to July 31, 1903, nonrecording gage at Southern Railway bridge, 2.0 mi downstream, at different datum.

REMARKS.-- Flow regulated by Lake Wylie, usable capacity, 2.52 x 10^9 ft^3 and other power plants above station.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 77,900 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1896	July 10	15.20	71,500	1959	Dec. 30	10.39	25,100	1984	Apr. 10	11.79	32,900
1897	Feb. 7	14.80	68,500	1960	Feb. 6	15.80	50,000	1985	Feb. 2	7.55	13,600
1898	---	9.00	30,600	1961	Feb. 25	9.49	21,300	1986	Nov. 22	10.72	27,500
1899	Mar. 20	18.00	95,000	1962	Jan. 7	15.70	49,500	1987	Mar. 1	12.06	34,300
1900	---	12.30	50,800	1963	Mar. 6	10.73	26,300	1988	Feb. 17	7.52	13,500
1901	May 23	24.15	151,000	1964	Apr. 8	13.25	37,500	1989	Mar. 24	7.84	14,800
1902	Dec. 30	19.70	108,000	1965	Oct. 17	14.64	44,700	1990	Oct. 1	16.41	57,400
1903	Mar. 24	18.00	93,800	1966	Mar. 5	7.66	15,000	1991	---	---	---
1942	Sept. 8	10.61	25,900	1967	Aug. 23	13.53	39,200	1992	June 16	10.64	27,100
1943	July 10	16.99	56,100	1968	Jan. 11	7.74	15,000	1993	Mar. 24	13.58	41,800
1944	Sept. 30	11.55	30,200	1969	Feb. 3	7.72	14,900	1994	Aug. 19	12.03	34,100
1945	Sept. 19	20.84	76,800	1970	Aug. 13	7.84	15,400	1995	Feb. 17	9.62	22,300
1946	Feb. 11	15.05	46,000	1971	May 16	11.75	31,000	1996	Feb. 3	10.42	26,000
1947	Jan. 20	13.57	39,300	1972	June 23	10.01	24,000	1997	Apr. 29	9.95	23,800
1948	Mar. 31	13.63	39,300	1973	May 30	12.44	33,800	1998	Mar. 12	8.24	16,400
1949	Nov. 28	17.79	60,200	1974	Apr. 6	10.31	25,200	1999	Feb. 11	7.51	13,500
1950	Nov. 1	10.03	23,600	1975	Mar. 15	17.57	62,400	2000	Sept. 25	7.35	12,800

1951	Jan. 23	7.49	13,600	1976	Mar. 8	7.47	13,400	2001	Mar. 29	6.73	11,200
1952	Mar. 4	16.96	56,100	1977	Oct. 9	16.57	55,400	2002	July 26	6.58	9,880
1953	Mar. 24	13.49	38,900	1978	Nov. 7	13.44	39,000	2003	Apr. 10	15.17	50,300
1954	Jan. 23	16.01	51,000	1979	Feb. 25	13.86	43,300	2004	Sept. 10	15.90	54,400
1955	Apr. 15	7.69	14,200	1980	Apr. 17	9.40	21,100	2005	Dec. 17	7.91	15,300
1956	Apr. 16	7.77	14,600	1981	Jan. 5	7.47	13,300	2006	Dec. 18	7.97	15,300
1957	Apr. 7	12.93	36,100	1982	Jan. 4	11.31	30,400				
1958	Apr. 28	15.28	50,000	1983	Apr. 10	10.86	28,100				

SANTEE RIVER BASIN

02147000 CATAWBA RIVER NEAR CATAWBA, S.C.

LOCATION.--Lat 34º51'09", long 80º52'06" referenced to North American Datum of 1927, York County, Hydrologic Unit 03050103, on right bank, 60 ft downstream from Seaboard Coast Line Railroad bridge, 200 ft downstream from Twelvemile Creek, 2.5 mi east of Catawba, and at river mile 122.8.

DRAINAGE AREA.--3,530 mi^2, approximately.

GAGE.--Water-stage recorder and data collection platform. Datum of gage is 446.18 ft above National Geodetic Vertical Datum of 1929 (levels by Bowaters Carolina Corporation). June 1906 to Dec. 21, 1948, nonrecording gage at site 2.1 mi downstream at different datum.

REMARKS.--Flow regulated by Lake Wylie, usable capacity, 2.52 x 10^9 ft^3.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since June 1906, 40.4 ft, July 16, 1916 at site and datum then in use, from records furnished by the National Weather Service.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 63,300 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1968	Jan. 11	11.92	23,000	1976	Dec. 31	8.48	15,700	1985	Feb. 2	11.74	25,400
1969	Feb. 3	9.79	18,100	1977	Oct. 9	23.81	73,600	1986	Nov. 22	15.80	39,000
1970	Aug. 13	10.22	19,200	1978	Jan. 26	18.12	47,500	1987	Mar. 1	21.10	59,200
1971	May 16	14.01	28,500	1979	Feb. 25	19.16	51,700	1988	Dec. 28	9.23	17,900
1972	Oct. 17	12.15	23,900	1980	Mar. 29	14.00	32,300	1989	Mar. 24	14.36	33,900
1973	Apr. 1	17.16	37,500	1981	Feb. 19	8.08	14,400	1990	Oct. 2	24.33	72,700
1974	Apr. 6	13.43	27,100	1983	Apr. 10	13.40	30,700	1991	Oct. 23	20.13	55,300
1975	Mar. 15	21.76	63,400	1984	Dec. 12	15.05	36,300				

SANTEE RIVER BASIN

02147020 CATAWBA RIVER BELOW CATAWBA, S.C.

LOCATION.--Lat 34º50'10", long 80º52'47" referenced to North American Datum of 1927, York County, Hydrologic Unit 03050103, on right bank, 1.5 mi downstream from Twelvemile Creek, 2.2 mi southeast of Catawba, and at mile 121.3.

DRAINAGE AREA.--3,540 mi^2.

GAGE.-- Data collection platform. Datum of gage is 442.0 ft above National Geodetic Vertical Datum of 1929 (by Global Positioning Survey). June 1906 to Dec. 21, 1948, nonrecording gage at site 0.6 mi downstream at different datum. October 1967 to January 1992, recording gage at site 1.5 mi upstream at different datum and published as station 02147000.

REMARKS.--Flow regulated by Lake Wylie (usable capacity, 2,520,000,000 ft^3).

EXTREMES OUTSIDE PERIOD OF RECORD.-- Maximum stage known since June 1906, 40.4 ft July 16, 1916, at site and datum then in use, from records furnished by the National Weather Service.

STAGE-FLOW RELATION.-- Defined by current-meter measurements below 26,000 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1993	Mar. 25	20.86	49,300	1998	Apr. 10	12.76	18,300	2003	Apr. 11	22.69	50,000
1994	Aug. 20	18.45	37,800	1999	Jan. 24	11.02	13,500	2004	Sep. 10	20.29	46,400
1995	Aug. 28	17.20	33,200	2000	Mar. 22	10.51	12,300	2005	Dec. 10	12.45	17,300
1996	Feb. 03	17.10	32,800	2001	Mar. 29	10.94	13,300	2006	Sep. 14	12.24	16,700
1997	Apr. 29	15.43	27,000	2002	Jan. 25	10.40	12,000				

SANTEE RIVER BASIN

02148000 WATEREE RIVER NEAR CAMDEN, S.C.

LOCATION.--Lat 34º14'40", long 80º39'15" referenced to North American Datum of 1927, Kershaw County, Hydrologic Unit 03050104, in pier of downstream bridge on U.S. Highway 1, 1,500 ft downstream from Five and Twenty Creek, 4,000 ft upstream from Seaboard Coast Line Railroad bridge, 2.2 mi west of Camden, 7.4 mi downstream from Wateree Dam, and at river mile 68.8.

DRAINAGE AREA.--5,070 mi^2, approximately..

REVISED RECORDS.--WSP 802: 1930. WSP 952: Drainage area. WSP 1082: 1934 (M). WSP 1433: 1905-10. WSP 1623: 1930-51 (monthly and yearly runoff).

GAGE.--Data collection platform. Datum of gage is 118.36 ft above National Geodetic Vertical Datum (NGVD) of 1929. January 1903 to September 1910, nonrecording gage at site 1.5 mi downstream at datum 117.71 ft above NGVD of 1929. Oct. 1, 1929 to Sept. 1, 1942, recording gage at site 830 ft upstream at datum 119.36 ft above NGVD of 1929. October 1942 to Sept. 30,1997, recording gage at present site at datum 119.36 ft above NGVD of 1929.

REMARKS.--Flow regulated by power plant at Wateree Reservoir (usable capacity, 2.79 x 10^9 ft^3) and by other power plants above station.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of July 18, 1916 reached a stage of 40.4 ft, datum 117.71 ft above sea level, at site 1.5 mi downstream, from records of National Weather Service, flow, 400,000 ft^3/s, from rating curve extended about 122,000 ft^3/s, as explained above.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 102,000 ft^3/s at current site and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1886	Sept. --	31.50	---	1931	Dec. 23	14.31	11,600	1971	Mar. 5	23.46	31,300
1892	Jan. 20	30.10	---	1932	Jan. 9	28.31	50,700	1972	Jan. 14	19.70	22,400
1893	Aug. 30	29.60	---	1933	Dec. 28	25.37	32,000	1973	Apr. 2	28.53	56,100
1894	Oct. 24	30.50	---	1934	June 9	20.65	20,200	1974	Apr. 7	16.00	16,700
1895	Oct. 10	30.20	---	1935	Mar. 14	24.03	30,000	1975	Mar. 16	30.55	70,200
1896	July 11	28.80	---	1936	Apr. 7	36.63	168,000	1976	Mar. 17	16.44	17,300
1897	Feb. 8	29.70	---	1937	Jan. 4	27.26	52,500	1977	Oct. 11	28.36	55,100
1898	Sept. 25	28.00	---	1938	Apr. 9	14.92	13,300	1978	Jan. 27	26.22	42,300
1899	Feb. 8	31.00	---	1939	Mar. 2	29.01	70,500	1979	Feb. 26	29.17	60,200
1900	Apr. 23	28.40	---	1940	Aug. 16	30.50	89,000	1980	Mar. 30	25.80	40,200

1901	May 24	32.50	---	1941	July 9	28.10	60,600	1981	Feb. 13	15.41	16,500
1902	Dec. 31	31.20	---	1942	Mar. 10	24.85	35,400	1982	Jan. 5	25.99	41,200
1903	Mar. 25	30.40	---	1943	Jan. 20	24.76	35,400	1983	Mar. 19	23.16	30,500
1904	Aug. 9	25.20	---	1944	Mar. 21	29.08	71,700	1984	Feb. 16	21.62	26,500
1905	July 15	29.60	66,800	1945	Sept. 19	33.84	132,000	1985	Feb. 7	15.68	16,800
1906	Dec. 22	28.60	54,100	1946	Jan. 9	24.28	33,800	1986	Nov. 24	16.13	17,400
1907	Oct. 21	28.70	55,000	1947	Jan. 21	27.87	58,500	1987	Mar. 2	30.44	69,600
1908	Aug. 26	39.70	366,000	1948	Apr. 2	27.96	59,500	1988	Jan. 21	12.69	13,700
1909	June 5	31.70	103,000	1949	Nov. 30	31.44	101,000	1989	Mar. 25	25.82	40,300
1910	Mar. 2	26.90	39,700	1950	Nov. 3	19.21	20,500	1990	Oct. 31	33.24	110,000
1911	Oct. 10	26.90	---	1951	Apr. 11	15.11	15,200	1991	Oct. 24	28.74	57,300
1912	Mar. 17	35.40	---	1952	Mar. 5	31.35	82,900	1992	Feb. 28	15.00	16,000
1913	Mar. 17	34.00	---	1953	Feb. 24	20.82	24,500	1993	Mar. 28	26.44	43,700
1914	Jan. 4	27.60	---	1954	Jan. 24	29.36	67,000	1994	Aug. 22	20.74	24,500
1915	Dec. 27	30.50	---	1955	Apr. 16	22.66	30,800	1995	Feb. 19	22.35	28,300
1916	July 18	40.40	400,000	1956	Mar. 18	15.93	16,800	1996	Feb. 4	21.35	25,800
1917	Mar. 6	30.30	---	1957	Apr. 10	19.63	22,200	1997	July 25	24.27	33,700
1918	Apr. 21	28.20	---	1958	Nov. 26	25.20	36,800	1998	Feb. 5	26.29	37,500
1919	July 21	33.00	---	1959	July 11	17.45	18,300	1999	Jan. 25	16.51	17,000
1920	Aug. 29	28.60	---	1960	Apr. 6	28.54	58,800	2000	Mar. 22	15.96	16,400
1921	Feb. 11	31.00	---	1961	Feb. 26	27.00	46,800	2001	Mar. 30	13.38	13,700
1922	Feb. 16	30.20	---	1962	Jan. 8	22.87	30,000	2002	Jan. 25	11.06	11,000
1923	Mar. 18	30.00	---	1963	Mar. 15	---	20,100	2003	Apr. 12	29.90	58,400
1924	July 9	24.50	---	1964	Apr. 9	26.50	43,900	2004	Sept. 11	29.67	39,500
1925	Jan. 20	31.00	---	1965	Oct. 18	29.07	64,500	2005	Mar. 30	19.34	16,800
1926	Apr. 2	19.40	---	1966	Mar. 6	18.99	21,100	2006	Dec, 17	17.08	14,300
1927	July 23	12.70	---	1967	Aug. 25	32.22	88,300				
1928	Aug. 18	35.00	---	1968	Jan. 12	20.91	24,900				
1929	Mar. 1	31.80	---	1969	Apr. 20	21.41	26,000				
1930	Oct. 3	36.20	163,000	1970	Mar. 23	16.83	17,800				

SANTEE RIVER BASIN

02155500 PACOLET RIVER NEAR FINGERVILLE, S.C.

LOCATION.--Lat 35º06'35", long 81º57'35" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050105, on right bank, 100 ft upstream from bridge on State Road 55, 0.2 mi downstream from confluence of North Pacolet and South Pacolet Rivers, 2.8 mi southeast of Fingerville, and at river mile 46.5.

DRAINAGE AREA.--212 mi^2.

GAGE.--Basic data recorder. Datum of gage is 706.33 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Some regulation by South Pacolet River Reservoir and Lake William C. Bowen (02154950). Some diurnal fluctuation caused by mill on North Pacolet River. Some water diverted from South Pacolet River above station for City of Spartanburg water supply.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1903 reached a stage of 46 ft, from floodmark (Flow not determined).

STAGE-FLOW RELATION.--Defined by current-meter measurements below 9,510 ft^3/s and extended by velocity-area studies.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1903	June --	46.00	---	1956	Apr. 17	5.55	3,160	1982	Feb. 4	7.45	4,920
1931	Dec. 6	2.68	1,020	1957	Apr. 6	7.33	4,570	1983	Apr. 10	5.44	3,140
1932	Dec. 15	6.45	3,810	1958	Apr. 29	8.20	5,450	1984	Feb. 14	6.51	4,060
1933	Oct. 17	13.31	11,000	1959	May 26	13.82	11,600	1985	Aug. 18	7.31	4,790
1934	Mar. 4	6.39	3,810	1960	Mar. 30	8.78	6,050	1986	Aug. 18	5.43	3,130
1935	Oct. 11	4.76	2,510	1961	June 22	8.65	5,850	1987	Mar. 1	11.71	9,250
1936	Apr. 7	12.53	10,100	1962	Apr. 11	6.31	3,710	1988	Feb. 9	3.94	1,960
1937	Oct. 17	13.63	11,300	1963	Mar. 13	10.46	7,860	1989	Mar. 24	4.58	2,460
1938	Oct. 19	12.73	10,300	1964	Aug. 10	7.05	4,560	1990	Mar. 18	8.09	5,520
1939	Aug. 19	7.09	4,390	1965	Oct. 5	17.65	16,300	1991	Mar. 30	7.23	4,720
1940	Aug. 14	22.43	22,800	1966	Mar. 4	7.21	4,610	1992	Feb 26	5.71	3,360
1941	July 17	3.63	1,760	1967	Aug. 24	---	6,500	1993	May 6	7.08	4,420
1942	Feb. 17	9.54	6,760	1968	Mar. 13	5.83	3,470	1994	Aug. 17	10.63	8,090
1943	Jan. 28	6.84	4,120	1969	Apr. 19	7.71	5,210	1995	Aug. 27	15.58	13,700
1944	Mar. 20	6.50	3,870	1970	Nov. 2	3.50	1,640	1996	Jan. 27	6.71	4,090

1945	Sept. 17	8.56	5,850	1971	Feb. 22	6.23	3,820	1997	Dec. 2	5.37	2,880
1946	Jan. 7	11.90	9,400	1972	June 21	10.15	7,650	1998	Feb. 4	7.15	4,480
1947	June 15	7.99	5,250	1973	Feb. 3	8.58	6,080	1999	Apr. 1	3.28	1,320
1948	Aug. 5	5.62	3,160	1974	Apr. 5	7.16	4,660	2000	Mar. 21	6.29	3,710
1949	Nov. 29	9.66	6,980	1975	Mar. 14	9.88	7,380	2001	July 26	3.74	1,630
1950	Oct. 7	9.05	6,250	1976	Oct. 17	9.69	7,190	2002	Jan. 23	3.43	1,430
1951	Dec. 8	6.85	4,120	1977	Oct. 9	14.89	12,900	2003	Mar. 20	11.84	9,390
1952	Mar. 24	9.46	6,760	1978	Jan. 26	7.58	5,080	2004	Sept. 8	12.76	10,400
1953	Feb. 21	6.27	3,710	1979	Feb. 26	7.81	5,260	2005	July 7	13.76	11,500
1954	Jan. 23	10.38	7,750	1980	May 24	---	6,500	2006	Oct. 7	3.91	1,750
1955	Feb. 7	5.10	2,810	1981	Oct. 1	3.43	1,580				

SANTEE RIVER BASIN

021556525 PACOLET RIVER BELOW LAKE BLALOCK, S.C.

LOCATION.-- Lat 35°02′51″, long 81°51′21″ referenced to North American Datum of 1927, Spartanburg County, SC, Hydrologic Unit 03050105, on right bank, 0.75 mi downstream of Lake Blalock Dam, and 3.5 mi northwest of Cowpens, S.C.

DRAINAGE AREA.--273 mi^2.

GAGE.-- Data collection platform. Elevation of gage is 600 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Prior to November 4, 1998, at site 0.6 mi upstream at different datum.

REMARKS.--Flow regulated by Lake Blalock. Water diverted by City of Spartanburg above station at Lake Blalock for municipal supply.

STAGE-FLOW RELATION.-- Defined by current-meter measurements below 11,700 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1995	Aug. 28	17.10	22,900	1999	Apr. 02	4.476	1,450	2003	May 23	17.10	22,900
1996	Feb. 03	7.74	4,280	2000	Mar. 21	7.05	3,710	2004	Sep. 08	13.52	14,300
1997	Dec. 02	6.69	2,930	2001	Mar. 30	5.23	1,910	2005	Jul. 08	13.53	14,300
1998	Mar. 09	8.34	5,160	2002	Jan. 23	4.33	1,320	2006	Oct. 07	12.31	11,800

SANTEE RIVER BASIN

02156000 PACOLET RIVER NEAR CLIFTON, S.C.

LOCATION.--Lat 34º58'10", long 81º48'05" referenced to North American Datum of 1927, Spartanburg County, Hydrologic Unit 03050105, on left bank, 1.0 mi downstream from dam at Clifton Mill, 1.3 mi southeast of Clifton, 2.7 mi upstream from Lawsons Fork Creek, 2.7 mi northeast of Glendale, and at river mile 28.2.

DRAINAGE AREA.--320 mi^2.

GAGE.--Water-stage recorder from October 1939 to September 1971. Crest-stage, partial-record station, October 1971 to September 1978. Datum of gage is 540 ft above National Geodetic Vertical Datum of 1929 (from topographical map).

REMARKS.--Some regulation by power plants above station, South Pacolet River Reservoir, and Lake William C. Bowen. City of Spartanburg diverts water above station from South Pacolet River Reservoir for municipal supply.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 12,100 ft^3/s and extended on the basis of peak flow over dam computation.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1940	Aug. 14	21.19	26,800	1953	Feb. 21	6.12	4,800	1966	Mar. 4	10.85	10,200
1941	July 11	7.74	5,620	1954	Jan. 22	9.14	8,520	1967	July 7	9.95	8,940
1942	Aug. 18	9.76	8,640	1955	Feb. 6	5.35	4,020	1968	July 21	9.24	8,010
1943	Jan. 28	11.10	9,300	1956	Apr. 16	9.63	9,170	1969	Apr. 18	9.43	8,260
1944	Mar. 20	8.08	7,220	1957	Aug. 14	7.51	6,480	1970	July 27	6.16	4,560
1945	Aug. 17	14.16	12,000	1958	Nov. 19	12.06	12,600	1971	Feb. 22	7.17	5,590
1946	Jan. 7	12.69	12,900	1959	May 26	12.11	12,600	1972	June 21	13.39	14,000
1947	Jan. 20	6.95	5,860	1960	Feb. 5	10.16	9,840	1973	Feb. 3	11.24	10,800
1948	Aug. 4	6.05	4,690	1961	Feb. 21	9.98	9,050	1974	Apr. 5	8.75	7,400
1949	Nov. 28	9.62	9,170	1962	Apr. 11	9.82	8,770	1975	Mar. 15	12.39	12,500
1950	Oct. 7	14.64	16,300	1963	Mar. 6	14.80	16,100	1976	Oct. 18	11.79	11,600
1951	Dec. 7	7.11	6,100	1964	Aug. 10	14.97	16,400	1977	Oct. 9	21.70	27,700
1952	Mar. 24	11.16	11,400	1965	Oct. 5	17.31	20,100	1978	Jan. 26	11.27	10,800

SANTEE RIVER BASIN

02167000 SALUDA RIVER AT CHAPPELLS, S.C.

LOCATION.--Lat 34º10'28", long 81º51'51" referenced to North American Datum of 1927, Newberry County, Hydrologic Unit 03050109, on left bank on downstream side of bridge on State Highway 39 at Chappells, 6.7 mi downstream from dam at Lake Greenwood, 9.8 mi upstream from Little River, and at river mile 52.3.

DRAINAGE AREA.--1,360 mi^2.

GAGE.--Data collection platform. Datum of gage is 362.89 ft above National Geodetic Vertical Datum (NGVD) of 1929. Oct. 1, 1926 to Sept. 30, 1939, nonrecording or recording gage at site 300 ft downstream at datum 363.79 ft above NGVD of 1929. Oct. 1, 1939 to Oct. 7, 1964, recording gage at present site and at datum 363.89 ft above NGVD of 1929.

REMARKS.--Peaks are from graphs based on gage readings by the U.S. Weather Bureau prior to June 27, 1927. Peak flows since May 1940 affected by storage in Lake Greenwood. Lake is formed by earth dam. Usable capacity is approximately 7,640,000,000 ft^3.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Aug. 26, 1908 reached a stage of 36.7 ft (present site and datum), from reports of National Weather Service.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 28,100 ft^3/s and extended on basis of velocity-area studies.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1888	Sept.--	30.60	---	1939	Mar. 1	19.07	13,200	1973	Apr. 2	22.75	20,600
1906	Dec. 22	18.60	---	1940	Aug. 14	28.66	49,700	1974	Apr. 5	14.74	6,800
1907	Oct. 5	13.30	---	1941	July 17	14.96	7,400	1975	Mar. 15	24.84	28,300
1908	Aug. 26	34.70	---	1942	Mar. 22	22.82	24,300	1976	Mar. 17	19.03	10,800
1909	June 5	20.50	---	1943	Jan. 29	22.21	22,100	1977	Oct. 9	26.47	35,200
1910	Mar. 3	17.60	---	1944	Mar. 21	24.84	32,300	1978	Jan. 27	15.48	7,740
1911	Oct. 9	12.20	---	1945	Sept. 18	13.52	6,080	1979	Feb. 26	21.74	17,500
1912	Mar. 16	25.00	---	1946	Jan. 8	22.30	22,500	1980	Mar. 29	24.24	25,800
1913	Mar. 16	22.00	---	1947	Jan. 21	15.68	8,100	1981	Oct. 1	18.06	9,870
1914	Dec. 31	16.70	---	1948	Apr. 1	19.52	14,200	1982	Jan. 4	23.05	21,600
1915	Jan. 8	16.50	---	1949	Nov. 29	24.59	31,400	1983	Apr. 9	15.72	7,900
1916	Feb. 4	20.30	---	1950	Mar. 7	12.46	5,310	1984	Dec. 7	22.60	20,200
1917	Mar. 6	19.00	---	1951	Apr. 3	12.39	5,430	1985	Feb. 7	---	6,000

1918	Aug. 4	17.00	---	1952	Mar. 25	24.68	31,900	1986	Dec. 1	14.66	7,140
1919	Oct. 28	22.60	---	1953	Feb. 25	13.70	6,380	1987	Mar. 3	20.11	13,300
1920	Dec. 12	19.50	---	1954	Jan. 24	13.57	6,320	1988	Feb. 4	10.31	4,380
1921	Feb. 11	22.50	---	1955	Apr. 15	13.78	6,460	1989	July 18	15.81	7,960
1922	Feb. 17	20.00	---	1956	Apr. 18	18.79	12,400	1990	Feb. 19	23.08	21,700
1923	Mar. 18	18.80	---	1957	Apr. 5	12.48	5,590	1991	Oct. 13	17.28	9,150
1924	July 10	16.80	---	1958	Nov. 20	19.14	13,200	1992	Mar. 7	13.57	6,380
1925	Jan. 20	20.50	---	1959	June 3	12.28	5,390	1993	Mar. 28	20.04	13,100
1926	Jan. 20	15.50	---	1960	Feb. 14	21.00	18,300	1994	Aug. 19	20.06	14,700
1927	Dec. 30	15.30	7,700	1961	Feb. 26	20.71	17,400	1995	Aug. 28	27.22	38,000
1928	Aug. 17	29.97	56,200	1962	Jan. 7	17.64	10,200	1996	Feb. 3	22.17	19,500
1929	Sept. 28	30.90	60,700	1963	Mar. 13	22.78	24,300	1997	Mar. 2	17.20	10,600
1930	Oct. 2	31.50	63,700	1964	Apr. 8	24.98	33,200	1998	Feb. 5	22.96	21,700
1931	Apr. 1	12.49	5,310	1965	June 16	21.35	16,400	1999	Feb. 1	11.60	5,850
1932	Jan. 9	20.51	16,800	1966	Mar. 5	21.41	16,600	2000	Jan. 24	11.16	5,540
1933	Oct. 19	21.28	19,200	1967	Aug. 26	19.01	10,800	2001	Mar. 30	9.92	4,660
1934	June 7	20.94	18,000	1968	Jan. 11	16.90	8,300	2002	Apr. 1	9.53	4,390
1935	Oct. 12	17.22	9,700	1969	Apr. 19	24.32	26,200	2003	Mar. 21	22.96	21,700
1936	Apr. 8	28.60	49,400	1970	Mar. 22	13.02	5,510	2004	Srpt. 10	20.17	14,900
1937	Jan. 5	22.03	21,400	1971	Mar. 4	22.51	19,800	2005	Mar. 30	16.91	10,300
1938	Oct. 22	20.91	18,000	1972	June 22	21.69	17,400	2006	Dec. 6	10.00	4,850

SANTEE RIVER BASIN

02167500 SALUDA RIVER NEAR SILVERSTREET, S.C.

LOCATION.--Lat 34º10'58", long 81º43'37" referenced to North American Datum of 1927, Newberry County, Hydrologic Unit 03050109, on left bank 200 ft upstream from Higgins Perry Bridge on State Highway 19, 1.0 mi downstream from Little River, and 2.5 mi south of Silverstreet.

DRAINAGE AREA.--1,620 mi^2, approximately.

GAGE.--Water-stage recorder. Datum of gage is 345.13 ft above National Geodetic Vertical Datum of 1929, unadjusted. Prior to Oct 15, 1929, staff gage at same site and datum. From March 1939 to June 1966, water-stage recorder for station on Lake Murray near Columbia has been used as an auxiliary gage for this station.

REMARKS.-- Peak flows since May 1940 affected by storage in Lake Greenwood. Lake is formed by earth dam. Usable capacity is approximately 7,640,000,000 ft^3.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 28,000 ft^3/s and extended on basis of flow measurements made at Chappells and near Chapin.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1928	Aug. 18	30.60	60,400	1941	July 18	15.08	8,610	1954	Apr. 2	14.96	7,760
1929	Sept. 28	32.05	69,800	1942	Mar. 23	22.96	23,700	1955	Apr. 15	16.88	10,400
1930	Oct. 3	33.97	83,800	1943	Jan. 30	21.66	20,100	1956	Apr. 18	18.62	13,200
1931	Apr. 2	12.87	6,180	1944	Mar. 21	26.93	39,100	1957	Apr. 6	14.21	6,620
1932	Jan. 10	21.12	18,600	1945	Apr. 27	15.46	9,130	1958	Nov. 21	---a	15,400
1933	Sept. 8	21.52	19,600	1946	Jan. 9	---	22,800	1959	Sept. 30	---a	6,860
1934	June 7	20.84	18,000	1947	Jan. 21	18.12	13,000	1960	Feb. 14	22.54	21,100
1935	Oct. 11	17.22	11,500	1948	Apr. 2	20.40	14,600	1961	Feb. 26	22.30	20,600
1936	Apr. 8	31.89	63,000	1949	Nov. 30	25.80	32,200	1962	Jan. 7	20.39	15,800
1937	Jan. 6	21.98	20,900	1950	Mar. 8	14.43	6,860	1963	Mar. 14	24.12	26,300
1938	Oct. 23	19.73	15,800	1951	Apr. 4	14.07	6,970	1964	Apr. 9	27.10	39,500
1939	Mar. 2	20.00	16,300	1952	Mar. 25	25.34	28,400	1965	June 17	22.15	20,200
1940	Aug. 15	30.29	58,300	1953	Feb. 25	14.20	6,860				

[a] Gage height not maximum for the year.

SANTEE RIVER BASIN

02169000 SALUDA RIVER NEAR COLUMBIA, S.C.

LOCATION.--Lat 34º00'50", long 81º05'17" referenced to North American Datum of 1927, Richland County, Hydrologic Unit 03050109, on left bank 0.4 mi upstream from site of Old Saluda Mill, 1.6 mi upstream from confluence with Broad River and 3.3 mi west of State Capital in Columbia, and at river mile 1.7.

DRAINAGE AREA.--2,520 mi^2.

GAGE.--Data collection platform. Datum of gage is 149.46 ft above National Geodetic Vertical Datum (NGVD) of 1929. Prior to Sept. 1, 1929, at same site at datum 150.46 ft above NGVD of 1929.

REMARKS.--Flow regulated by Lake Murray and Lake Greenwood. Lake Murray is formed by earth dam; storage began Aug. 31, 1929; dam completed in 1930. Usable capacity approximately 68,200,000,000 ft^3. Lake Greenwood also is formed by earth dam; storage began in May 1940; dam completed in 1940. Usable capacity is approximately 7,640,000,000 ft^3.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 36,000 ft^3/s and extended on basis of flow measurements made at Wise Ferry bridge near Chapin.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1926	Mar. 31	8.75	23,300	1953	Sept. 3	6.13	9,600	1980	Mar. 30	---	[2]31,000
1927	July 20	6.62	12,300	1954	Nov. 9	6.10	9,600	1981	July 11	7.68	16,300
1928	Aug. 18	14.04	58,200	1955	Aug. 19	6.03	9,250	1982	Jan. 4	8.30	19,600
1929	Mar. 6	13.43	53,600	1956	Aug. 15	5.65	8,080	1983	Apr. 8	8.54	21,000
1930	Oct. 2	15.22	67,000	1957	Sept. 3	6.07	10,300	1984	Aug. 9	8.03	18,100
1931	Sept. 11	5.86	9,590	1958	Jan. 24	6.77	13,100	1985	Feb. 5	7.99	18,400
1932	Sept. 13	6.12	10,300	1959	Sept. 30	6.26	10,300	1986	Sept. 26	7.75	17,100
1933	Feb. 20	9.04	24,500	1960	Feb. 13	7.02	13,200	1987	Aug. 26	7.69	16,700
1934	Nov. 2	6.44	11,500	1961	Apr. 12	7.33	15,200	1988	Oct. 29	7.21	14,200
1935	Sept. 5	7.17	14,800	1962	Mar. 13	6.83	13,100	1989	Sept. 21	8.05	18,800
1936	Apr. 7	14.53	61,600	1963	Mar. 13	6.83	13,100	1990	Feb. 22	8.52	21,600
1937	Apr. 9	8.74	23,000	1964	Apr. 10	11.25	38,800	1991	Oct. 12	8.81	23,300
1938	Nov. 15	6.28	11,600	1965	June 16	13.32	53,200	1992	Sept. 22	7.86	17,700
1939	Sept. 8	6.04	9,950	1966	Mar. 4	7.16	14,300	1993	Apr. 5	8.18	19,500
1940	Aug. 28	5.95	9,950	1967	Aug. 24	---	[1]12,000	1994	Aug. 16	8.12	19,200

1941	Dec. 13	6.15	10,700	1968	Jan. 10	7.44	15,700	1995	June 6	8.72	22,800
1942	June 10	6.92	13,500	1969	Apr. 19	10.82	35,700	1996	Mar. 9	8.63	22,300
1943	July 22	6.09	10,300	1970	Aug. 31	6.48	11,400	1997	May 8	7.64	16,500
1944	Mar. 24	9.15	25,700	1971	Aug. 17	8.31	20,400	1998	Feb. 4	8.53	21,700
1945	Sept. 17	6.13	10,300	1972	Jan. 11	7.93	18,200	1999	July 23	7.71	16,800
1946	Apr. 26	9.71	28,700	1973	Apr. 7	8.63	22,300	2000	Oct. 15	7.70	16,800
1947	Dec. 7	6.13	10,300	1974	Feb. 25	8.48	21,400	2001	Oct. 4	7.78	17,200
1948	Apr. 8	8.31	20,400	1975	Feb. 19	8.22	19,800	2002	May 11	6.96	12,900
1949	May 1	9.16	25,700	1976	July 7	7.99	18,400	2003	Mar. 20	8.39	20,800
1950	Nov. 22	6.38	10,700	1977	Mar. 22	7.95	18,200	2004	Feb. 16	7.40	15,200
1951	Aug. 10	6.29	10,300	1978	Jan. 26	7.80	17,400	2005	June 2	7.40	15,200
1952	June 12	6.39	10,700	1979	Feb. 26	9.53	27,200	2006	Jan. 3	7.96	18,300

[1]Flow is a maximum daily value.
[2]Flow is an estimate.

SANTEE RIVER BASIN

02169500 CONGAREE RIVER AT COLUMBIA, S.C.

LOCATION.--Lat 33º59'35", long 81º03'00" referenced to North American Datum of 1927, Lexington County, Hydrologic Unit 03050110, on right bank at Columbia, 1,000 ft downstream from Gervais Street Bridge, 1.4 mi downstream from confluence of Broad and Saluda Rivers, and at river mile 174.8.

DRAINAGE AREA.--7,850 mi^2, approximately.

GAGE.--Water-stage recorder and data collection platform. Datum of gage is 113.02 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by Lake Murray and Lake Greenwood on the Saluda River and to some extent, at low and medium flow, by power plants on the Broad River. City of Columbia diverts flow above station for municipal supply.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since at least October 1891, flow 364,000 ft^3/s, Aug. 27, 1908, gage height, 39.8 ft, present datum, based on flood marks from records of the U.S. Weather Bureau at site 1,000 ft upstream and at datum 4.0 ft higher.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 150,000 ft^3/s and extended graphically on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1852	Sept. --	34.40	---	1930	Oct. 3	33.10	303,000	1969	Apr. 19	23.37	94,200
1892	Jan. 20	24.60	154,000	1931	Dec. 8	6.70	26,800	1970	Aug. 12	15.44	45,200
1893	Aug. 29	21.10	110,000	1932	Jan. 10	16.70	71,600	1971	Mar. 4	21.55	79,100
1894	Oct. 24	12.70	49,800	1933	Oct. 19	21.50	115,000	1972	Jan. 12	19.26	63,900
1895	Oct. 10	20.40	103,000	1934	Mar. 29	12.70	33,400	1973	Apr. 2	23.99	99,800
1896	Feb. 7	17.80	79,600	1935	Oct. 12	23.30	92,300	1974	Jan. 2	16.87	51,600
1897	Feb. 7	21.50	115,000	1936	Apr. 8	33.34	231,000	1975	Mar. 16	26.47	122,000
1898	Sept. 25	10.20	39,100	1937	Oct. 19	20.56	70,900	1976	Mar. 17	16.16	48,400
1899	Feb. 8	21.70	117,000	1938	Oct. 21	18.42	57,900	1977	Oct. 11	29.74	155,000
1900	Apr. 22	22.00	120,000	1939	Mar. 2	19.93	66,400	1978	Jan. 28	21.87	81,700
1901	Apr. 3	23.00	132,000	1940	Aug. 16	26.14	121,000	1979	Feb. 26	23.46	94,500
1902	Mar. 2	22.00	120,000	1941	July 18	17.19	52,000	1980	Mar. 30	23.29	93,100
1903	June 9	27.20	194,000	1942	Feb. 19	17.31	52,400	1981	Oct. 2	16.81	51,300
1904	Aug. 10	12.20	47,500	1943	Jan. 20	19.44	63,400	1982	Jan. 6	22.20	84,200

1905	Feb. 22	14.70	59,400	1944	Mar. 21	24.57	105,000	1983	Mar. 18	19.65	66,000
1906	Dec. 22	20.30	102,000	1945	Sept. 20	24.30	102,000	1984	Feb. 16	20.30	70,300
1907	June 3	9.00	34,500	1946	Jan. 9	19.21	62,200	1985	Aug. 19	17.52	54,700
1908	Aug. 27	39.80	364,000	1947	Jan. 21	19.42	63,400	1986	Nov. 23	18.37	58,900
1909	June 5	22.00	120,000	1948	Feb. 14	17.72	54,400	1987	Mar. 3	26.67	123,000
1910	Mar. 3	13.80	54,900	1949	Nov. 30	25.56	116,000	1988	Jan. 23	9.78	24,700
1911	Oct. 9	10.90	41,900	1950	Oct. 9	16.77	50,200	1989	Mar. 25	16.17	48,400
1912	Mar. 17	30.70	256,000	1951	Dec. 9	12.27	32,000	1990	Oct. 3	23.37	93,700
1913	Mar. 16	23.20	135,000	1952	Mar. 6	23.20	91,400	1991	Oct. 15	27.94	135,000
1914	Dec. 31	14.60	58,900	1953	Feb. 23	15.28	43,500	1992	Apr. 23	16.78	51,200
1915	Jan. 8	17.40	76,500	1954	Jan. 25	19.66	65,200	1993	Mar. 26	19.49	65,200
1916	July 17	31.50	272,000	1955	Apr. 15	16.06	47,000	1994	Aug. 20	20.59	72,300
1917	Mar. 6	17.80	79,600	1956	Apr. 18	15.22	43,100	1995	Jan. 17	25.95	116,000
1918	Jan. 31	12.20	47,500	1957	Apr. 7	12.00	31,000	1996	Feb. 4	20.97	74,900
1919	Oct. 28	20.70	106,000	1958	May 1	19.46	64,000	1997	Feb. 17	16.69	50,800
1920	Aug. 28	19.50	94,100	1959	June 3	12.60	33,100	1998	Feb. 5	23.55	95,200
1921	Feb. 11	24.30	149,000	1960	Oct. 1	19.68	65,200	1999	Jan. 6	10.51	27,000
1922	Feb. 17	22.20	123,000	1961	Feb. 25	21.08	74,400	2000	Mar. 22	13.97	39,100
1923	Mar. 18	17.70	78,800	1962	Jan. 8	19.69	65,200	2001	Mar. 31	11.86	31,400
1924	Jan. 18	15.60	64,600	1963	Mar. 15	23.09	91,800	2002	Jan. 22	8.59	20,500
1925	Jan. 20	23.50	139,000	1964	Apr. 10	28.60	142,000	2003	Mar. 22	25.79	115,000
1926	Feb. 26	13.00	51,100	1965	Oct. 18	26.18	120,000	2004	Sept. 10	23.88	98,000
1927	Feb. 25	10.20	39,100	1966	Mar. 6	21.74	80,600	2005	Mar. 29	17.76	55,900
1928	Aug. 18	33.50	311,000	1967	Aug. 25	23.78	97,900	2006	Oct. 10	16.01	47,700
1929	Mar. 1	25.90	173,000	1968	Jan. 12	18.81	61,200				

SANTEE RIVER BASIN

02170000 SANTEE RIVER AT FERGUSON, S.C.

LOCATION.--Lat 33º26'15", long 80º16'20" referenced to North American Datum of 1927. at Ferguson, Orangeburg County, Hydrologic Unit 03050111, 4 miles downstream from Eutaw Creek, inundated by Lake Marion since 1942.

DRAINAGE AREA.--14,600 mi^2.

GAGE.--Nonrecording prior to Nov. 23, 1921, recording thereafter. Datum of gage is 42.30 ft above National Geodetic Vertical Datum of 1929, supplementary adjustment of 1936.

REMARKS.--Gage heights prior to Nov. 23, 1921, furnished by the U.S. Weather Bureau. Peaks affected since August 1929 by storage in Lake Murray and to a lesser degree since 1904 by storage in reservoirs on Catawba, Wateree, and Broad Rivers. Site is currently inundated by Lake Marion; therefore frequency data were not computed.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 260,000 ft^3/s and extended on basis of velocity-area studies.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1908	Aug. 31	23.70	344,000	1920	Apr. 3	14.00	53,000	1932	Jan. 15	13.95	53,000
1909	June 10	15.62	101,000	1921	Feb. 15	17.47	158,000	1933	Jan. 3	14.08	56,000
1910	Mar. 9	13.90	50,000	1922	Feb. 21	15.77	106,000	1934	June 12	13.80	47,000
1911	Jan. 10	13.47	38,000	1923	Mar. 23	15.20	89,000	1935	Oct. 17	13.81	47,000
1912	Mar. 20	19.44	215,000	1924	Jan. 23	13.87	50,000	1936	Apr. 11	20.42	245,000
1913	Mar. 21	15.56	101,000	1925	Jan. 23	17.13	146,000	1937	Jan. 11	14.19	59,000
1914	Jan. 6	14.02	53,000	1926	Mar. 3	13.43	35,900	1938	Oct. 27	13.54	38,000
1915	Jan. 24	14.65	71,000	1927	Mar. 2	13.30	32,500	1939	Mar. 7	15.1	86,000
1916	July 21	24.74	374,000	1928	Aug. 22	20.60	251,000	1940	Aug. 21	14.07	56,000
1917	Mar. 10	14.70	74,000	1929	Mar. 10	17.55	160,000	1941	July 24	[1]15.98	[2]48,000
1918	Feb. 6	13.90	50,000	1930	Oct. 7	21.04	263,000				
1919	July 27	17.12	146,000	1931	Jan. 19	12.88	26,000				

[1]Affected by backwater; annual maximum gage height occurred on July 25, 1941.

[2]Maximum daily flow occurred on July 24, 1941.

SANTEE RIVER BASIN

02171500 SANTEE RIVER NEAR PINEVILLE, S.C.

LOCATION.--Lat 33º27'15", long 80º09'25" referenced to North American Datum of 1927, Berkeley County, Hydrologic Unit 03050112, on right bank 2.4 mi downstream from Lake Marion Dam, 3.0 mi upstream from Dead River, 6.7 mi west of Pineville, and at river mile 85.0.

DRAINAGE AREA.--Indeterminate.

GAGE.--Data collection platform. Datum of gage is 22.83 ft above National Geodetic Vertical Datum of 1929 (from South Carolina Geodetic Survey benchmark). Prior to Feb. 25, 1943, nonrecording gage at site 2.2 mi upstream of temporary water-stage recorder operated by U.S. Army Corps of Engineers, at site 200 ft upstream, at different datum.

REMARKS.--Flow records for 1987-2004 water years are computed by utilization of a one-dimensional unsteady flow simulation model (BRANCH). Flow completely regulated by Lake Marion. Water is diverted above station from Lake Marion through Diversion Canal into Lake Moultrie for generation of power and for navigation, then discharged into Cooper River basin and lower Santee.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 14,600 ft^3/s and extended by computation of peak flow over spillway at Lake Marion.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1943	Mar. 27	23.23	32,300	1964	Apr. 13	27.07	77,200	1985	Feb. 12	9.55	3,900
1944	Mar. 24	29.52	122,000	1965	Oct. 22	27.41	88,100	1986	Dec. 6	22.24	16,600
1945	Sept. 23	31.10	155,000	1966	Mar. 9	24.94	51,400	1987	---	---	---
1946	Jan. 9	25.50	55,800	1967	Aug. 26	25.42	52,400	1988	---	---	---
1947	Feb. 8	30.04	132,000	1968	Jan. 17	22.77	23,000	1991	Oct. 18	27.26	---
1948	Feb. 17	26.35	73,800	1969	Apr. 20	24.87	45,500	1992	Mar. 11	8.28	---
1949	Dec. 4	28.56	114,000	1970	Mar. 24	24.03	36,400	1993	Jan. 13	26.69	---
1950	Aug. 29	---[a]	782	1971	Mar. 8	25.51	53,600	1994	Aug. 24	23.96	---
1951	June 24	---[a]	617	1972	Jan. 21	21.64	19,800	1995	Jan. 20	26.29	---
1952	Mar. 11	27.77	89,900	1973	Apr. 7	25.24	50,100	1996	Feb. 10	20.10	---
1953	Mar. 25	7.15	2,830	1974	Feb. 16	21.94	21,300	1997	Mar. 7	19.44	---
1954	Apr. 17	3.53	1,140	1975	Mar. 19	27.91	91,700	1998	Feb. 3	27.67	---
1955	Oct. 15	2.34	653	1976	May 8	6.49	2,340	1999	Mar. 3	6.29	---
1956	Apr. 7	2.51	744	1977	Oct. 14	26.01	60,200	2000	Apr. 4	5.53	---
1957	Apr. 6	3.12	989	1978	Jan. 31	24.74	43,900	2001	Apr. 1	7.53	---
1958	Nov. 30	25.85	59,700	1979	Mar. 2	27.74	85,000	2002	Sept. 10	2.55	---

1959	July 27	12.36	6,840	1980	Mar. 30	26.58	67,900	2003	Mar. 25	27.44	88,800
1960	Feb. 18	26.57	69,300	1981	Mar. 16	7.01	2,640	2004	Sept. 14	23.63	42,000
1961	Mar. 3	24.68	46,500	1982	Jan. 10	26.88	72,000	2005	Apr. 2	22.66	39,900
1962	Mar. 17	24.03	36,100	1983	Apr. 16	24.73	32,300	2006	Oct. 2	18.62	20900
1963	Mar. 18	25.43	52,200	1984	Dec. 13	13.65	25,600				

SANTEE RIVER BASIN

02171650 SANTEE RIVER BELOW ST. STEPHENS, S.C.

LOCATION.--Lat 33º24'05", long 79º51'20", referenced to North American Datum of 1927, Berkeley County, Hydrologic Unit 03050112, on right bank, on Tract 13P of Francis Marion National Forest, 3.9 mi east of St. Stephens, 600 ft downstream from Mattassee Lake, and at river mile 52.0.

DRAINAGE AREA.--14,900 mi^2, approximately.

GAGE.--Water-stage recorder. Datum of gage is 0.23 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Regulation patterns has been altered since rediversion in 1986.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 83,700 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1971	Mar. 10	25.77	66,200	1975	Mar. 21	29.67	98,900	1979	Mar. 4	28.98	89,600
1972	Jan. 23	21.29	22,700	1976	July 1	9.00	2,150	1980	Apr. 4	27.52	73,400
1973	Apr. 9	25.32	61,800	1977	Oct. 17	25.93	58,900	1981	Mar. 18	---	1,300
1974	Feb. 21	20.64	19,600	1978	Feb. 3	24.96	50,600				

SAVANNAH RIVER BASIN

02187500 SAVANNAH RIVER NEAR IVA, S.C.

LOCATION.--Lat 34º15'20", long 82º44'42" referenced to North American Datum of 1927, Anderson County, Hydrologic Unit 03060103, on left bank at downstream side of bridge on State Highway 184, 0.5 mi upstream from Little Generostee Creek, 5.8 mi southwest of Iva, and at river mile 296.5.

DRAINAGE AREA.--2,230 mi^2.

GAGE.--Water-stage recorder. Datum of gage is 432.26 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Flow regulated by power plants above station, by Burton and Mathis Reservoirs, and by Hartwell Lake. Currently in backwater from Richard B. Russell Dam.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 52,300 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1950	Oct. 10	---	27,500	1961	Mar. 7	5.79	10,400	1972	Jan. 7	8.43	31,000
1951	Oct. 21	8.98	27,200	1962	Dec. 18	7.89	21,200	1973	Dec. 15	8.57	32,000
1952	Mar. 12	12.74	54,400	1963	Apr. 30	7.86	21,400	1974	Aug. 9	8.01	28,100
1953	Feb. 22	10.44	36,800	1964	Apr. 8	11.25	44,300	1975	Mar. 13	8.82	33,700
1954	Jan. 16	11.28	44,200	1965	Oct. 5	8.87	29,500	1976	Mar. 31	8.23	29,600
1955	Feb. 7	10.04	34,000	1966	Mar. 4	9.79	35,000	1977	Mar. 30	8.12	28,800
1956	Apr. 16	9.65	31,200	1967	June 6	8.88	30,800	1978	Jan. 25	8.47	31,300
1957	Apr. 6	10.08	34,800	1968	Jan. 12	8.58	29,000	1979	Apr. 13	8.73	33,300
1958	Nov. 19	9.67	32,000	1969	May 2	8.44	28,100	1980	Mar. 28	8.36	30,500
1959	Apr. 13	8.22	22,000	1970	July 29	8.51	28,600	1981	July 24	7.99	27,800
1960	Apr. 6	6.16	12,300	1971	Mar. 3	8.96	31,300				

SAVANNAH RIVER BASIN

02188000 ROCKY RIVER NEAR CALHOUN FALLS, S.C.

LOCATION.--Lat 34º07'40", long 82º37'56" referenced to North American Datum of 1927, Abbeville County, Hydrologic Unit 03060103, on right bank, 2,000 ft upstream from Swanigan Mill bridge on county road, 3.2 mi northwest of Calhoun Falls, and 3.8 mi upstream from mouth.

DRAINAGE AREA.--267 mi^2.

GAGE.--Digital water-stage recorder. Datum of gage is 403.04 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Aug. 13, 1964, graphic water-stage recorder at same site and datum.

REMARKS.--Flow regulated by Lake Secession (storage capacity, about 1.12 x 10^9 ft^3). City of Abbeville diverts a small amount of water during year for municipal supply.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 8,450 ft^3/s and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1951	Dec. 7	3.44	1,240	1961	Feb. 25	6.81	4,360	1975	Mar. 13	11.57	9,380
1952	Mar. 25	9.44	9,450	1962	Feb. 22	5.42	2,960	1976	Mar. 17	6.08	3,380
1953	Mar. 23	4.54	2,240	1963	Mar. 13	7.68	5,330	1977	Oct. 9	7.50	4,800
1954	Jan. 23	5.09	2,880	1964	Mar. 26	12.79	10,900	1978	Oct. 26	6.84	4,140
1955	Feb. 6	4.92	2,700	1965	Oct. 6	12.51	10,600	1979	Apr. 13	11.40	9,180
1956	Sept. 27	6.22	4,110	1966	Mar. 5	9.57	7,030	1980	---	---	---
1957	Apr. 5	3.60	1,260	1971	Mar. 3	10.65	8,280	1981	Oct. 1	9.24	6,660
1958	Nov. 20	7.45	5,000	1972	Jan. 11	7.21	4,510	1982	Jan. 4	9.56	7,020
1959	Sept. 7	6.23	3,860	1973	Apr. 1	5.86	3,160				
1960	Feb. 14	5.87	3,560	1974	Jan. 9	11.20	8,940				

SAVANNAH RIVER BASIN

02189000 SAVANNAH RIVER NEAR CALHOUN FALLS, S.C.

LOCATION.--Lat 34º04'15", long 82º38'30" referenced to North American Datum of 1927, Abbeville County, Hydrologic Unit 03060103, on left bank 150 ft upstream from bridge on State Highway 72, 1.0 mi downstream from Seaboard Coast Line Railway bridge, 1.5 mi downstream from Rocky River, 3.0 mi southwest of Calhoun Falls, and at river mile 279.7.

DRAINAGE AREA.--2,880 mi^2.

GAGE.--Water-stage recorder. Datum of gage is 363.53 ft above National Geodetic Vertical Datum of 1929. Prior to July 1, 1928, nonrecording gage at railroad bridge 1.0 mi upstream at elevation 369.0 ft.

REMARKS.--During the period of record, flow regulated by power plants above station, by Burton and Mathis Reservoirs, and by Lake Hartwell. In 1984, the site was inundated by Richard B. Russell Lake.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Aug. 25, 1908, reached a stage of 28.2 ft at original site and datum, from records of National Weather Service.

STAGE-FLOW RELATION.--Defined by current-meter measurements below 50,000 ft^3/s. Extended above 50,000 ft^3/s by velocity-area studies.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1897	Apr. 5	15.30	57,400	1927	Dec. 29	8.50	27,800	1955	Feb. 7	6.89	40,200
1900	Feb. 14	19.70	76,500	1928	Aug. 17	11.90	130,000	1956	Sept. 26	7.02	40,200
1901	Sept. 18	17.40	66,500	1929	Sept. 27	8.70	85,400	1957	Apr. 6	6.79	38,100
1902	Feb. 28	19.60	76,100	1930	Oct. 2	10.10	105,000	1958	Nov. 19	6.76	38,100
1903	June 7	15.40	57,800	1931	Apr. 23	4.22	15,800	1959	June 2	6.41	32,800
1904	Aug. 9	9.90	33,900	1932	Dec. 4	7.10	41,400	1960	Feb. 13	5.03	19,600
1905	July 2	13.00	47,400	1933	Oct. 17	11.60	97,600	1961	Mar. 8	4.79	17,400
1906	Mar. 20	11.80	42,200	1934	June 5	7.00	39,400	1962	Dec. 19	5.62	26,000
1907	Oct. 4	9.90	33,900	1935	Jan. 10	6.00	29,400	1963	Apr. 30	6.12	30,900
1908	Aug. 25	28.20	114,000	1936	Apr. 7	11.50	96,200	1964	Apr. 8	8.08	60,000
1909	June 4	12.20	43,900	1937	Oct. 1	9.00	63,000	1965	Oct. 6	6.91	44,800
1910	Mar. 1	12.50	45,200	1938	Oct. 20	8.20	53,100	1966	Mar. 4	7.50	52,500
1911	Jan. 4	7.50	23,500	1939	Aug. 19	7.88	49,600	1967	June 5	6.76	39,900
1912	Mar. 16	19.50	75,700	1940	Aug. 13	11.52	96,500	1968	Jan. 10	6.17	33,200
1913	Mar. 15	13.20	48,300	1941	July 7	6.70	36,300	1969	Jan. 20	7.04	43,400

1914	Dec. 30	7.20	22,200	1942	Feb. 18	7.73	47,200	1970	July 29	5.89	32,000
1915	July 1	10.90	38,300	1943	Jan. 18	8.21	53,100	1971	Mar. 4	6.97	45,600
1916	Dec. 30	12.40	44,800	1944	Mar. 20	7.91	49,500	1972	Jan. 10	6.20	35,700
1917	Mar. 25	11.30	40,000	1945	Apr. 25	6.40	33,300	1973	Dec. 16	6.80	43,400
1918	Aug. 3	8.10	26,100	1946	Jan. 8	9.41	68,400	1974	Apr. 5	5.84	31,400
1919	Dec. 23	15.70	59,100	1947	Jan. 20	7.47	44,800	1975	Mar. 14	7.32	47,100
1920	Dec. 10	16.60	63,100	1948	Mar. 7	6.11	29,800	1976	Mar. 16	6.72	39,400
1921	Feb. 9	14.00	51,800	1949	Nov. 29	8.94	61,800	1977	Mar. 30	6.35	35,200
1922	Mar. 11	10.10	34,800	1950	Oct. 8	5.98	29,400	1978	Jan. 26	7.16	45,000
1923	Dec. 19	10.30	35,700	1951	Oct. 21	5.98	28,800	1979	Apr. 13	7.78	52,900
1924	Sept. 21	11.30	40,000	1952	Mar. 24	8.65	58,000	1980	Mar. 28	10.30	91,400
1925	Jan. 19	9.40	31,700	1953	Feb. 22	6.94	38,400				
1926	Jan. 19	8.60	28,300	1954	Jan. 17	7.44	44,600				

SAVANNAH RIVER BASIN

02197000 SAVANNAH RIVER AT AUGUSTA, GA.

LOCATION.--Lat 33º22'25", long 81º56'35" referenced to North American Datum of 1927, Richmond County, Ga.-Aiken County, S.C., Hydrologic Unit 03060106, at New Savannah River Bluff lock and dam, 0.2 mi upstream from Butler Creek, 12.0 mi downstream from Augusta, and at river mile 187.4.

DRAINAGE AREA.--7,510 mi^2, including that of Butler Creek..

GAGE.--Data collection platform. Datum of gage is 96.58 ft above National Geodetic Vertical Datum (NGVD) of 1929 (U.S. Army Corps of Engineers bench mark). Oct. 1, 1883 to Dec. 31, 1891, Jan. 1, 1896 to Dec. 31, 1906, Jan. 1, 1925 to Sept. 30, 1932, nonrecording or recording gage at Fifth Street Bridge at datum 102.06 ft above NGVD of 1929 (levels by Southeastern Engineering Co.). Oct. 1, 1932 to Sept. 30, 1936, recording gage at Thirteenth Street bridge at datum 104.56 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Oct. 1, 1936 to Nov. 10, 1948, recording gage at site 0.2 mi downstream from present site and at present datum.

REMARKS.--Flow regulated by Hartwell Lake, by Thurmond Lake, and by Richard B. Russell Lake, and by other power plants above station. Minor regulation from Lake Burton and Mathis Reservoir. Peaks for periods of nonrecording gage are from graphs based on gage readings by the U.S. Weather Bureau (now National Weather Service) and the city of Augusta. Gage heights for June 11, 1927 to July 31, 1932, furnished by Savannah River Electric Co. Subsequent to Sept. 30, 1938, gage heights collected in cooperation with the U.S. Army Corps of Engineers. Revised records include WSP 1303: 1927-39 (monthly runoff), WSP 1433: 1888, 1896-99, 1902-03, 1906-07, and 1932 (M), and WRD SC-77-1: 1975. WRD SC-94-1: Peaks outside period of record, 1796, 1840, 1852, 1864, 1865, 1908.

EXTREMES OUTSIDE PERIOD OF RECORD.-- Maximum flow, 307,000 ft^3/s, Aug. 27, 1908, gage height, 38.8 ft, at site and datum at Fifth Street gage. Stages and flows for other floods at site and datum at Fifth Street gage are as follows: 280,000 ft^3/s, Jan. 17, 1796, gage height (determined by analysis of historical documents), 38 ft; 260,000 ft^3/s, May 28, 1840, gage height, 37.5 ft; 230,000 ft^3/s, Aug. 29, 1852, gage height, 36.8 ft; 160,000 ft^3/s, Jan. 1, 1864, gage height, 34.0 ft; 220,000 ft^3/s, Jan. 11, 1865, gage height, 36.4 ft. Stages for the 1840, 1852, 1864, and 1865 floods were obtained from the City of Augusta, Georgia, gage records that were copied in the log books of the National Weather Service. These floods and floods recorded by the National Weather Service beginning in 1876 are stored in the USGS peak flow database. Other historical documents indicated floods of unknown magnitude occurred in 1722 and 1741.

STAGE-FLOW RELATION.--Defined for period prior to levee construction (completed in 1914) by current-meter measurements below 127,000 ft^3/s and by slope-conveyance study at 360,000 ft^3/s. Defined for subsequent period by current-meter measurements below 300,000 ft^3/s and by computation of flow over Stevens Creek Dam to 350,000 ft^3/s. Bankfull stage and flow, 21 ft and 36,000 ft^3/s. At site used prior to Oct. 1, 1936, bankfull stage and flow, 32 ft and approximately 110,000 ft^3/s.

SAVANNAH RIVER BASIN

02197000 SAVANNAH RIVER AT AUGUSTA, GA., Continued

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1796	Jan. 17	38.00	280,000*	1916	Feb. 3	31.00	82,400	[4]1961	Apr. 2	20.56	34,800
1840	May 28	37.50	260,000*	1917	Mar. 6	29.20	68,000	1962	Jan. 9	20.09	32,500
1852	Aug. 29	36.80	230,000*	1918	Jan. 30	25.50	45,500	1963	Mar. 23	19.52	31,300
1864	Jan. 1	34.00	160,000*	1919	Dec. 24	35.00	128,000	1964	Apr. 9	24.16	87,100
1865	Jan. 11	36.40	220,000*	1920	Dec. 11	35.40	133,000	1965	Dec. 27	20.62	34,600
1876	Dec. 30	28.60	86,400	1921	Feb. 11	35.10	129,000	1966	Mar. 6	21.50	39,300
1877	Apr. 14	31.40	119,000	1922	Feb. 16	32.00	92,000	1967	Aug. 25	18.10	26,500
1878	Nov. 23	23.50	51,500	1923	Feb. 28	28.00	59,700	1968	Jan. 12	20.94	35,900
1879	Aug. 3	22.00	44,000	1924	Sept. 22	28.00	59,700	1969	Apr. 21	22.24	45,600
1880	Dec. 16	30.10	102,000	1925	Jan. 20	36.50	150,000	1970	Apr. 1	17.68	25,200
1881	Mar. 18	32.20	130,000	1926	Jan. 20	27.30	55,300	1971	Mar. 5	23.30	63,900
1882	Sept. 12	29.30	93,300	1927	Dec. 30	24.00	39,000	1972	Jan. 20	20.36	33,700
1883	Jan. 22	30.80	111,000	1928	Aug. 17	40.40	226,000	1973	Apr. 8	21.63	40,200
1884	Apr. 16	28.00	81,000	1929	Sept. 27	46.30	343,000	1974	Feb. 23	20.13	32,900
1885	Jan. 26	27.50	77,000	1930	Oct. 2	45.10	350,000	1975	Mar. 25	22.24	45,600
1886	May 21	32.50	135,000	1931	Nov. 17	19.90	26,100	1976	June 5	20.27	33,300
1887	July 31	34.50	173,000	1932	Jan. 9	30.40	93,800	1977	Apr. 7	20.50	34,200
1888	Sept. 11	38.70	303,000	1933	Oct. 18	30.30	92,600	1978	Jan. 26	21.98	43,100
1889	Feb. 19	33.30	149,000	1934	Mar. 5	28.50	73,200	1979	Feb. 27	21.13	37,300
1890	Feb. 27	22.90	48,500	1935	Mar. 15	27.40	63,700	1980	Mar. 31	22.33	47,200
1891	Mar. 10	35.50	197,000	1936	Apr. 8	41.20	258,000	1981	Feb. 12	14.70	17,700
1892	Jan. 20	32.80	140,000	1937	Jan. 4	30.10	91,400	1982	Jan. 2	19.39	30,700
1893	Feb. 14	25.00	60,000	1938	Oct. 21	30.10	91,400	[5]1983	Apr. 10	23.21	66,100
1894	Aug. 7	24.00	54,000	1939	Mar. 2	24.10	90,900	1984	Mar. 5	20.35	34,000
1895	Jan. 11	30.40	106,000	1940	Aug. 15	29.40	239,000	1985	Feb. 7	17.89	25,700
1896	July 10	30.50	107,000	1941	July 8	22.89	53,300	1986	Oct. 3	15.74	21,000
1897	Apr. 6	29.30	93,300	1942	Mar. 23	24.56	105,000	1987	Mar. 6	18.98	29,200
1898	Sept. 2	31.30	117,000	1943	Jan. 20	25.10	117,000	1988	Feb. 5	10.61	13,600
1899	Feb. 8	31.00	113,000	1944	Mar. 22	25.53	128,000	1989	Sept. 22	15.33	20,200
1900	Feb. 15	32.70	138,000	1945	Apr. 27	23.16	64,000	1990	Feb. 27	20.69	35,300
1901	Apr. 4	31.80	124,000	1946	Jan. 9	24.43	97,200	1991	Oct. 13	22.80	59,200

1902	Mar. 1	34.60	175,000	1947	Jan. 22	23.97	86,000	1992	Mar. 27	16.29	22,100
1903	Feb. 9	33.20	147,000	1948	---	---	---	1993	Jan. 14	21.81	45,100
1904	Aug. 10	25.50	63,000	1949	Nov. 30	26.61	154,000	1994	Jul. 1	21.40	40,700
1905	Feb. 14	25.80	64,800	1950	Oct. 9	20.10	32,500	1995	Feb. 19	20.48	33,600
1906	Jan. 5	29.60	96,600	1951	Oct. 22	22.32	46,300	1996	Feb. 5	20.48	34,400
1907	Oct. 5	23.60	52,000	[3]1952	Mar. 6	21.53	39,300	1997	Mar. 10	18.11	26,300
1908	Aug. 27	38.80	307,000	1953	May 8	20.80	35,200	1998	Feb. 7	21.63	43,000
1909	June 5	28.70	87,300	1954	Mar. 30	17.39	25,500	1999	Feb. 2	14.72	19,000
1910	Mar. 2	26.40	69,800	1955	Apr. 15	16.77	23,900	2000	Jan. 25	13.25	16,800
1911	Apr. 14	19.10	32,800	1956	Apr. 12	14.70	18,600	2002	Mar. 4	7.14	8,510
1912	Mar. 17	36.80	234,000	1957	May 7	14.08	18,000	2003	May 24	20.42	31,600
1913	Mar. 16	35.10	156,000	1958	Apr. 18	22.91	66,300	2004	June 14	13.82	17,600
1914	Dec. 31	24.30	48,000	1959	June 8	18.65	28,500	2005	Mar. 29	20.30	33,700
1915	Jan. 20	28.20	61,000	1960	Feb. 14	20.58	34,900	2006	Mar. 23	19.12	29,400

[1]Flood of January 17, 1796, reached a stage of about 38.8 ft (at site and datum of Fifth Street gage), marked by local residents.

[2]U.S. House of Representatives Document No. 64.

[3]Filling of Thurmond Lake began in December 1951.

[4]Filling of Hartwell Lake began in February 1961.

[5]Filling of Russell Lake began in October 1984.

*Estimated values.

SAVANNAH RIVER BASIN

02197500 SAVANNAH RIVER AT BURTONS FERRY BRIDGE, NEAR MILLHAVEN, GA.

LOCATION.--Lat 32º56'20", long 81º30'10" referenced to North American Datum of 1927, Screven County (GA) – Allendale County (S.C.), Georgia-South Carolina state line, Hydrologic Unit 03060106, on right bank 500 ft downstream from U.S. Highway 301 bridge, 2.0 mi downstream from Rocky Creek, 9.0 mi east of Millhaven, and at river mile 118.7 (revised).

DRAINAGE AREA.--8,650 mi^2, approximately.

GAGE.--Data collection platform. Datum of gage is 52.42 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by Thurmond Lake and affected by regulation of Hartwell Lake and Richard B. Russell Lake.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1929 reached a stage of 30.8 ft from information by U.S. Army Corps of Engineers, flow, 220,000 ft^3/s, from rating curve extended graphically above 141,000 ft^3/s on logarithmic plotting paper.

STAGE-FLOW RELATION.--Defined by current-meter measurements by U.S. Army Corps of Engineers up to 141,000 ft^3/s, which is maximum for period of record.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1930	Oct. 5	30.80	220,000	1957	May 11	12.27	13,900	1987	Mar. 10	16.79	27,600
1940	Aug. 18	27.00	141,000	1958	Apr. 22	18.94	41,400	1988	Oct. 2	10.80	11,900
1941	July 13	18.20	38,400	1959	June 13	16.59	27,400	1989	Mar. 26	14.73	19,800
1942	Mar. 26	22.00	73,000	1960	Feb. 17	18.28	37,100	1990	Mar. 2	18.14	36,000
1943	Jan. 23	22.60	80,900	1961	Apr. 24	17.60	32,400	1991	Oct. 17	17.66	32,700
1944	Mar. 26	23.40	89,300	1962	Jan. 15	16.75	27,400	1992	Mar. 30	14.17	18,300
1945	May 1	18.80	42,900	1963	Mar. 27	17.22	29,200	1993	Jan. 10	18.66	39,600
1946	Jan. 12	21.60	68,600	1964	Apr. 15	22.10	71,700	1994	Aug. 26	17.79	33,600
1947	Jan. 25	21.53	67,500	1965	Apr. 4	17.66	32,800	1995	Mar. 1	17.86	34,100
1948	Feb. 14	21.10	61,000	1966	Mar. 9	18.05	37,100	1996	Feb. 16	17.70	33,000
1949	Dec. 3	24.91	108,000	1967	June 17	15.47	22,000	1997	Mar. 14	16.95	28,400
1950	Oct. 14	14.87	18,500	1968	Jan. 16	16.64	26,800	1998	Feb. 10	18.70	39,900
1951	Oct. 27	16.53	25,700	1969	Apr. 25	18.31	37,200	1999	Feb. 5	12.84	16,100
1952	Mar. 29	18.26	38,500	1970	Apr. 4	14.14	18,200	2000	Jan. 28	12.20	15,200
1953	May 13	17.52	31,800	1983	Apr. 15	---	60,000	2001	Mar. 7	11.33	13,400

1954	Apr. 6	14.40	17,600	1984	May 12	17.83	33,900	2002	Feb. 9	7.25	8,950
1955	Apr. 18	13.21	15,000	1985	Feb. 10	14.69	19,700	2003	Mar. 21	17.34	29,300
1956	Mar. 19	11.88	13,700	1986	Nov. 25	12.71	15,200	2004	Oct. 9	16.60	26,700
								2006	Mar. 26	15.34	21,600

SAVANNAH RIVER BASIN

02198500 SAVANNAH RIVER NEAR CLYO, GA.

LOCATION.--Lat 32º31'41", long 81º16'08" referenced to North American Datum of 1927, Effington County (GA) – Jasper County (S.C.), Hydrologic Unit 03060109, at Georgia-South Carolina State line, on downstream side of center pier of drawspan of bridge on Seaboard Coast Line Railroad, 3.0 mi north of Clyo, and at river mile 61.4.

DRAINAGE AREA.--9,850 mi^2, approximately.

GAGE.--Data-collection platform. Datum of gage is 13.39 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 31. 1933, nonrecording gage at same site and at datum 4.00 ft higher. Jan. 31, 1933 to June 12, 1945, nonrecording gage at same site and datum. All gage readings have been adjusted to present datum.

REMARKS.--Flow regulated by Hartwell Lake, Thurmond Lake, Richard B. Russell Lake, and by other power plants above station.

STAGE-FLOW RELATION.--Defined by current-meter measurements up to 130,000 ft^3/s, and graphically extended on logarithmic plotting paper.

Peak Stages and Flows

Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)	Water Year	Date	Gage Height (ft)	Flow (ft^3/s)
1925	Jan. 24	23.90	134,000	1953	May 17	15.80	35,800	1981	Feb. 16	10.39	13,600
1926	Jan. 28	15.40	31,400	1954	Apr. 12	12.49	18,800	1982	Jan. 11	12.89	19,500
1927	Mar. 6	13.40	20,600	1955	Apr. 23	11.35	15,500	1983	Apr. 17	18.40	58,600
1928	Aug. 23	22.30	106,000	1956	Mar. 22	10.47	14,100	1984	May 14	16.48	37,700
1929	Mar. 11	23.60	128,000	1957	May 15	11.15	15,000	1985	Feb. 15	12.89	19,500
1930	Oct. 6	29.70	270,000	1958	Apr. 25	17.41	45,500	1986	Nov. 28	11.50	15,800
1931	Nov. 28	12.77	18,200	1959	June 18	14.36	26,000	1987	Mar. 13	15.57	29,700
1932	Jan. 15	19.18	59,600	1960	Feb. 19	17.35	40,900	1988	Oct. 4	8.93	11,400
1933	Jan. 4	19.20	59,600	1961	Apr. 25	16.20	34,900	1989	Sept. 26	10.54	14,200
1934	June 15	17.20	43,800	1962	Jan. 19	14.98a	28,200	1990	Mar. 5	16.70	39,400
1935	Mar. 22	15.20	29,100	1963	Mar. 31	15.27	29,200	1991	Oct. 20	16.09	34,900
1936	Apr. 13	26.00	176,000	1964	Apr. 18	20.22	83,800	1992	Apr. 3	12.57	17,600
1937	Jan. 11	19.40	65,800	1965	Apr. 6	16.52	38,000	1993	Jan. 13	18.51	60,100
1938	Apr. 16	17.80	48,400	1966	Mar. 11	17.10	42,800	1994	Aug. 30	16.29	36,500
1939	Mar. 8	20.40	70,100	1967	June 22	13.67	22,500	1995	Mar. 4	16.84	40,700
1940	Aug. 22	23.60	128,000	1968	Jan. 21	14.84	28,000	1996	Mar. 21	16.79	36,900
1941	July 17	16.30	36,500	1969	Apr. 29	16.74	39,700	1997	Mar. 17	15.27	30,300
1942	Mar. 29	20.00	73,000	1970	Apr. 7	13.31	21,000	1998	Mar. 12	18.00	53,000

1943	Jan. 27	20.00	73,000	1971	Mar. 6	18.11	54,500	1999	Feb. 7	10.86	14,600
1944	Mar. 29	21.60	95,200	1972	Jan. 26	16.30	36,400	2000	Jan 30	9.75	13,000
1945	May 5	16.00	34,400	1973	Apr. 15	17.29	44,500	2001	Mar. 20	9.90	14.400
1946	Jan. 16	19.50	64,400	1974	Mar. 1	15.78	33,000	2002	Feb. 12	5.77	8,260
1947	Jan. 28	19.40	63,200	1975	Mar. 24	17.83	50,600	2003	Mar. 24	16.75	39,900
1948	Feb. 17	19.66	71,000	1976	June 14	15.87	33,500	2004	Mar. 3	12.77	18,500
1949	Dec. 6	22.17	104,000	1977	Dec. 22	15.85	33,400	2005	Apr. 6	15.46	30,800
1950	Oct. 19	12.21	16,000	1978	Feb. 3	16.81	38,700	2006	Mar. 30	12.54	17.600
1951	Nov. 1	13.38	22,600	1979	Apr. 27	16.34	36,600				
1952	Apr. 2	16.90	41,300	1980	Apr. 2	18.40	58,600				

Manuscript approved on July 8, 2009

For additional information regarding this publication, contact:
USGS South Carolina Water Science Center
720 Gracern Road, Suite 129
Columbia, South Carolina 29210-7651
phone: 803–750–6100
http://sc.water.usgs.gov/

Edit and layout by Kay E. Hedrick
Graphics by Caryl J. Wipperfurth
Geographic information system work by Jaime A. Painter

USGS

Feaster and others—**Magnitude and Frequency of Rural Floods in the Southeastern United States, 2006: Volume 3, South Carolina**—Scientific Investigations Report 2009–5156