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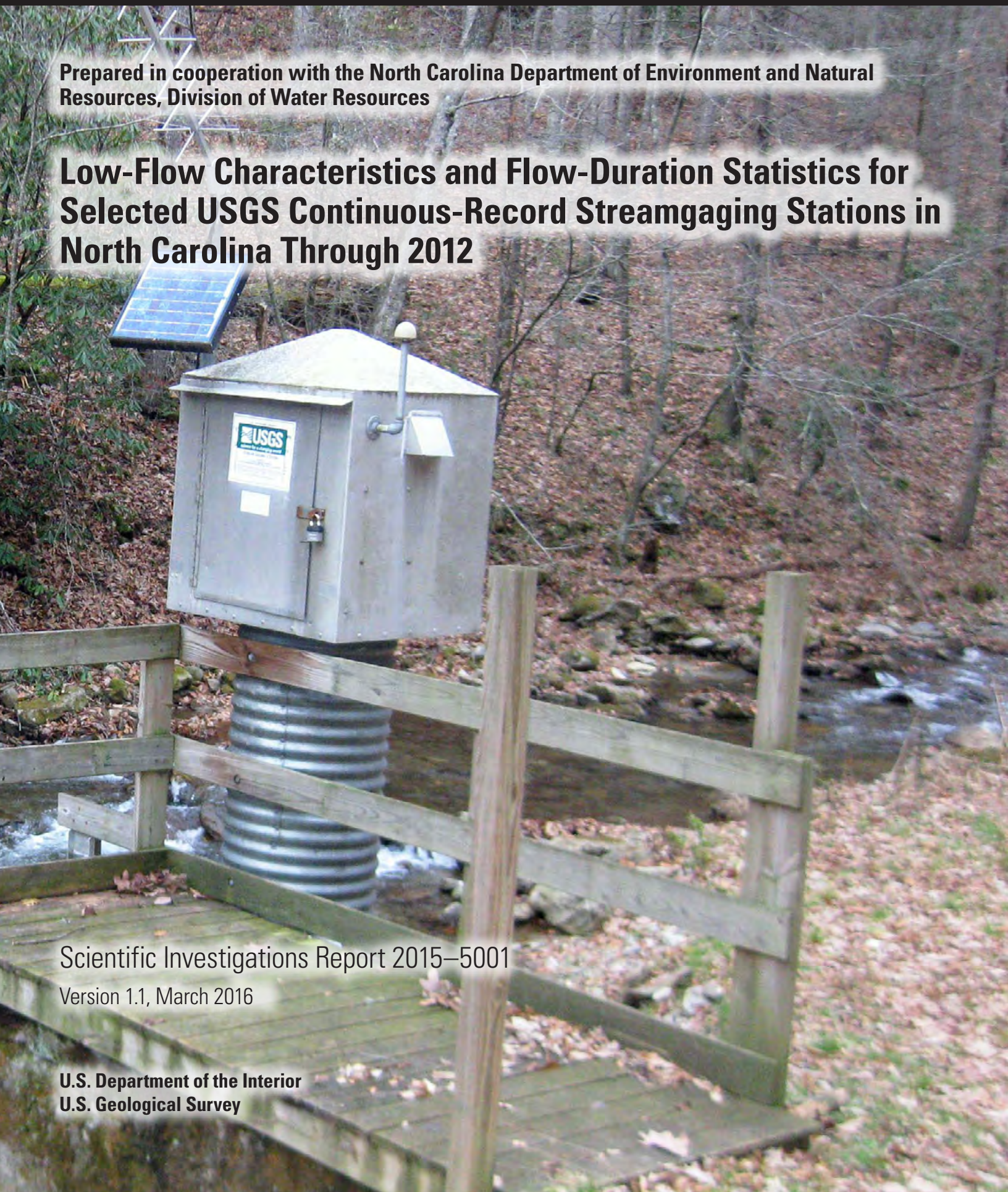
Low-Flow Characteristics and Flow-Duration Statistics for Selected USGS Continuous-Record Streamgaging Stations in North Carolina Through 2012



Scientific Investigations Report 2015–5001

Version 1.1, March 2016

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

Cover: U.S. Geological Survey streamflow gage 03450000, Beetree Creek near Swannanoa in Buncombe County in western North Carolina, with records of continuous discharge dating back to February 1926. Photograph by Curtis Weaver, U.S. Geological Survey.

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U.S. Department of the Interior
SALLY JEWELL, Secretary

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

U.S. Geological Survey, Reston, Virginia
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Support for this study was provided by the North Carolina Division of Water Resources under the leadership of Mr. Tom Reeder, Director. Mr. Reeder's foresight and leadership in areas of water management, as well as his assistance and support of this study, has improved the understanding of the streamflow statistics for streams across North Carolina.

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Conversion Factors

Inch/Pound to SI

Multiply	By	To obtain
	Length	
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)
cubic foot per second (ft^3/s)	0.6463	million gallons per day (Mgal/d)

Datum

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

Abbreviations

30Q2	30-day, 2-year low-flow discharge
7Q10	climatic year 7-day, 10-year low-flow discharge
7Q2	7-day, 2-year low-flow discharge
ASCII	American Standard Code for Information Interchange
DCP	Drought Contingency Plan
DENR	Department of Environment and Natural Resources
EF-SAB	Ecological Flows Science Advisory Board
HA	hydrologic area
NCDWQ	North Carolina Division of Water Quality
NCDWR	North Carolina Division of Water Resources
QAQC	quality assurance and quality control
USGS	U.S. Geological Survey
W7Q10	winter 7-day, 10-year low-flow discharge

Low-Flow Characteristics and Flow-Duration Statistics for Selected USGS Continuous-Record Streamgaging Stations in North Carolina Through 2012

By J. Curtis Weaver

Abstract

In 2013, the U.S. Geological Survey, in cooperation with the North Carolina Division of Water Resources, compiled updated low-flow characteristics and flow-duration statistics for selected continuous-record streamgages in North Carolina. The compilation of updated streamflow statistics provides regulators and planners with relevant hydrologic information reflective of the recent droughts, which can be used to better manage the quantity and quality of streams in North Carolina.

Streamflow records available through the 2012 water year[1] were used to determine the annual (based on climatic year[2]) and winter 7-day, 10-year (7Q10, W7Q10) low-flow discharges, the 30-day, 2-year (30Q2) low-flow discharge, and the 7-day, 2-year (7Q2) low-flow discharge. Consequently, streamflow records available through March 31, 2012 (or the 2011 climatic year) were used to determine the updated low-flow characteristics. Low-flow characteristics were published for 177 unregulated sites, 56 regulated sites, and 33 sites known or considered to be affected by varying degrees of minor regulation and (or) diversions upstream from the streamgages (266 sites total).

The updated 7Q10 discharges were compared for 63 streamgages across North Carolina where (1) long-term streamflow record consisted of 30 or more climatic years of data available as of the 1998 climatic year, and (2) streamflows were not known to be regulated. The 7Q10 discharges did not change for 3 sites, whereas increases and decreases were noted at 5 and 55 sites, respectively. Positive changes (increases) ranged from 4.3 percent (site 362) to 34.1 percent (site 112) with a median of 13.2 percent. Negative percentage changes (decreases) ranged from –3.3 percent (site 514) to –80.0 percent (site 308) with a median of –22.2 percent. The median percentage change for all 63 streamgages was –18.4 percent.

Streamflow statistics determined as a part of this compilation included minimum, mean, maximum, and flow-duration statistics of daily mean discharges for categorical periods. Flow-duration statistics based on the daily mean discharge records were compiled in this study for the 5th, 10th, 25th, 50th, 75th, 90th, and 95th percentiles. Flow-duration statistics were determined for each complete water year of record at a streamgage as well as the available period of record (or selected periods if flows were regulated) and selected seasonal, monthly, and calendar day periods. In addition to the streamflow statistics compiled for each of the water years, the number of days the daily mean discharge was at or below the 10th percentile was summed for each water year as well as the number of events during the water year when streamflow was consistently at or below the 10th percentile.

All low-flow characteristics for the streamgages were added into the StreamStatsDB, which is a database accessible to users through the recently released USGS StreamStats application for North Carolina. The minimum, mean, maximum, and flow-duration statistics of daily mean discharges based on the available (or selected if regulated flows) period of record were updated in the North Carolina StreamStatsDB. However, for the selected seasonal, monthly, calendar day, and annual water year periods, tab-delimited American Standard Code for Information Interchange (ASCII) tables of the streamflow statistics are available online to users from a link provided in the StreamStats application.

[1]The annual period from October 1 through September 30, designated by the year in which the period ends.

[2]The annual period from April 1 through March 31, designated by the year in which the period begins.

Introduction

The future health and economic welfare of the Nation is dependent upon a continuing supply of uncontaminated fresh water. In North Carolina, competition for normally abundant, high-quality surface-water resources has increased in recent decades because of rising demand in response to a growing population. Recent droughts in the southeastern United States also have emphasized the need to better understand low-flow frequency and other streamflow (or flow or discharge, used interchangeably in this report) statistics for sustained water supplies and effective waste assimilation as well as ecological-flow requirements for the protection of aquatic resources in North Carolina.

The U.S. Geological Survey (USGS) has long been a source of streamflow statistics for streams in North Carolina (fig. 1) and serves as an objective source of hydrologic information for regulators and stream users. Since the 1960s, the USGS has provided site-specific estimates of **low flow**[3], the vast majority of estimates in response to site-specific requests from outside the agency.

The North Carolina Division of Water Resources (NCDWR) within the Department of Environment and Natural Resources (DENR) uses low-flow characteristics and other streamflow statistics in its mission to provide the strategic information necessary to manage the State's water resources and to assess the streamflow needed to maintain ecological integrity in surface waters. The division's Water Quality Permitting Section—formerly the North Carolina Division of Water Quality (NCDWQ)—also uses low-flow characteristics in its mission to protect and enhance North Carolina's surface-water and groundwater resources. State regulations require an Engineering Alternatives Analysis for all new and expanding wastewater treatment facilities, requiring permit applicants to contact the USGS for low-flow data (North Carolina Department Environment and Natural Resources, n.d.). Water resources planning and management by the NCDWR covers streams across 17 major river basins lying partially or wholly within the State boundaries (fig. 2).

In the most recent USGS statewide update of low-flow characteristics, Giese and Mason (1993) evaluated low-flow characteristics at 122 continuous-record streamgaging stations and 396 partial-record measuring sites having **drainage areas** ranging from 1 to 400 square miles (mi^2) and streamflows unaffected by regulation or diversion. In conjunction with the basinwide management approach adopted by the former NCDWQ in the early 1990s, the USGS has conducted studies in North Carolina to define low-flow characteristics and develop discharge profiles for streams in selected river basins (Weaver, 1996, 1997, 1998; Weaver and Pope, 2001; Weaver and Fine, 2003; fig. 3).

Since 2003 no systematic and formal update of low-flow characteristics has been completed for streams in North Carolina other than updates associated with responding to site-specific low-flow requests. As a result of droughts since 1998, updated low-flow characteristics at selected long-term USGS streamgaging stations have generally decreased from pre-1998 statistics by varying percentages (Weaver, 2005).

Streamflow statistics, including annual and monthly flow-duration statistics, also are a key component in evaluating ecologic integrity of the aquatic environment. In 2010, the passage of North Carolina General Assembly House Bill 1743 mandated that the NCDWR convene an Ecological Flows Science Advisory Board (EF–SAB, North Carolina General Assembly, 2009) to advise the State on how to establish streamflow criteria that will protect the ecological integrity of streams (T.F. Cuffney, U.S. Geological Survey, written commun., June 26, 2014). The EF–SAB reviewed methods that have been developed to establish ecological flows in the United States, Canada, and Australia and aggregated and evaluated the extant biological and hydrologic data within the State. This review confirmed that flow-duration statistics are important in developing the relations between biological response measures and hydrologic variables that are required to establish science-based ecological-flow criteria.

In 2013, the USGS, in cooperation with the NCDWR, updated and evaluated low-flow characteristics and flow-duration statistics at selected continuous-record streamgaging stations (also referred to as **streamgages**) in North Carolina. The updated streamflow statistics provide regulators and planners with tools and relevant hydrologic information and data reflective of the recent droughts, which can be used to better manage the quantity and quality of water in North Carolina.

Streamflow statistics provided in this report support USGS priority water-resource issues at both the national and water science center levels. This study addresses the natural hazards strategic action under the long-term mission goals of the USGS to enhance understanding of the linkages among natural hazards, the environment, climate, and society, and the ways by which climate variability and change influence the frequency and intensity of natural-hazard events (U.S. Geological Survey, 2007). The study also addresses one of the USGS Cooperative Water Program priorities for fiscal year 2012 (U.S. Geological Survey, 2011) to support data-collection activities and to establish comprehensive, uniform, and accurate data on surface water, groundwater, water quality, sediment, and water use. The study also supports the North Carolina District Science Plan (Bales and others, 2004) through interpretation and distribution of relevant hydrologic geospatial data having sufficient spatial and temporal resolution to support the water-resources needs of all users and will support water-resources management programs at State and local levels.

[3]Terms shown in bold are defined in the glossary.

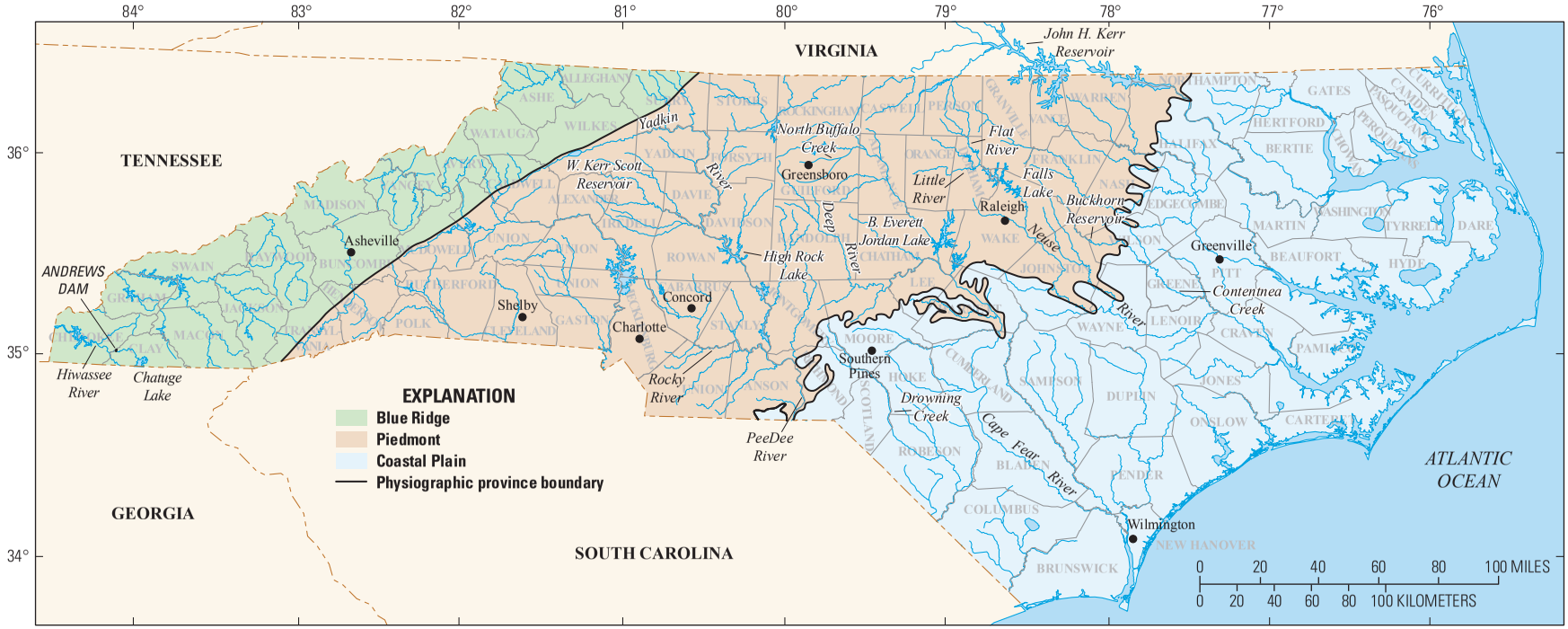

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Figure 1. Selected rivers, lakes, metropolitan areas, counties, and physiographic provinces in North Carolina.

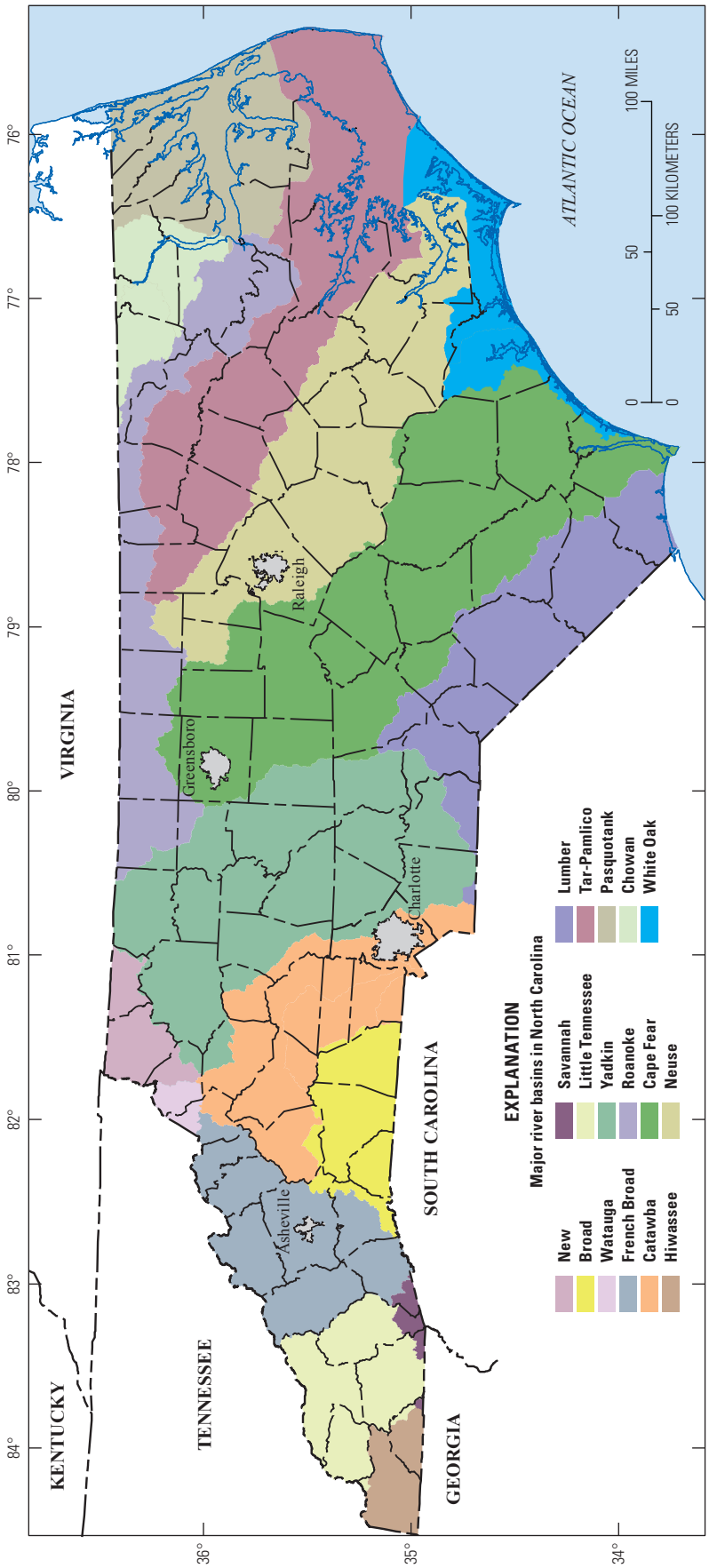

Figure 2. Seventeen major river basins used in North Carolina by State agencies to plan and manage water resources (North Carolina Department of Environment and Natural Resources, 2014).

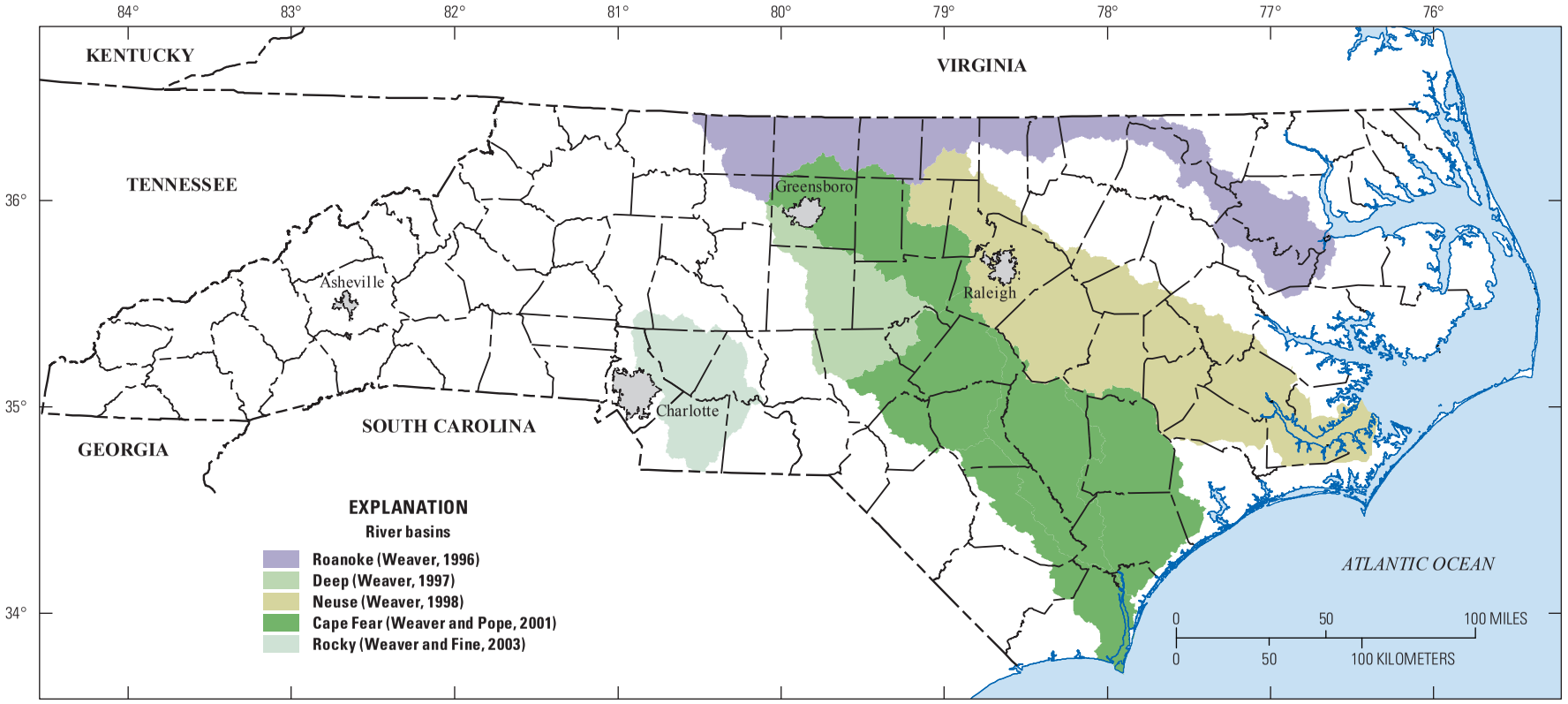

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Figure 3. Selected river basins in North Carolina where basinwide low-flow studies were completed by the U.S. Geological Survey between 1996 and 2003.

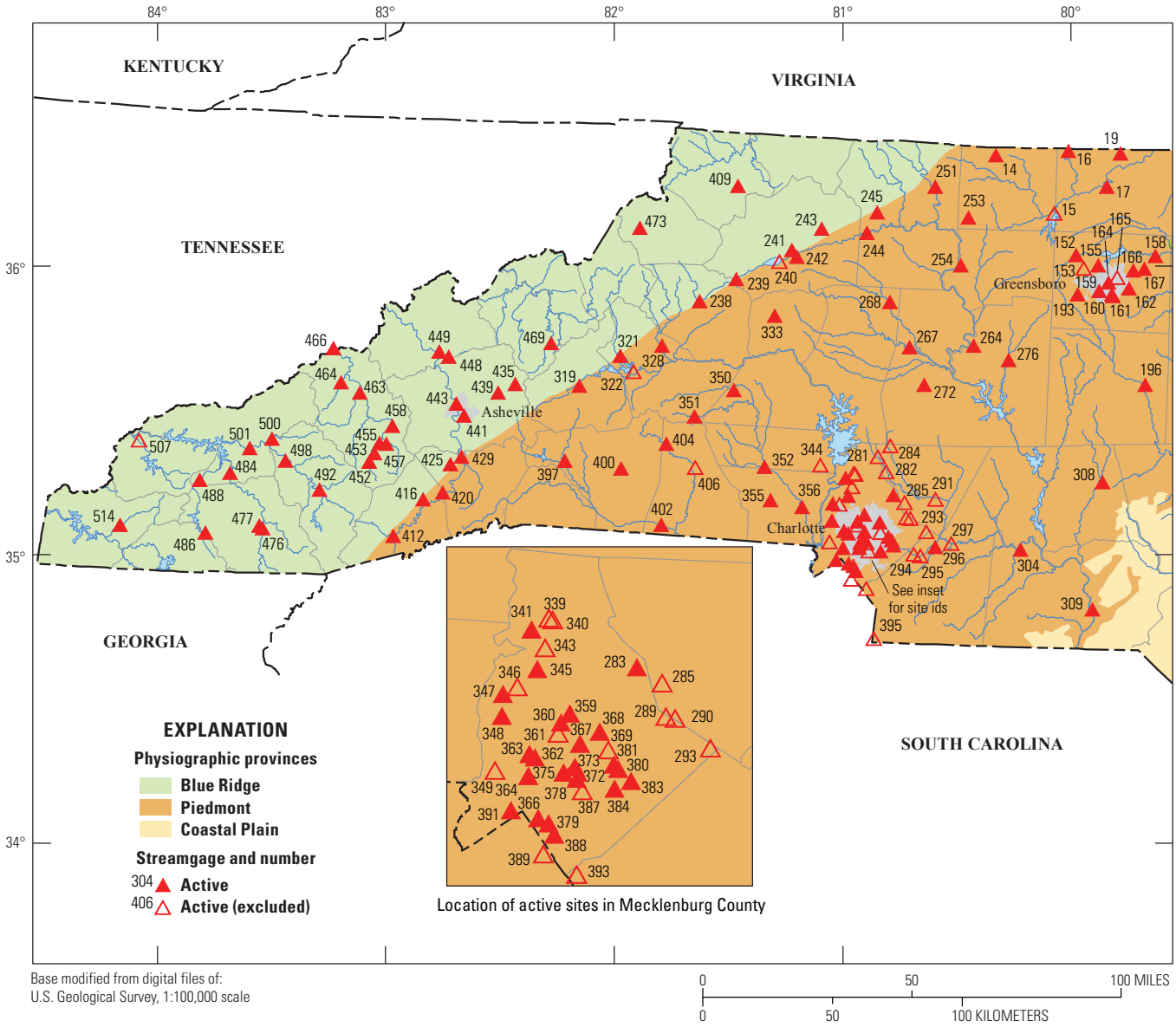

Figure 4. Active continuous-record streamgages in western and eastern North Carolina as of the 2012 water year and physiographic provinces.

Purpose and Scope

This report presents updated low-flow characteristics along with minimum, mean, maximum, and flow-duration statistics of daily mean discharges for streamgages in North Carolina having 10 or more years of discharge records and provides links to the updated information available online through the USGS StreamStats application for North Carolina. The scope of the study includes the State of North Carolina.

Daily mean discharge records available through the 2012 **water year** at active and discontinued streamgages in North Carolina were included where sufficient data were available for low-flow analyses and characterization of selected flow-duration statistics. No water years containing partial records during the annual period were used in this compilation. As of the 2012 water year, there were 224 and 292 active and discontinued streamgages, respectively, along streams in North Carolina (fig. 4, fig. 5, table 1). Use of the 2012 water year data resulted in streamflow records available

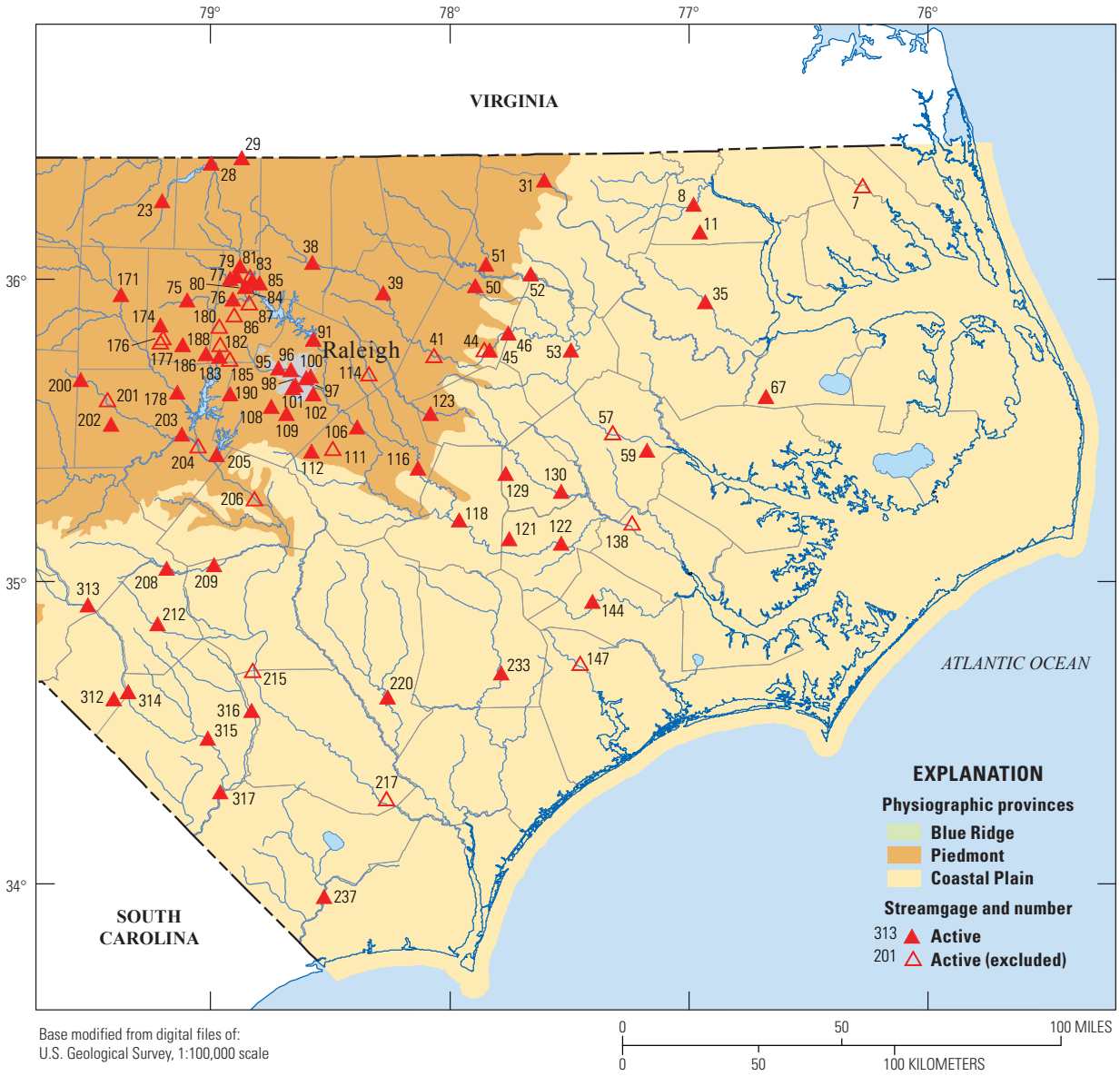

Figure 4. Active continuous-record streamgages in western and eastern North Carolina as of the 2012 water year and physiographic provinces.—Continued

through March 31, 2012 (or the 2011 **climatic year**) being used to determine the updated low-flow characteristics.

Updated low-flow characteristics include the annual (climatic year) and winter 7-day, 10-year (7Q10, W7Q10) low-flow discharges; the 30-day, 2-year (30Q2) low-flow discharge; and the 7-day, 2-year (7Q2) low-flow discharge. The W7Q10 discharge, or winter 7Q10, is defined in a similar manner as the 7Q10 discharge, except that only streamflow during the 5 months of November through March were considered in the analysis.

The minimum, mean, maximum, and flow-duration statistics (5th, 10th, 25th, 50th, 75th, 90th, and 95th percentiles) of daily mean discharges were compiled for the available periods of record or selected periods if flows were regulated. Flow-duration statistics were also compiled for other selected categorical periods.

For each water year that flow-duration statistics were determined, the number of days in which the daily mean discharge was at or below the 10th percentile, number of events (one or more days) at or below the 10th percentile, and duration of the longest event are also presented.

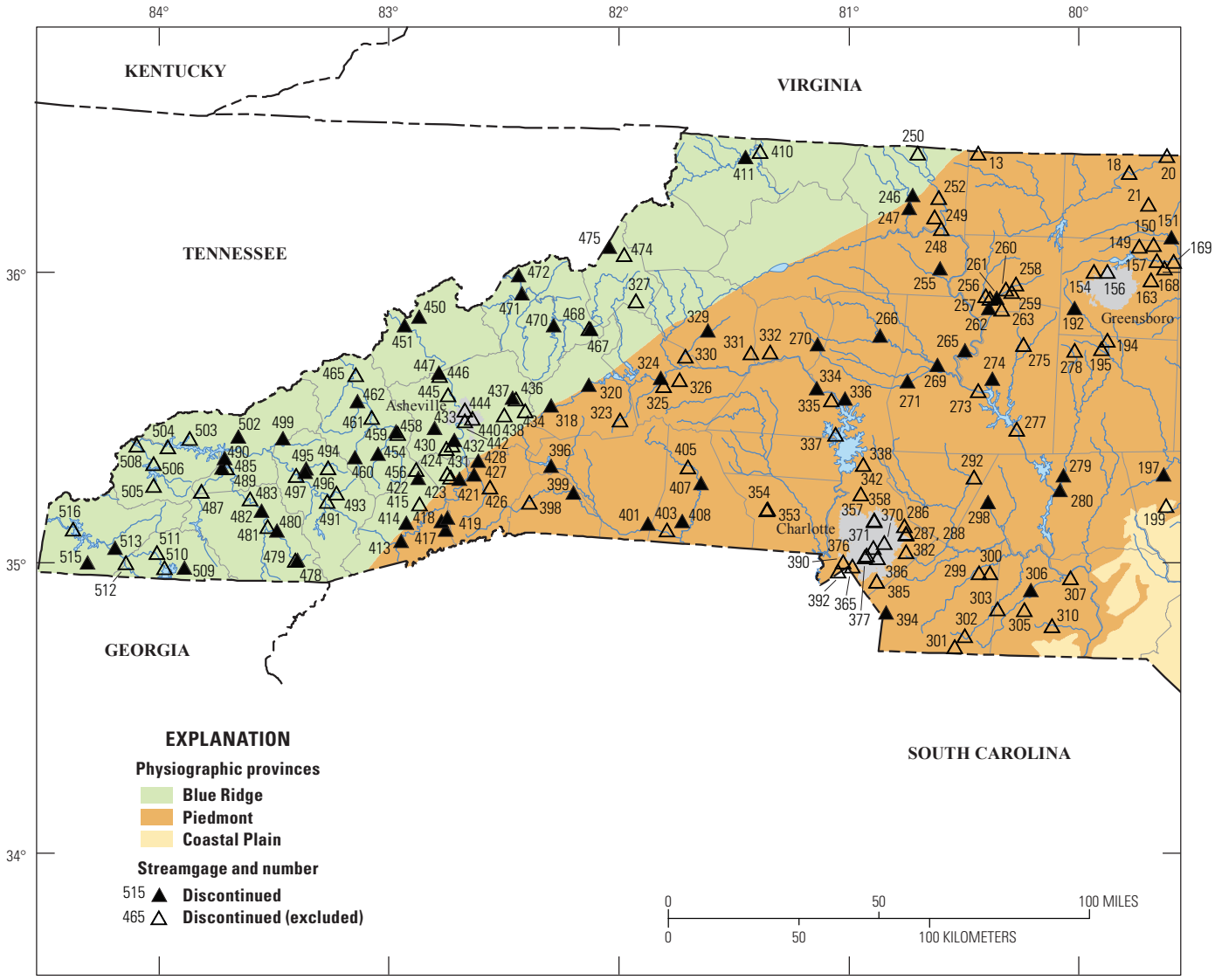

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Figure 5. Discontinued continuous-record streamgages in western and eastern North Carolina as of the 2012 water year and physiographic provinces.

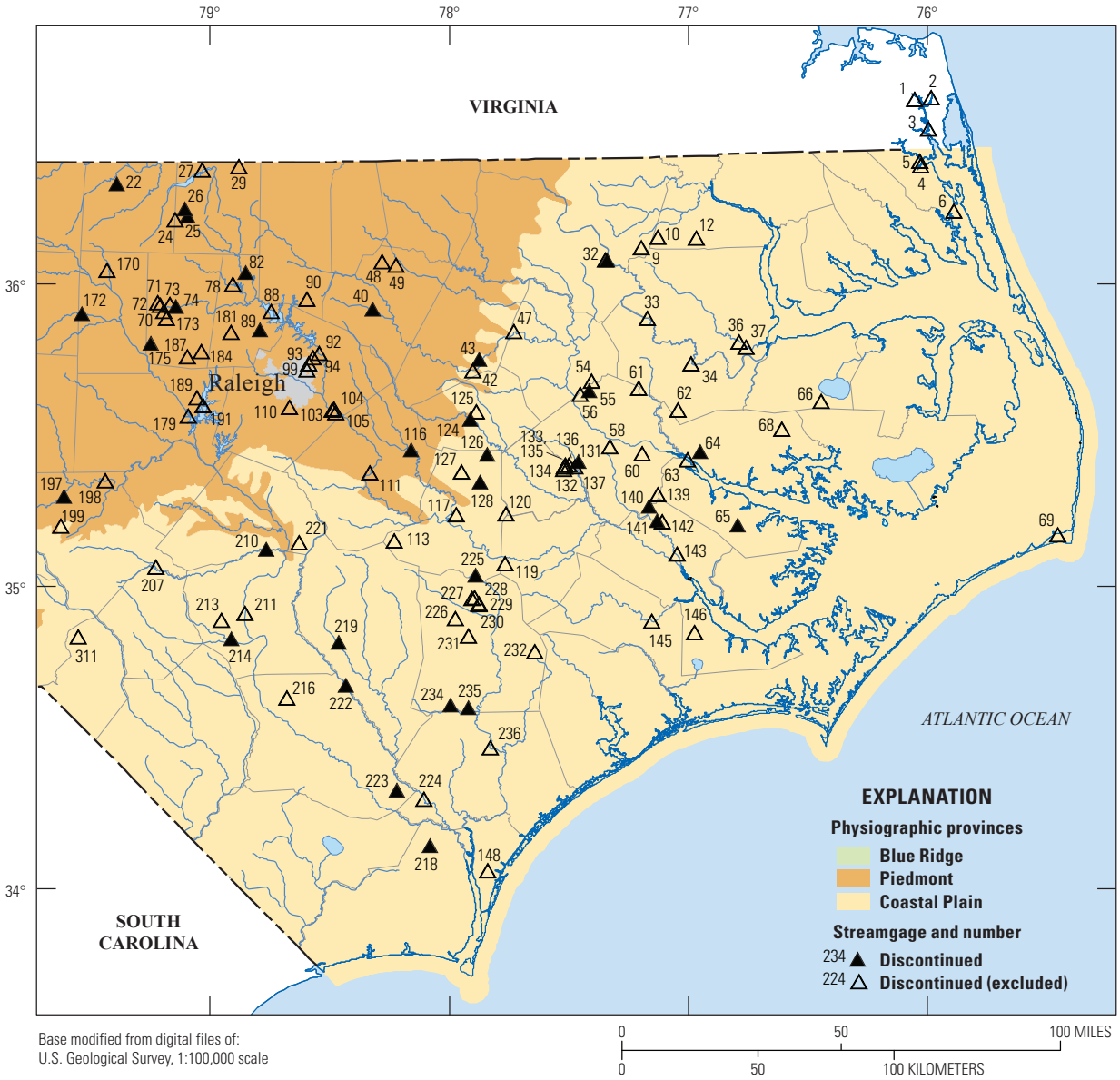


Figure 5. Discontinued continuous-record streamgages in western and eastern North Carolina as of the 2012 water year and physiographic provinces.—Continued

Previous Low-Flow Studies

Prior to World War II, low-flow characteristics of North Carolina streams were determined only for continuous-record streamgaging stations. Following World War II and the subsequent economic expansion, there was an increasing need for hydrologic information at sites where no data had previously been collected (Yonts, 1971). Thus, the USGS expanded its data-collection program in the late 1940s to include partial-record measurement sites where discharge measurements were made on a periodic basis. Discharge measurements made under base-flow conditions, along with observations of zero flow, provided the data used in the initial assessments of low-flow characteristics of streams in North Carolina. With data available from the network of partial-record measuring sites, the USGS began to respond to requests for low-flow characteristics on a site-specific basis, including those for ungaged sites.

Several studies have been conducted to investigate low flows along streams in North Carolina. Goddard (1963) presented low-flow characteristics for many continuous-record streamgaging stations in North Carolina, along with drainage area and 7Q10 discharge profiles developed for selected mainstem rivers. Yonts (1971) reported base-flow measurements made at over 2,200 locations, including continuous-record streamgaging stations and partial-record measuring sites throughout the State.

Giese and Mason (1993) evaluated low-flow characteristics at 122 continuous-record streamgaging stations and 396 partial-record measuring sites having drainage areas ranging from 1 to 400 mi^2 and streamflows unaffected by regulation or diversions. Sites were characterized on the basis of similarity in their ranges of low-flow discharge and potential to sustain **base flow**. Ten hydrologic areas (HAs) were delineated and regression equations relating low-flow characteristics to basin characteristics were derived for ungaged sites. Equations for only 4 of the 10 hydrologic areas—HA10, representing the mountains and western Piedmont; HA3, representing the Sand Hills; and HAs 5 and 9, representing the eastern and central Piedmont, respectively—had standard errors considered small enough to permit use of the regression equations to estimate low-flow characteristics at the ungaged sites.

Evett (1994) investigated the effects of urbanization and land-use changes on low flows. Trends of decreasing low flows with increasing urbanization were detected in data from selected continuous-record streamgaging stations in the Asheville, Charlotte, Greensboro, and Raleigh metropolitan areas (fig. 1) and at streamgaging stations in nearby rural areas. Because of the decreasing trends noted at both urban and rural streamgaging stations used in the analyses, Evett described the results as being statistically inconclusive.

Weaver (1996) studied low-flow characteristics in the Roanoke River Basin as part of the former NCDWQ program of basinwide assessment and management of water quality in major river basins of North Carolina (fig. 3). Low-flow characteristics were summarized for 82 streamflow sites (79 sites in North Carolina and 3 sites in Virginia) and profiles of drainage area and low-flow discharge were developed for 10 selected streams. Total drainage areas for the profiled streams range from 22 mi^2 to about 9,700 mi^2. Low-flow discharges for each stream included 7Q10, 30Q2, W7Q10, and 7Q2 discharges in a continuous profile, and contributions from major tributaries also were included.

Weaver (1997) also investigated low-flow characteristics in the Deep River Basin in the central Piedmont Province of North Carolina (fig. 3). The Deep River is tributary to the Cape Fear River and drains slightly over 1,440 mi^2 in parts of Guilford, Randolph, Moore, and Chatham Counties. Low-flow characteristics were summarized for 7 continuous-record streamgaging stations and 23 partial-record measuring sites. Drainage-area and low-flow discharge profiles were developed for the Deep River and were presented in a similar manner as those for the Roanoke River Basin (Weaver, 1996).

Continuing the series of basinwide low-flow investigations, Weaver (1998) summarized low-flow characteristics for 50 continuous-record streamgaging stations and 113 partial-record measuring sites in the Neuse River Basin (fig. 3). Drainage-area and low-flow discharge profiles were developed for 10 selected streams in the basin. Drainage areas for the profiled streams range from 9 to about 5,600 mi^2. The low-flow discharges for each stream include 7Q10, 30Q2, W7Q10, and 7Q2 discharges in a continuous profile with contributions from major tributaries.

Weaver and Pope (2001) also compiled low-flow characteristics for 67 continuous-record streamgaging stations and 121 partial-record measuring sites in the Cape Fear River Basin (fig. 3). Drainage-area and low-flow discharge profiles were developed for 13 selected streams in the basin. Total drainage areas for the profiled streams range from about 44 to almost 9,100 mi^2. As with the basins discussed previously, low-flow discharges for each stream in the Cape Fear River Basin include 7Q10, 30Q2, W7Q10, and 7Q2 discharges in a continuous profile with contributions from major tributaries. Because the Deep River is part of the Cape Fear River Basin, the summary of low-flow characteristics at continuous-record streamgaging stations and partial-record measuring sites in the Deep River Basin (Weaver, 1997) was republished in the Cape Fear River report (Weaver and Pope, 2001). However, the drainage-area and low-flow discharge profiles developed for the Deep River and associated discussions of low-flow characteristics were not republished in Weaver and Pope (2001).

Weaver and Fine (2003) investigated low-flow characteristics in the Rocky River Basin in the southern Piedmont Province of North Carolina (fig. 3). The Rocky River is tributary to the Pee Dee River and drains slightly over 1,410 mi^2 in parts of Iredell, Rowan, Mecklenburg, Cabarrus, Stanly, Union, and Anson Counties. Low-flow characteristics were summarized for 12 continuous-record streamgaging stations and 44 partial-record measuring sites. Drainage-area and low-flow discharge profiles were developed and presented for the Rocky River.

Low-Flow Characteristics

Where sufficient discharge records are available for specific streamgages, application of statistical techniques, such as those described by Riggs (1972), Stedinger and Thomas (1985), and Helsel and Hirsch (2002), form the basis for determining low-flow characteristics and other streamflow statistics. A summary and brief description of the low-flow characteristics compiled in this study are provided in table 2.

Low flow, also referred to as base flow or sustained fair-weather flow, is composed largely of groundwater discharge from aquifers to streams. Groundwater discharges have large spatial and temporal variations that are highly dependent on topographic, geologic, land use, and climatic conditions. The high variability of such conditions across North Carolina, and sometimes even within a drainage basin or along a single stream, results in complex low-flow hydrology. Moreover, the characterization of low-flow hydrology is further complicated by withdrawals, point-source discharges, impoundments,

Table 2. Selected streamflow statistics compiled for U.S. Geological Survey continuous-record streamgaging stations in North Carolina.

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second. The flow-duration statistics were computed for categorical periods including the period of record, each complete water year of record, selected seasonal, monthly, and calendar day periods of observed daily mean discharges]

Flow statistic	Units	Description
		Low-flow characteristics
Annual 7-day, 10-year low-flow discharge (7Q10)	ft^3/s	Discharge value that the annual minimum average streamflow for a 7-consecutive-day period is equal to or lower than, on average, once every 10 years
Annual 30-day, 2 year low-flow discharge (30Q2)	ft^3/s	Discharge value that the annual minimum average streamflow for a 30-consecutive-day period is equal to orlower than, on average, once every 2 years
Winter 7-day, 10-year low-flow discharge (W7Q10)	ft^3/s	Discharge value that the winter (November through March) minimum average streamflow for a 7-consecutive-day period is equal to or lower than, on average, once every 10 years
Annual 7-day, 2-year low-flow discharge (7Q2)	ft^3/s	Discharge value that the annual minimum average streamflow for a 7-consecutive-day period is equal to or lower than, on average, once every 2 years
		Average, minimum, and maximum discharges
Average discharge	ft^3/s	Average of mean daily discharge based on historical data observed for a defined categorical period
Minimum discharge	ft^3/s	Minimum daily mean discharge based on historical data observed for a defined categorical period
Maximum discharge	ft^3/s	Minimum daily mean discharge based on historical data observed for a defined categorical period
		Flow-duration statistics
5th percentile (non-exceedance)	ft^3/s	Daily mean discharge not exceeded 5 percent of the time during the categorical period
10th percentile (non-exceedance)	ft^3/s	Daily mean discharge not exceeded 10 percent of the time during the categorical period
25th percentile (non-exceedance)	ft^3/s	Daily mean discharge not exceeded 25 percent of the time during the categorical period
50th percentile (non-exceedance, median)	ft^3/s	Daily mean discharge not exceeded 50 percent of the time during the categorical period (median)
75th percentile (non-exceedance)	ft^3/s	Daily mean discharge not exceeded 75 percent of the time during the categorical period
90th percentile (non-exceedance)	ft^3/s	Daily mean discharge not exceeded 90 percent of the time during the categorical period
95th percentile (non-exceedance)	ft^3/s	Daily mean discharge not exceeded 95 percent of the time during the categorical period
		Selected flow statistics for each complete water year of record
Number of occurrences below 10th exceedance percentile	Number of days	Number of observed discharge values at or below the 10th percentile for the indicated full water year
Number of events below 10th exceedance percentile	Number of days	Number of events during the indicated full water year with observed discharge values at or below the 10th percentile, where an event is an occurrence of one or more consecutive days
Maximum duration among events during indicated period	Number of days	Maximum duration among the number of events identified for the indicated full water year

and land use within the drainage basin. Low flows in North Carolina typically occur at the end of the growing season in late summer and early autumn as a result of evaporation from surface-water bodies and use of groundwater in the form of soil moisture by crops and other vegetation. In addition, the relatively high temperatures of summer and early autumn encourage increased water use, which results in high demand for withdrawals from streams, reservoirs, and groundwater wells. An understanding of low-flow characteristics is crucial for evaluating water-supply potential and reservoir-release requirements, determining and regulating wastewater discharges to streams, and maintaining aquatic habitats in streams.

Computational Procedures for Low-Flow Characteristics

Low-flow characteristics are defined by a set of discharges that are statistically derived values having an associated duration (expressed in days) and **recurrence interval** (also referred to as return period and expressed in years). The recurrence interval represents the average period of time between occurrences of a specified low-flow hydrologic event. An example of a widely used low-flow statistic is 7Q10 discharge. In non-exceedance probability terminology, the annual minimum average streamflow for a 7-consecutive-day period will be equal to or lower than the 7Q10 discharge, on average, once every 10 years. If the 7Q10 discharge is 5 cubic feet per second (ft^3/s), then the annual minimum average streamflow for a 7-consecutive-day period would be 5 ft^3/s or lower, on average, once every 10 years, 5 times every 50 years, or 10 times every 100 years. Alternatively, in terms of exceedance probability, a recurrence interval of 10 years implies that the annual minimum average streamflow for a 7-consecutive-day period will exceed the 7Q10 discharge, on average, in 9 of 10 years. Stated differently, the probability is 10 percent (the inverse of the recurrence interval) that the lowest average 7-consecutive-day streamflow in any given year will be less than the 7Q10 discharge.

Recurrence intervals, regardless of length, always refer to an *average* period of time in years during which the streamflow at a given streamgage will be equal to or less than the associated low-flow statistic once. A 10-year recurrence interval does not mean that the streamflow *will* be at or less than the 7Q10 *only once* every 10 years. It does indicate, however, that the streamflow *may* be at or less than the 7Q10, *on average*, once during a 10-year period. It is possible that streamflows could be at or below the low-flow statistic multiple times or at no time during the stated recurrence interval.

The accuracy of low-flow statistics at streamgages is related to the length of record (sample from the population) upon which the statistics are based (Feaster and Guimaraes, 2012). For a given streamgage, as the period of record covering a broad range of hydrologic conditions increases, the low-flow statistics will be increasingly accurate or reflective of long-term conditions. Thus, as the length of record at a streamgage increases, the low-flow statistics are moving toward values that would be expected to be obtained from the population and tend to be less influenced by extreme conditions, whether wet or dry. Awareness of this consideration thus results in a recommendation that streamflow statistics be updated about once every 10 years where resources permit. Use of a 10-year interval also allows for the inclusion of newer streamgages having sufficient periods of record, with a recommended minimum of 10 years for each station (Riggs, 1972).

In North Carolina, other low-flow characteristics besides the 7Q10 used by State regulatory agencies in determining permitting limits for withdrawals from and discharges to streams include the 30Q2 discharge; W7Q10 discharge; and 7Q2 discharge. The W7Q10 discharge, or winter 7Q10, is defined in a similar manner as the 7Q10 discharge except that only streamflow during the 5 months from November through March are considered in the analysis.

Statistical methods used by the USGS to determine low-flow characteristics are documented in Riggs (1972) and Stedinger and Thomas (1985). An effective description of these methods is provided by Feaster and Guimaraes (2012), part of which is presented here. The low-flow characteristics compiled in this study were computed using the SWSTAT software available from the USGS Office of Surface Water (*http://water.usgs.gov/software/SWSTAT/*). An internal Perl routine was developed for the Unix platform to handle manipulation of daily mean discharges at the streamgages and to use the SWSTAT software to compute the low-flow characteristics.

Low-flow frequency statistics at continuous-record streamgages are computed by fitting a series of annual minimum *N*-day average streamflows to some known statistical distribution, where *N* can equal any number from 1 to 365. Using available periods of record, the low-flow frequency statistics for this study were computed by fitting base 10 logarithms of the annual and (or) winter minimum 7- and 30-day average streamflows to a Pearson Type III distribution, which also is referred to as a log-Pearson Type III distribution or frequency curve. The frequency curve developed from the fitted distribution depicts the relation between recurrence interval and the lowest average annual discharge for a specified number of days at a streamgage (Riggs, 1972). The Pearson Type III distribution is commonly used because it generally corresponds closely to the distribution of annual low flows for sites having long-term periods of record. The USGS uses a 30-year criterion to identify those streamgages having long-term periods of streamflow record (U.S. Geological Survey, 2009).

Fitting the distribution requires calculating the mean, standard deviation, and skew coefficient of the logarithms of the *N*-day streamflows. Estimates of the *N*-day non-exceedance flows for a specified recurrence interval, *T*, are computed by using the following equation:

$$\log Q_T = \bar{X} + KS, \quad (1)$$

where

Q is the N-day low flow, in cubic feet per second;
T is the recurrence interval, in years;
$\bar{X}$ is the mean of the logarithms of the annual minimum N-day average streamflows;
K is a frequency factor that is a function of the recurrence interval and the coefficient of skew; and
S is the standard deviation of the logarithms of the annual minimum N-day average streamflows.

An example of a frequency curve is shown for the long-term streamgage on Elk Creek at Elkville in Wilkes County (site 239, fig. 4). The curve depicts the relation between the recurrence interval and the annual minimum 7-day average streamflow at this streamgage. The points plotted on the graph correspond to the annual minimum 7-day average streamflows that were observed during the period of analysis used to develop the low-flow characteristic. The 7Q10 discharge for this streamgage, which is read from the frequency curve, is 13.0 ft^3/s (fig. 6).

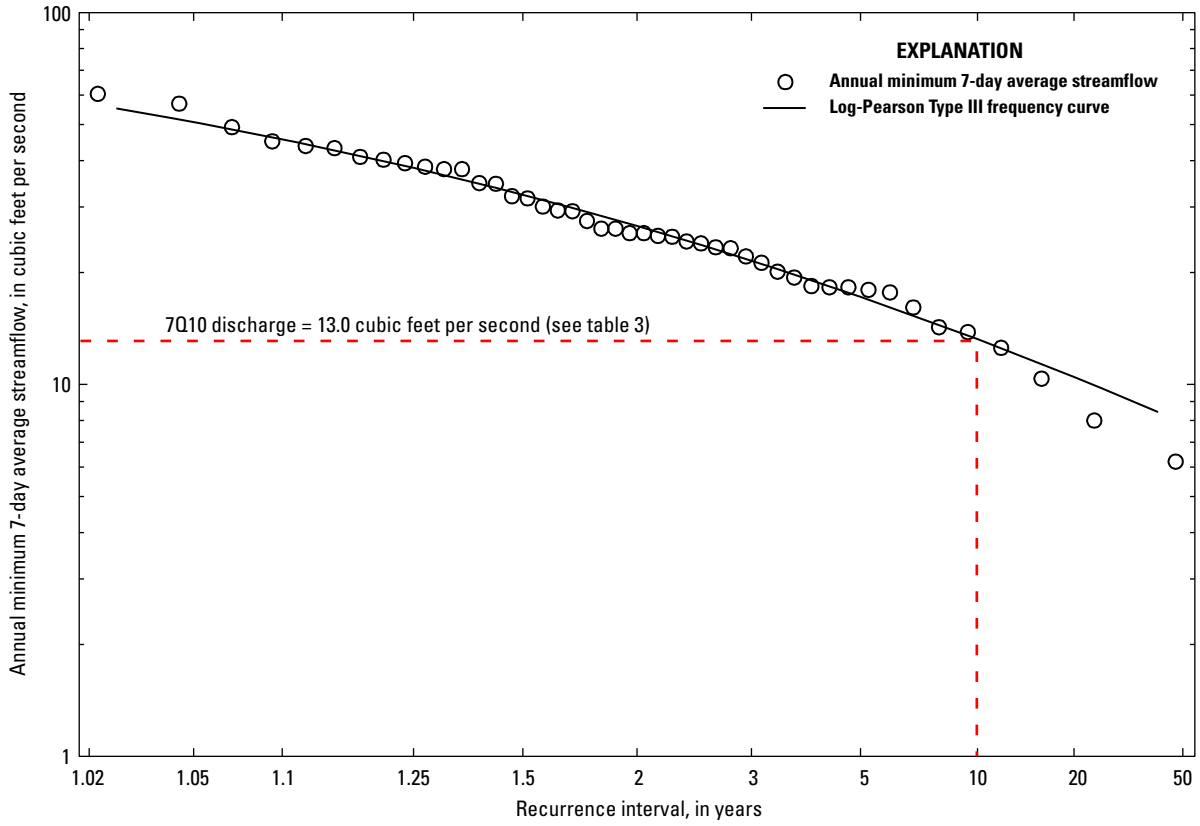


Figure 6. Low-flow frequency curve of annual minimum 7-day average streamflow using log-Pearson Type III frequency distribution at Elk Creek at Elkville in Wilkes County, North Carolina (site 239, fig. 4).

Quality Assurance Procedures

For this study, a quality assurance and quality control (QAQC) analysis was completed for the annual minimum 7- and 30-day, winter minimum 7-day average streamflow data for the streamgages that had a minimum of 10 years of record. The data at each streamgage were reviewed for homogeneity, a prerequisite for statistical analysis that implies relatively stable basin conditions during the period of record. The Kendall's tau test was used to assess the homogeneity of the annual minimum 7- and 30-day, and winter minimum 7-day average streamflow data for all streamgages (Helsel and Hirsch, 2002).

The Kendall's tau statistical test was used to detect monotonic trends in the annual minimum 7- and 30-day, winter minimum 7-day average streamflow over time. Specifically, the test uses the relation (trend) between time and ranked discharges as opposed to discharge magnitude (Helsel and Hirsch, 2002; Barbie and Wehmeyer, 2012). The trend analyses thus refer to the direction and not the magnitude of streamflow change. A statistically significant positive Kendall's tau value indicates an upward monotonic streamflow trend; conversely, a statistically significant negative tau indicates a downward monotonic streamflow trend. The probability value or p-value of Kendall's tau is a measure of the statistical significance of the trend. For this study, a p-value of less than 0.05 *is assumed* to indicate a statistically significant trend, whereas, a p-value of 0.05 or greater *is assumed* to indicate no significant trend.

If a trend (non-homogeneity) was indicated, additional assessments were used to determine if the trend may have been caused by a short-term condition. For example, if the period of record for a streamgage happened to begin or end under extreme conditions (excessively wet or dry), the test may indicate a trend, but additional analysis that excludes the extreme events may indicate no trend (fig. 7). As noted by Lins and others (2010), sometimes hydrologic records for a timeframe of a few years to a few decades may indicate a trend in the data, but when viewed in the context of longer timeframes spanning decades to centuries, the short-term trends may be recognized as part of a much longer term oscillation. Trends at unregulated streamgages may result from changes in climatic cycles, land use, changes in upstream diversions for water supply or waste treatment purposes, groundwater pumpage, or other practices that may affect groundwater levels.

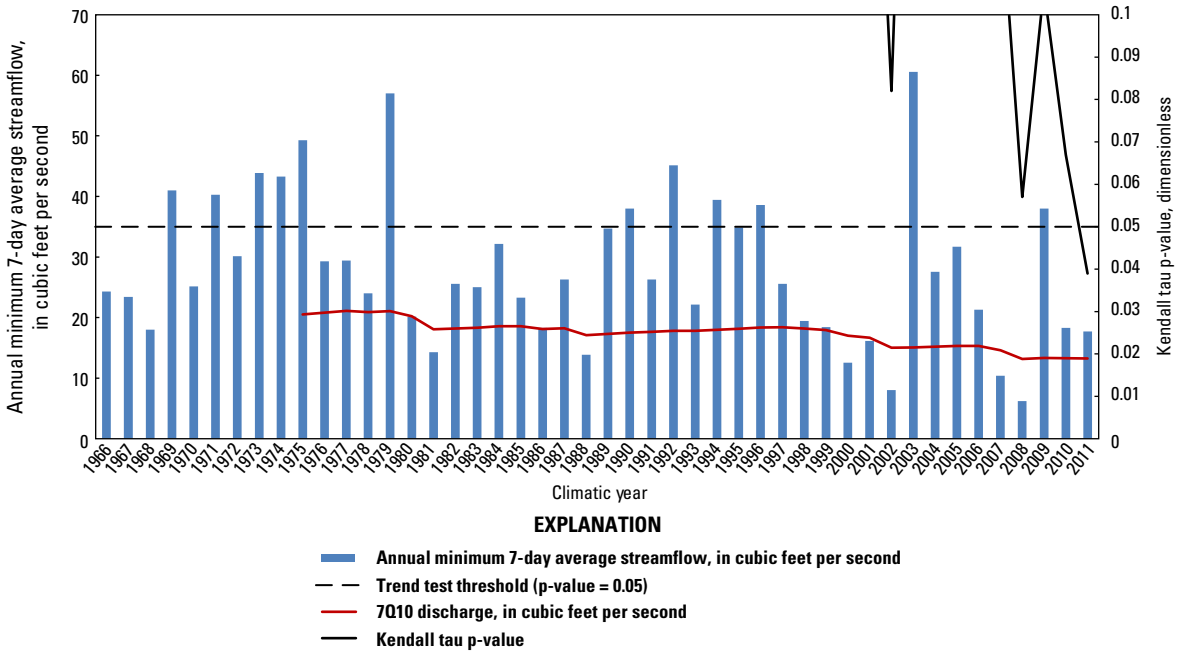


Figure 7. Annual minimum 7-day average streamflow, 7Q10 discharge, and Kendall tau p-value for the 1966–2011 climatic years at Elk Creek at Elkville in Wilkes County, North Carolina (site 239, fig. 4).

For streamgages downstream from a major source of regulation, such as a dam, the data were assessed for gross trends, which may indicate a long-term change in the pattern of regulation (William Kirby, U.S. Geological Survey, written commun., June 6, 2005). Additionally, some investigations have shown that urbanization can lead to a reduction in low flows (U.S. Environmental Protection Agency, 2012). Final decisions to include or exclude data from a specific streamgage were made by applying hydrologic judgment to the results of the QAQC analyses.

The components of the QAQC reviews that were conducted for the streamgages, where appropriate and deemed as needed, are as follows:

- The Kendall's tau test was used to check for trends in the annual minimum 7- and 30-day, winter minimum 7-day average streamflow data over time (fig. 7).
- A plot of the annual minimum 7-day average streamflow against climatic year was created and used along with the Kendall's tau results to visually assess potential trends.
- A plot of the relation of the ratio of the 10th percentile to the 50th percentile of the average 7-day streamflows (loratio) against climatic year was created and used to graphically assess potential trends.
- A plot of the relation of the 50th percentile of the average 7-day streamflow against climatic year was created and used to assess potential changes in the median average 7-day streamflow over time.
- A plot of the relation of the cumulative loratio against climatic year was created and examined for significant change in slope, which indicates a change in streamflow patterns.
- A plot of the relation of the cumulative 50th percentile of the average 7-day streamflow against climatic year was created and examined for significant change in slope, which indicates changes in the median average 7-day streamflow patterns.

Results of Quality Assurance Analyses

Analyses of the trend tests resulted in the identification of 76 streamgages having potential trends in one or more of the following flow characteristics: annual minimum 7-day average streamflow, annual minimum 30-day average streamflow, and winter minimum 7-day average streamflow. For those sites, plots of the annual minimums were examined to determine if the trend occurrences were synchronous with known drought periods, particularly those that have occurred in North Carolina since the late 1990s (Weaver, 2005). Additionally, plots of the computed loratio, 10th percentiles, and 50th percentiles of annual minimum 7-day average streamflow by climatic year were examined, as needed, for any gross variations in patterns that could possibly indicate other factors that would preclude the publication of low-flow characteristics.

Among the 76 sites where potential trends were detected, the indication of a trend at 60 streamgages was probably due to the period of record ending within a drought period, particularly those sites with records through the 2012 water year. As a result of this conclusion, a decision was made to proceed with the publication of low-flow characteristics for those streamgages.

An example of such a site is Elk Creek at Elkville (site 239, table 1) in southwestern Wilkes County where streamflow records have been collected continuously since October 1965. Beginning with 10 years of record (1975–85 climatic years), trend tests completed on incrementally longer periods having an April 1, 1975, start date yielded p-values that were consistently 0.05 or higher (indicating no trend) until the period analyzed included the 2011 climatic year, the last year used in the period of analysis (fig. 7). Although the p-value does not fall below 0.05 until the last year of record used in the analysis, the trend tests indicate the p-value also was close to the 0.05 threshold in the 2002 and 2008 climatic years, which includes droughts that have been observed since 1998 (Weaver, 2005). A decision was thus made to include this site among those for which low-flow characteristics are published herein.

For the remaining 16 of the 76 sites, examination of the plots resulted in a decision to refrain from publishing the low-flow characteristics. Reasons for these decisions ranged from a site demonstrating a trend during a short period of record (for example, site 60, table 1), presence of discontinuous periods of record that resulted in trends among the sub-periods (site 87, table 1), or known substantial changes in upstream regulation (sites 206, 215, and 217; table 1). This group of 16 sites included 9 active and 7 discontinued streamgages.

Low-flow characteristics have previously been published for 8 of the aforementioned 16 streamgages (Giese and Mason, 1993; Weaver, 1996, 1997, 1998; Weaver and Pope, 2001; Weaver and Fine, 2003). These streamgages are sites 83, 185, 191, 194, 206, 215, 217, and 506 (table 1). Except at the two discontinued sites (191 and 506), additional data were collected at these streamgages following publication of previous low-flow characteristics. Trends present in the record for the remaining sites were attributed to streamflow affected by both recent droughts *and* upstream effects associated with diversions or impoundments. A decision was therefore made not to publish low-flow characteristics for these sites in this report. For the two discontinued sites, the new analyses previously described provided additional insight concerning the streamflow record and resulted in the decision to not republish the low-flow characteristics for these streamgages.

Low flow characteristics for sites 206, 215, and 217, were previously published in the basinwide low-flow report for the Cape Fear River Basin (Weaver and Pope, 2001), but the updated statistics were not published in this report because of changes in the reservoir management plan for B. Everett

Jordan Lake. Streamflows at these three streamgages are affected by regulated flow releases from the impoundment. Inspection of the trend plots for the period of regulated streamflow through the 1997 climatic year do not indicate trends for the periods of analysis used in the basinwide study. However, inclusion of additional record beginning with the 1998 climatic year results in trends being noted in the annual 7- and 30-day minimum series.

Inspection of the annual minimum 7-day average streamflows at these three streamgages along the Cape Fear River (sites 206, 215, and 217) indicate visibly distinct changes in the variation of the annual minimums between the 1982–97 and 1998–2011 climatic years (fig. 8). At the streamgage at Lillington (site 206), the annual minimum 7-day average streamflow ranged from 501 to 636 ft^3/s and from 206 to 811 ft^3/s during these two sub-periods, respectively. The median of these annual minimums decreased from 597 ft^3/s during the 1982–97 climatic years to 452 ft^3/s during the 1998–2011 climatic years, representing a –24.3-percent change. Similarly, at the streamgage near Tarheel (site 215), the annual minimum 7-day average streamflow ranged from 787 to 1,291 ft^3/s and from 373 to 1,746 ft^3/s during these two sub-periods, respectively. The median of these annual minimums decreased from 878 ft^3/s during the 1982–97 climatic years to 675 ft^3/s during the 1998–2011 climatic years, representing a –23.1-percent change. At the streamgage near Kelly (site 217), the annual minimum 7-day average streamflow ranged from 834 to 1,573 ft^3/s and from 323 to 1,896 ft^3/s during these two sub-periods, respectively. The median of these annual minimums decreased from 941 ft^3/s during the 1982–97 climatic years to 670 ft^3/s during the 1998–2011 climatic years, representing a –28.8-percent change. The relatively greater percentage change at the downstream streamgage near Kelly indicates that there may be other possible factors affecting the flow characteristics at this location on the river. Identifying other possible factors is beyond the scope of this study, however, and subsequent data collection and investigation would be necessary to confirm or refute such factors.

Since completion of the Cape Fear basinwide low-flow report (Weaver and Pope, 2001), the management of Jordan Lake and the Drought Contingency Plan (DCP) have been modified several times. Recent correspondence with the U.S. Army Corps of Engineers indicates that drought conditions since the mid to late 1990s resulted in deviations or modifications to the DCP in 1998, 2001, 2002, 2005, and 2006 (Ashley Hatchell, U.S. Army Corps of Engineers, written commun., November 14, 2013). Each year, as agreed upon by resource agencies, the modification was slightly different and more proactive than before, but basically dealt with modifying the target flow at Lillington based on the remaining "water-quality storage" within the conservation pool that is used to set flow releases from B. Everett Jordan Lake. The drought of 2007 brought about the current version of the DCP, formally approved in 2008, and allows for varying the releases from B. Everett Jordan Lake to reduce the target flow at Lillington. Because this most recent plan has only been in place for about 6 years, the recommended minimum data period of 10 years under the current operating plan is not available to compute updated streamflow statistics for the site with any level of confidence. Consequently, a decision was made to refrain from publishing updated low-flow characteristics for sites 206, 215 and 217 in this report. Based on the information that the 2007 drought brought about the current DCP, 2016 is the earliest the minimum 10 years of continuous streamflow data would be available for use in an updated low-flow analysis.

At the Flat River at Bahama streamgage (site 81, table 1), reviews of the analyses completed for this site revealed that closure of an upstream mill operated prior to December 1962 may have altered the range in magnitudes of annual minimum 7-day average streamflows (T.D. Feaster, U.S. Geological Survey, written commun., August 8, 2014). This factor was not accounted for in the low-flow characteristics previously published for this site (Weaver, 1998). Upon further review of the analyses, however, the period analyzed for the streamgage on Flat River was modified to begin with the 1963 water year following closure of the upstream mill. Subsequent analyses of the redefined period indicate the presence of trends following the drought in late 2007 into 2008, and thus, are probably a reflection of this event. Consequently, a decision was made to provide the low-flow characteristics for this streamgage (based on the redefined period of analysis), which supersede those published in the Neuse River low-flow report (Weaver, 1998).

Examination of the trend analyses for station number 02090380 on Contentnea Creek near Lucama in Wilson County (site 123, table 1) led to the recognition that a new dam had been constructed for the upstream Buckhorn Reservoir (fig. 1) during the late 1990s. Low-flow characteristics were previously published for this streamgage in the basinwide low-flow report for the Neuse River Basin (Weaver, 1998) based on period of record through the 1996 water year, which reflected the streamflow patterns associated with the old dam. In this study, the period of analysis for the streamgage on Contentnea Creek was modified to begin with the 2000 water year following completion of the new dam in 1999. Although the post-1999 period of record is relatively short, no trends were detected in the analyses for the new period.

Similarly, information for station number 02133500 on Drowning Creek near Hoffman in Richmond County (site 313, table 1) indicates that diversions made 0.5 mile upstream from the streamgage for public water supply in the Town of Southern Pines (fig. 1) have been in place since 1984. Initial trend analyses based on the period of record beginning with the 1940 water year indicated trends that appear in the 1980s, which is consistent with the start of the diversions. Low-flow characteristics were previously published for this streamgage in the statewide low-flow report (Giese and Mason. 1993) based on a period of record through the 1988 water year, which reflected the streamflow patterns prior to the start of diversions. In this study, the period of analysis for the streamgage on Drowning Creek was redefined to begin with the 1985 water year. Reanalysis indicated the presence of trends since 2010 was probably a reflection of the recent droughts. Thus, a decision was made to provide the low-flow characteristics for this streamgage.

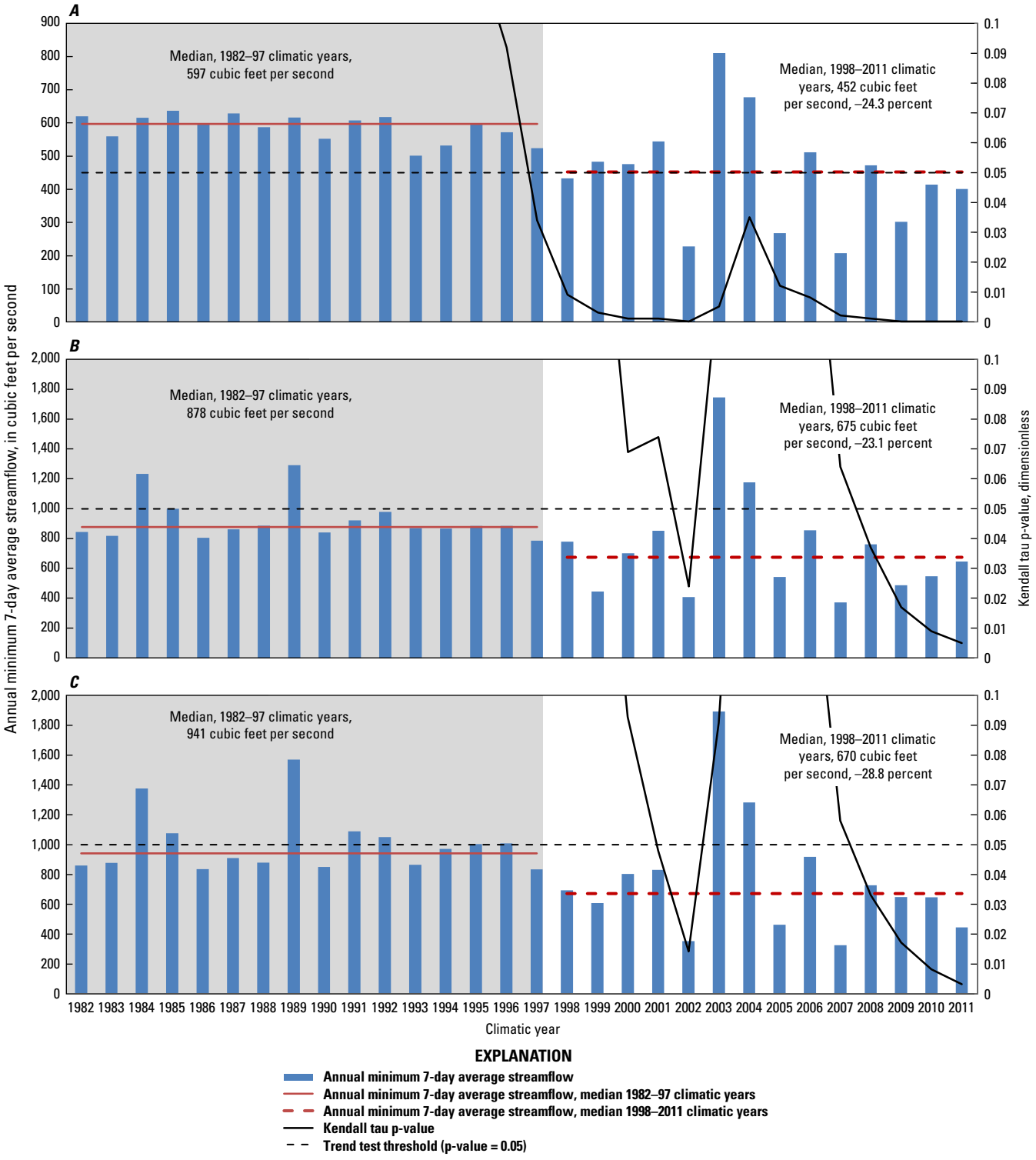


Figure 8. Annual minimum 7-day average streamflows at *A*, Cape Fear River at Lillington (site 206), *B*, Cape Fear River at William O. Huske Lock 3 near Tarheel (site 215), and *C*, Cape Fear River at Lock 1 near Kelly (site 217, fig. 4).

Trend analyses also resulted in the periods of record being redefined for three other sites (sites 141, 166, and 513, table 1). For station number 02092000 on Swift Creek near Vanceboro in Craven County (site 141), plots of the annual 7-day minimum series indicate rather sudden increases in the annual values beginning in the mid-1960s. Further investigation yielded information indicating the stream was canalized during 1964, a consideration that was not accounted for during the analyses completed for the Neuse River basinwide low-flow study (Weaver, 1998). Low-flow characteristics published for this streamgage in this report were based on a redefined period beginning with the 1965 water year and supersede those published in the previous Neuse River low-flow report (Weaver, 1998).

Trend analyses also resulted in a redefined period of analysis for station number 02095500 on the North Buffalo Creek near Greensboro (site 166, table 1). Historical information obtained during this study concerning operations at an upstream wastewater treatment plant along North Buffalo Creek resulted in the period of analyses being redefined to start with the 1960 water year following a plant expansion completed in 1959 (City of Greensboro, North Carolina, n.d.). Low-flow characteristics published for this streamgage (site 166) in this report were based on the redefined period beginning with the 1960 water year and exhibited no trends in the plots, thereby superseding those published in the Cape Fear River low-flow report (Weaver and Fine, 2003).

Trend analyses for station number 03548500 on the Hiwassee River above Murphy in Cherokee County (site 513, table 1) resulted in a redefined period of analysis for the streamgage beginning with the 1971 water year. Streamflow at this streamgage is regulated by two upstream impoundments (Andrews Dam and Chatuge Lake, fig. 1). Inspection of the loratio (ratio of 10th to 50th percentiles 7-day average streamflow) plotted by time suggests an apparent shift in operational practices beginning about 1970. Subsequent trend analyses on the redefined period indicate trends in the annual 7-day minimum series for the 1997–2004 water years. Because this period is generally concurrent with recent droughts since the late 1990s, a decision was made to publish the low-flow characteristics for this streamgage using the redefined period.

Updated Low-Flow Characteristics Through 2012

Use of available streamflow record during the 2012 water year allowed updated low-flow characteristics to be determined through the end of the 2011 climatic year (March 31, 2012). Low-flow characteristics updated for this study are provided in table 3. To determine low-flow characteristics at a continuous-record streamgage, a minimum of 10 climatic years of record are recommended to develop the frequency curve. However, the length of observed period of record (in water years) at a streamgage will not equate to the same number of climatic years that may be available for low-flow analysis. Depending on the beginning and end months of the record used, as well as the presence of discontinuous periods that may exist within the overall record, the number of available climatic years of record may be less than the number of years of observed record.

Of the 516 streamgages considered for this study, 224 remain active (as of the 2012 water year) and 292 have been discontinued. Flow conditions upstream from the streamgages represent a range of conditions: (1) unregulated, (2) regulated, (3) tidally affected, and (4) a combination of minor regulation and (or) diversions caused by municipalities, power plants, and (or) industries located upstream from the sites. The flow conditions were identified for the streamgages based on known upstream factors (for example, reservoirs and impoundments) that affect streamflows as well as historical information published in USGS water data reports (table 1).

The presence of documented tidal effects resulted in the exclusion of 4 active and 15 discontinued streamgages from further analyses. Although techniques are available for filtering tidally affected discharge records, application of these techniques was beyond the scope of the study.

Among the remaining 220 active and 277 discontinued sites, 180 and 139 sites, respectively, had 10 or more years of observed period of record. However, initial low-flow analyses completed for these streamgages indicated 177 active and 119 discontinued streamgages had the recommended minimum 10 climatic years during the periods of record.

For this study, low-flow characteristics were not determined for streamgages having less than 10 climatic years, which could be done using statistical techniques applicable to partial-record sites. In a similar manner, no record extension techniques were applied to streamgages having less than 10 years of record because application of these techniques was beyond the scope of the study. Not applying record extension techniques resulted in a decision to exclude two discontinued streamgages having insufficient periods of record and located adjacent to or between nearby active streamgages along the same stream. One streamgage is located on the Yadkin River at Siloam in Surry County (site 248, table 1) between two active streamgages (sites 244 and 254) having longer periods of record. Flow along this reach of the Yadkin River is regulated by releases from the upstream W. Kerr Scott Reservoir in Wilkes County (fig. 1). The second streamgage is located on Briar Creek at Sharon Road at Charlotte in Mecklenburg County (site 371, table 1) immediately upstream from an active streamgage (site 372) that has a period of record during the 1996–2012 water years and basin conditions more reflective of the recent urbanization patterns observed in this area. Exclusion of these two discontinued streamgages resulted in 177 active and 117 discontinued sites having 10 or more climatic years of record for which low-flow characteristics were determined (fig. 4, fig. 5).

Following the determination of low-flow characteristics for the 294 streamgages, the QAQC analyses were completed (discussed later) to identify any factors that would preclude publication of low-flow characteristics. Completion of the

QAQC analyses resulted in the exclusion of (1) 9 active and 7 discontinued sites because of trends, (2) 2 discontinued sites (sites 18 and 32, table 1) located on the Dan River at Leaksville in Rockingham County and the Roanoke River near Scotland Neck in Halifax County because of mixed, but insufficient length of unregulated and regulated streamflows in available period of record, (3) 1 discontinued site located on Horsepen Creek at Battle Ground in Guilford County (site 156, table 1) downstream from an active streamgage (site 155) that has a period of record during the 1999–2012 water years and basin conditions more reflective of the recent urbanization patterns observed in this area, (4) 1 discontinued site located on Little Sugar Creek near Charlotte in Mecklenburg County (site 376, table 1) immediately upstream from a wastewater treatment facility as well as a currently active streamgage along the same stream located downstream from the facility, and (5) 1 other discontinued site on the Pigeon River at Canton in Haywood County (site 459, table 1) where the period of record is already included in the discharge records of an active streamgage (site 458) located upstream on the same river. Exclusion of these 9 active and 12 discontinued streamgages resulted in 168 active and 105 discontinued sites for which low-flow characteristics were determined (fig. 4, fig. 5).

Further assessments of the periods of record used to determine low-flow characteristics also resulted in the identification of four discontinued streamgages (sites 42, 88, 211, and 273, table 1) for which the statistics do not reflect current flow conditions. The periods of record for the Tar River near Nashville in Nash County (site 42), Neuse River near Northside in Durham County (site 88), and the Yadkin River near Salisbury in Rowan County (site 273) reflect unregulated conditions, but the sites are located in reaches now inundated by impoundments. The period of record for the Cape Fear River at Fayetteville in Cumberland County (site 211) reflects unregulated flow conditions observed in the river in the early 1900s, well in advance of the regulated flow conditions present since 1982 and caused by flow releases from B. Everett Jordan Lake (fig. 1). Daily mean discharges determined for the Little Tennessee River at Fontana Dam (site 504) when the reservoir was initially filled in early 1945 resulted in low-flow characteristics considered unreliable. Because of the short period of regulated flow conditions reflected in discharge records for this site, a decision was made not to publish the low-flow characteristics for this streamgage. Exclusion of these five discontinued streamgages resulted in 168 active and 100 discontinued sites for which low-flow characteristics were determined (fig. 4, fig. 5).

Streamflow records for 5 pairs of active and discontinued streamgages were combined because the respective drainage areas for each pair of sites differ by less than 5 percent, providing a longer period of record available for the determination of low-flow characteristics and flow-duration statistics. The streamgages for which streamflow records were combined are located along the Little River in Durham County (sites 77 and 78), the Haw River in Chatham County (sites 178 and 179), the Nantahala River in Swain County (sites 487 and 488), the Tuckasegee River in central Jackson County (sites 491 and 492), and the Tuckasegee River in northern Jackson County (sites 497 and 498). Combining the streamflow records for these streamgages resulted in the inclusion of 3 additional active sites that initially had insufficient length of record prior to the combination of records and the removal of 5 discontinued streamgages after the combination of records. This resulted in 171 active and 95 discontinued sites (266 sites total) for which low-flow characteristics were published.

The 266 sites for which low-flow characteristics were published included 177 unregulated, 56 regulated, and 33 sites either known or considered to be affected by varying degrees of minor regulations and (or) diversions upstream from the streamgages. table 1 indicates (via shading) the sites for which low-flow characteristics were published (table 3) and those sites for which low-flow characteristics were excluded from publication (fig. 4, fig. 5).

For the 63 streamgages for which low-flow characteristics have previously been published *and* for which no additional data were collected following publication (Giese and Mason, 1993; Weaver, 1996, 1997, 1998; Weaver and Pope, 2001), previously published low-flow characteristics were republished in this report (table 3). For streamgages having less than 10 years of record and for which partial-record techniques were applied during the previous basinwide low-flow studies, the low-flow characteristics were not republished in this report. Users may refer to the aforementioned reports (Weaver, 1996, 1997, 1998; Weaver and Pope, 2001) to obtain the low-flow characteristics at those streamgages.

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
8	02053200	1958–2011	0.46	4.9	4.8	3.4	
11	02053500	1965–2011	1.4	4.3	3.0	2.9	
14	02068500	1950–83; 1985–86; 1992–2011	43.0	82.0	64.0	69.0	
16	02070500	1930–70; 1994–2011	58.0	126.0	113.0	108.0	
17	02071000	1950–2011	162.0	403.0	343.0	332.0	
19	02074000	1951–2011	162.0	292.0	211.0	245.0	
22	02075160	1962–73	0.4	3.0	3.0	1.5	Roanoke (Weaver, 1996)
23	02077200	1965–2011	0	0.41	0.72	0.01	
25	02077240	1965–74; 1977–81	0	0.6	0.6	0.5	Roanoke (Weaver, 1996)
26	02077250	1967–77	0	2.5	1.5	1.0	Roanoke (Weaver, 1996)
28	02077303	1974–2011	1.4	8.9	3.5	7.3	
30	02077670	1984–2011	1.3	2.4	1.8	2.1	
31	02080500	1964–92; 1994; 1996–2011	1,290.0	2,480.0	1,320.0	1,850.0	
35	0208111310	1988–2011	0	0.11	0.01	0	
38	02081500	1940–2011	0.16	3.4	1.2	1.5	
39	02081747	1974–2011	6.7	35.0	30.0	23.0	
40	02081800	1957–74	3.4	14.0	19.0	11.0	Statewide (Giese and Mason, 1993)
43	02082500	1950–69	0.07	1.4	0.55	0.39	
45	02082506	1973–2010	38.0	106.0	44.0	90.0	
46	02082585	1977–92; 1995–2011	29.0	112.0	39.0	84.0	
50	02082770	1964–92; 1996–2011	3.6	23.0	22.0	14.0	
51	02082950	1960–2011	1.4	14.0	9.1	8.6	
52	02083000	1927–92; 1994; 1996–2011	12.0	74.0	48.0	55.0	
53	02083500	1972–92; 1996–2011	83.0	262.0	149.0	201.0	
55	02083800	1957–92; 1994; 1996–2001	1.9	6.3	2.7	4.4	
59	02084160	1976–86; 1994; 1996–2011	0	0.24	0.45	0	

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
64	02084500	1950–79	0.65	1.1	0.69	0.85	
65	02084540	1966–92	0	0.36	0	0.03	
67	02084557	1978–2011	0	0.18	0	0.03	
74	02084909	1988–2003	0	0.29	0.13	0.1	
75	02085000	1928–70; 1986–2011	0.48	4.6	2.0	2.7	
76	02085070	1964–2011	0.85	7.3	3.8	4.1	
77	0208521324	1962–2011[1]	0.03	2.3	0.79	1.0	
79	0208524090	1995–2011	0	0.12	0.06	0.07	
80	0208524975	1996–2011	0.64	2.2	0.78	1.6	
81	02085500	1963–2011	0.23	5.5	2.2	3.1	
82	02086000	1926–70; 1990	0	0.3	0.1	0.2	Neuse (Weaver, 1998)
84	0208650112	1988–89; 1995–2011	0	0	0	0	
85	02086624	1983–94; 2006–11	1.4	3.1	2.9	2.4	
89	0208700780	1983–94	0	0	0	0	Neuse (Weaver, 1998)
91	02087183	1984–2011	49.0	88.0	49.0	82.0	
95	0208726005	1988–91; 1998–2011	4.7	11.0	5.9	8.1	
96	02087275	1998–2011	7.7	17.0	13.0	12.0	
97	02087324	1991–2011	5.9	24.0	16.0	15.0	
98	0208732534	1997–2011	0.01	0.06	0.01	0.02	
100	0208732885	1984–2011	0.11	1.6	0.87	0.92	
101	0208735012	1997–2011	0.02	0.37	0.15	0.14	
102	02087359	1997–2011	1.1	5.7	4.6	3.2	
106	02087500	1984; 1986–2011	181.0	259.0	171.0	221.0	
108	02087580	2002–11	0	1.5	0.8	0.39	
109	0208758850	1988–92; 1994–95; 1997–2011	0.01	0.55	0.52	0.12	
112	02088000	1940–2011	0.59	11.0	5.5	5.8	
115	02088470	1965–88	1.6	13.1	12.3	8.0	Neuse (Weaver, 1998)
116	02088500	1930–2011	0.95	20.0	11.0	12.0	
118	02089000	1984–2011	221.0	438.0	284.0	341.0	
121	0208925200	1988–2011	8.9	18.0	17.0	14.0	
122	02089500	1984–2011	271.0	572.0	380.0	448.0	

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
123	02090380	1977–93; 1996–2011	0.57	14.0	2.9	6.8	
124	02090500	1930–53	0.3	17.0	2.5	9.0	Neuse (Weaver, 1998)
126	02090625	1969–86	0.3	0.5	0.3	0.4	Neuse (Weaver, 1998)
128	0209096970	1988–97	0.12	0.44	0.39	0.24	
129	02091000	1954–92; 1994–2011	2.1	11.0	10.0	7.5	
130	02091500	1977–93; 1996–2011	24.0	80.0	59.0	56.0	
131	02091700	1957–86	0.1	4.0	1.3	1.7	Neuse (Weaver, 1998)
140	02091970	1971–84	0	0	0	0	Neuse (Weaver, 1998)
141	02092000	1965–88	2.1	11.2	6.2	7.5	Neuse (Weaver, 1998)
144	02092500	1951–2011	1.0	8.0	3.6	4.3	
151	02093500	1929–70	7.8	34.0	31.0	23.0	Cape Fear (Weaver and Pope, 2001)
152	02093800	1956–2011	1.9	6.9	6.4	5.4	
155	0209399200	2000–11	0.52	2.5	3.1	1.4	
158	02094500	1970–2011	0.98	6.8	3.8	5.8	
159	02094659	2000–11	0.14	1.1	0.69	0.36	
160	02094770	1999; 2000–11	0.27	2.8	1.5	0.88	
161	02094775	1999; 2000–11	0.02	0.49	0.23	0.14	
162	02095000	1999; 2000–11	0.96	5.7	2.8	2.5	
164	02095181	2000–11	0.05	1.6	0.86	0.61	
166	02095500	1999; 2000–11	11.0	20.0	15.0	17.0	
167	0209553650	1999; 2000–11	37.0	57.0	48.0	47.0	
171	02096500	1973–2011	60.0	114.0	100.0	90.0	
172	02096700	1958–79	1.3	9.6	7.5	5.4	Cape Fear (Weaver and Pope, 2001)
174	02096846	1989–2011	0	0.04	0	0.01	
175	02096850	1960–72	0.1	1.9	1.6	1.1	Cape Fear (Weaver and Pope, 2001)
178	02096960	1929–2011[2]	51.0	156.0	113.0	110.0	
183	02097314	1983–2011	5.3	13.0	7.0	9.8	
186	02097464	1989–2011	0	0.14	0.08	0.06	
188	02097517	1983–2011	6.7	12.0	7.6	10.0	
190	0209782609	2000–11	0	0.03	0.1	0	
192	02098500	1924–25; 1929–57	2.1	5.7	5.3	4.0	Cape Fear (Weaver and Pope, 2001)

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
193	02099000	1929–93; 1998–2011	1.5	3.8	3.0	3.1	
196	02100500	1923–2011	13.0	46.0	26.0	30.0	
197	02101000	1940–70	0.4	11.9	7.4	6.2	Cape Fear (Weaver and Pope, 2001)
200	0210166029	1989–2011	0.03	0.33	0.36	0.21	
202	02101800	1959–80; 1994–2011	0	0.09	0.04	0.02	
203	02102000	1931–2011	25.0	110.0	49.0	70.0	
205	02102192	1984–2011	0.04	1.1	0.37	0.32	
208	02102908	1969–2011	2.6	5.8	5.3	4.7	
209	02103000	1939–49; 2003–11	28.0	85.0	79.0	55.0	
210	02103500	1929–70	47.7	121.0	109.0	84.7	Cape Fear (Weaver and Pope, 2001)
212	02104220	1989–2011	30.0	55.0	56.0	45.0	
214	02104500	1929–30; 1939–53	97.6	186.0	163.0	144.0	Cape Fear (Weaver and Pope, 2001)
218	02105900	1957–72; 1994–2009	0.05	1.3	1.2	0.27	
219	02106000	1950–90	1.1	13.5	12.7	6.4	Cape Fear (Weaver and Pope, 2001)
220	02106500	1952–2011	21.0	108.0	82.0	64.0	
222	02107000	1952–85	2.0	24.6	17.2	15.2	Cape Fear (Weaver and Pope, 2001)
223	02107500	1950–70	0	3.5	1.5	1.0	Cape Fear (Weaver and Pope, 2001)
225	02107600	1959–74	5.0	12.2	9.5	8.9	Cape Fear (Weaver and Pope, 2001)
233	02108000	1941–2011	9.7	59.0	37.0	29.0	
234	02108500	1956–80	1.8	7.1	6.4	4.3	Cape Fear (Weaver and Pope, 2001)
235	02108548	1977–91	0.03	0.4	0.06	0.1	Cape Fear (Weaver and Pope, 2001)
237	02109500	1940–2011	1.5	29.0	4.7	18.0	
238	02111000	1940–2011	8.2	18.0	12.0	16.0	
239	02111180	1966–2011	13.0	32.0	20.0	27.0	
241	02111500	1940–2011	31.0	66.0	46.0	57.0	
242	02112000	1963–2011	190.0	381.0	254.0	331.0	
243	02112120	1964–2011	35.0	84.0	60.0	74.0	

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
244	02112250	1964–2011	314.0	637.0	452.0	552.0	
245	02112360	1964–2011	28.0	60.0	45.0	52.0	
246	02112500	1921–31	25.0	68.0	46.0	52.0	Statewide (Giese and Mason, 1993)
247	02113000	1932–2009	29.0	72.0	59.0	60.0	
251	02113850	1964–2011	48.0	129.0	107.0	108.0	
253	02114450	1961–2011	3.2	11.0	12.0	8.3	
254	02115360	1965–2011	487.0	1,100.0	811.0	948.0	
255	02115500	1940–70	2.2	7.3	6.8	5.8	Statewide (Giese and Mason, 1993)
261	02115856	1972–81	14.0	25.0	20.0	20.0	
262	02115860	1965–78; 1989–90; 2008–09	52.0	94.0	71.0	79.0	
264	02116500	1963–96; 1998–2011	543.0	1,300.0	1,020.0	1,110.0	
265	02117030	1969–82	0.1	0.3	0.3	0.2	Statewide (Giese and Mason, 1993)
266	02117500	1940–70	21.0	45.0	38.0	38.0	Statewide (Giese and Mason, 1993)
267	02118000	1939–2011	42.0	127.0	99.0	116.0	
268	02118500	1951–2011	28.0	76.0	58.0	66.0	
269	02119000	1929–64	107.0	229.0	180.0	191.0	
270	02119400	1956–68	0.14	2.6	2.5	2.1	
271	02120500	1941–70	16.0	33.0	27.0	28.0	
272	02120780	1979–2011	4.2	23.0	16.0	17.0	
274	02121180	1980–89	0.98	2.4	2.7	1.9	
276	02121500	1989–2011	5.1	17.0	13.0	9.7	
279	02123500	1939–70	3.6	29.0	12.0	17.0	
280	02123567	1982; 1986–2003	0.04	0.4	0.32	0.2	
283	0212414900	1995–2011	0.35	5.0	2.2	2.5	
296	02124692	2000–11	0	0.78	0.53	0.32	
298	02125000	1954–2009	0	0.36	0.18	0.09	
304	02126000	1930–2011	47.0	113.0	79.0	78.0	
306	02127000	1938–70	0	0.2	0	0	Statewide (Giese and Mason, 1993)
308	02128000	1954–2011	0.26	9.8	5.8	5.1	

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
309	02129000	1928–2011	731.0	2,580.0	1,220.0	1,740.0	
312	02132320	1988–2011	7.5	29.0	34.0	22.0	
313	02133500	1940–2011	31.0	80.0	81.0	63.0	
314	02133624	1988–2011	60.0	139.0	164.0	107.0	
315	02134170	2001–11	67.0	152.0	177.0	110.0	
316	02134480	1986–2011	0	13.0	11.0	2.7	
317	02134500	1930–2010	109.0	293.0	245.0	223.0	
318	02137000	1961–74	9.1	15.0	12.0	13.0	
319	02137727	1981–2011	30.0	87.0	62.0	74.0	
320	02138000	1942–80	66.0	146.0	90.0	125.0	Statewide (Giese and Mason, 1993)
321	02138500	1923–2011	17.0	40.0	28.0	31.0	
324	0213903612	1992–2008	125.0	313.0	199.0	229.0	
328	02140991	1986–2011	44.0	122.0	87.0	102.0	
329	02141150	1967–77	9.1	16.0	16.0	13.0	Statewide (Giese and Mason, 1993)
333	02142000	1953–94; 1998–2011	4.2	13.0	9.0	11.0	
334	02142500	1936–61	193.0	1,040.0	353.0	474.0	
336	0214253830	1984–2005	0.98	2.7	2.1	2.4	
341	0214266000	1997–2011	1.4	4.4	2.5	2.7	
345	02142900	1966–86; 1988–2011	0.42	2.0	1.5	1.5	
347	0214291555	1999; 2000–11	0.29	3.5	2.6	1.2	
348	0214295600	1995–2011	0.17	1.2	0.54	0.59	
350	02143000	1926–30; 1942–2011	19.0	48.0	32.0	39.0	
351	02143040	1962–2011	5.1	15.0	10.0	13.0	
352	02143500	1964–2011	4.1	23.0	18.0	19.0	
355	02144000	1953–2011	0.92	6.5	4.4	4.6	
356	02145000	1942–70; 1984–95; 1998–2011	105.0	273.0	216.0	215.0	
359	02146211	1982–93; 1998–99; 2000; 2005–11	0.28	0.83	0.56	0.5	
360	0214627970	2001–11	3.8	6.1	4.4	4.7	
362	02146300	1963–2005; 2007–11	4.9	11.0	7.8	7.6	

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
363	02146315	1999; 2000–11	0.08	0.6	0.22	0.2	
364	02146348	1999; 2000–11	0.09	1.0	0.52	0.33	
366	02146381	1995–2011	21.0	32.0	23.0	24.0	
367	02146409	1995–2011	1.5	4.0	2.3	2.5	
368	0214642825	1998–2011	0	0.7	0.09	0.06	
372	0214645022	1996–2011	0.59	3.5	1.6	1.7	
375	02146470	1983–89; 1995–2011	0	0.41	0.22	0.14	
378	02146507	1978–2011	19.0	30.0	23.0	24.0	
379	02146530	1998–2011	22.0	33.0	25.0	26.0	
380	0214655255	2000–11	0.01	0.6	0.26	0.1	
381	02146562	2000–11	0	0.72	0.09	0.16	
383	0214657975	2000–11	0	0.38	0.14	0.14	
384	02146600	1962–2011	0.62	4.7	2.6	2.5	
388	02146750	1974–2011	1.4	11.0	5.5	5.3	
391	0214678175	1999; 2000–11	0.08	0.57	0.32	0.19	
394	02146900	1961–2002	0.07	2.7	1.2	1.2	
396	02148500	1927–57	6.6	64.0	33.0	38.0	Statewide (Giese and Mason, 1993)
397	02149000	1951–2011	25.0	59.0	39.0	52.0	
399	02150000	1940–53	55.0	174.0	93.0	133.0	Statewide (Giese and Mason, 1993)
400	02150495	1999; 2000–11	10.0	33.0	28.0	26.0	
401	02151000	1926–95	63.0	133.0	96.0	111.0	
402	02151500	1926–2011	283.0	654.0	443.0	568.0	
404	02152100	1959–2011	14.0	35.0	25.0	31.0	
407	02152500	1940–70	53.0	115.0	84.0	98.0	Statewide (Giese and Mason, 1993)
408	02152610	1969–86	0.1	0.5	0.5	0.5	Statewide (Giese and Mason, 1993)
409	03161000	1925; 1929–85; 1987–2011	103.0	187.0	128.0	161.0	
411	03162500	1909–15; 1929–57	80.0	155.0	109.0	128.0	Statewide (Giese and Mason, 1993)
412	03439000	1908; 1936–2011	52.0	92.0	63.0	79.0	
413	03439500	1925–54	72.0	134.0	86.0	115.0	Statewide (Giese and Mason, 1993)

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
414	03440000	1945–54; 1987–2003	7.0	14.0	8.7	12.0	
416	03441000	1921–89; 1994–2011	23.0	45.0	29.0	38.0	
417	03441440	1963–89	15.0	34.0	23.0	27.0	
418	03441500	1943–54	7.1	47.0	24.0	37.0	Statewide (Giese and Mason, 1993)
419	03442000	1943–54	6.4	12.0	7.7	10.0	Statewide (Giese and Mason, 1993)
420	03443000	1921–2011	193.0	374.0	249.0	314.0	
421	03444000	1943–54	7.3	14.0	8.3	12.0	Statewide (Giese and Mason, 1993)
422	03444500	1926–48; 1966–72	3.8	9.1	6.4	7.0	Statewide (Giese and Mason, 1993)
425	03446000	1925; 1934–2011	29.0	61.0	38.0	51.0	
427	03447000	1939–54	40.0	79.0	53.0	69.0	Statewide (Giese and Mason, 1993)
428	03447500	1943–57	12.0	26.0	18.0	22.0	Statewide (Giese and Mason, 1993)
429	03447687	2002–11	210.0	561.0	343.0	442.0	
432	03448000	1935–85	378.0	689.0	468.0	590.0	
433	03448500	1943–76	21.0	41.0	28.0	35.0	Statewide (Giese and Mason, 1993)
435	0344894205	1989–2011	2.2	7.0	4.6	5.2	
437	03449000	1926–52	1.3	4.4	2.3	3.3	Statewide (Giese and Mason, 1993)
439	03450000	1926–74; 1980; 1986–2011	0.6	1.7	1.2	1.3	
441	03451000	1960–2011	15.0	44.0	31.0	36.0	
443	03451500	1896–2011	408.0	836.0	553.0	720.0	
446	03452000	1943–54	5.2	17.0	13.0	15.0	Statewide (Giese and Mason, 1993)
448	03453000	1934–72; 1995–2011	15.0	35.0	27.0	29.0	
449	03453500	1943–2011	465.0	956.0	645.0	825.0	
450	03454000	1934–70	26.0	48.0	31.0	40.0	Statewide (Giese and Mason, 1993)
451	03454500	1934–48	598.0	1,000.0	733.0	870.0	
452	03455500	1954–2011	14.0	27.0	20.0	21.0	

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft^3/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
453	0345577330	1988–2011	18.0	32.0	21.0	25.0	
454	03456000	1954–79	27.0	47.0	32.0	38.0	Statewide (Giese and Mason, 1993)
455	03456100	1981–2011	24.0	44.0	34.0	38.0	
457	03456500	1954–2011	17.0	36.0	26.0	29.0	
458	03456991	1933–82; 1985–2011	51.0	89.0	62.0	75.0	
460	03457500	1950–71	3.6	9.9	5.4	7.7	Statewide (Giese and Mason, 1993)
462	03459000	1930–71	27.0	44.0	32.0	38.0	Statewide (Giese and Mason, 1993)
463	03459500	1933–2011	118.0	215.0	152.0	181.0	
464	03460000	1934–51; 1963–2011	21.0	35.0	24.0	31.0	
466	03460795	1997–2011	116.0	273.0	145.0	163.0	
467	03462000	1939–56	34.0	63.0	43.0	52.0	Statewide (Giese and Mason, 1993)
469	03463300	1958–2011	14.0	36.0	25.0	29.0	
470	03463500	1934–51	26.0	51.0	[3]35.0	40.0	Statewide (Giese and Mason, 1993)
471	03464000	1934–70	40.0	78.0	52.0	63.0	Statewide (Giese and Mason, 1993)
472	03464500	1926–54	178.0	341.0	229.0	278.0	
473	03479000	1940–2011	19.0	43.0	29.0	34.0	
475	03481000	1935–54	9.1	20.0	13.0	17.0	Statewide (Giese and Mason, 1993)
476	03500000	1944–2011	71.0	133.0	94.0	114.0	
477	03500240	1962–2011	25.0	48.0	34.0	42.0	
478	03500500	1932–66	2.4	16.0	5.4	11.0	Statewide (Giese and Mason, 1993)
480	03501000	1927–66	37.0	71.0	45.0	60.0	Statewide (Giese and Mason, 1993)
482	03502000	1930–44	170.0	264.0	183.0	236.0	
484	03503000	1945–80; 1984–2011	191.0	368.0	255.0	316.0	
486	03504000	1941–2011	38.0	68.0	47.0	57.0	
488	03505550	1943–80; 2005–11[4]	34.0	184.0	61.0	58.0	
489	03506500	1913–16; 1921–42	101.0	164.0	119.0	143.0	Statewide (Giese and Mason, 1993)

Table 3. Magnitude and frequency of low-flow characteristics at U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft³/s, cubic foot per second; 7Q10, 7-day, 10-year low flow; 30Q2, 30-day, 2-year low flow; Winter 7Q10, winter 7-day, 10-year low flow; 7Q2, 7-day, 2-year low flow. Climatic year is the annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages, designated by the year in which the period begins. Source refers to the previous basinwide low-flow report in which low-flow characteristics were republished in the current report. A previous report is cited only if no new data have been collected at the streamgage since the report was published]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (climatic years)	Low-flow characteristic, in ft³/s				Source
			7Q10	30Q2	Winter 7Q10	7Q2	
490	03507000	1913–43	339.0	579.0	419.0	498.0	
492	03508050	1935–75; 2005–11[5]	49.0	160.0	77.0	101.0	
495	03509000	1942–74; 1993–94	27.0	45.0	30.0	38.0	
496	03509500	1928–40	24.0	40.0	26.0	36.0	Statewide (Giese and Mason, 1993)
498	03510577	1934–80; 2005–11[6]	179.0	351.0	217.0	282.0	
499	03511000	1921–48	72.0	117.0	83.0	103.0	Statewide (Giese and Mason, 1993)
500	03512000	1949–2011	96.0	170.0	111.0	140.0	
501	03513000	1942–80; 1984–93; 1996–2011	363.0	630.0	421.0	522.0	
502	03513500	1936–70	6.4	13.0	7.6	10.0	Statewide (Giese and Mason, 1993)
509	03546000	1942–44; 1947–54	13.0	24.0	17.0	21.0	Statewide (Giese and Mason, 1993)
513	03548500	1942–2003	98.0	290.0	125.0	183.0	
514	03550000	1905–08; 1914–16; 1919–2011	29.0	61.0	39.0	51.0	
515	03554000	1901–04; 1914–16; 1919–28; 1932–40	41.0	175.0	46.0	150.0	Statewide (Giese and Mason, 1993)

[1] The period of analysis was based on combined daily mean discharges at station 02085220 (site 78, 1962–87 water years) and station 0208521324 (site 77, active streamgage since October 1987).

[2] The period of analysis was based on combined daily mean discharges at station 02096960 (site 178, active streamgage since October 1973) and station 02097000 (site 179, 1928–73 water years).

[3] The W7Q10 discharge previously published (Giese and Mason, 1993) for site 470 was incorrectly listed.

[4] The period of analysis was based on combined daily mean discharges at station 03505500 (site 487, 1942–81 water years) and station 03505550 (site 488, active streamgage since December 2004).

[5] The period of analysis was based on combined daily mean discharges at station 03508000 (site 491, 1934–76 water years) and station 03508050 (site 492, active streamgage since September 2004).

[6] The period of analysis was based on combined daily mean discharges at station 03510500 (site 497, 1933–81 water years) and station 03510577 (site 498, active streamgage since July 2004).

Comparison of 7Q10 Discharges for 1998 and 2011 Climatic Years

Provisional low-flow analyses completed in North Carolina as a part of responding to site-specific low-flow requests have shown that low-flow characteristics have declined at numerous streamgages across the State because of recent droughts since the late 1990s (Weaver, 2005). Weaver (2005) compiled daily mean discharges for 211 streamgages operated during the 2002 water year. Of these 211 streamgages, 150 had periods of record that exceeded 10 years, and records of lowest daily mean discharge were set at 65 sites during the 1998–2002 drought (55 sites during the 2002 water year alone). Severe drought conditions also affected much of North Carolina from late 2007 into 2008 when the weekly U.S. Drought Monitor depicted nearly 90 percent of the State having combined extreme (D3) and exceptional (D4) drought conditions during the period (National Drought Mitigation Center, 2014). Because low-flow characteristics are used by State agencies tasked with managing both water quantity and quality, concerns have arisen about the potential effects these declines will have on ability of water users to maintain existing water withdrawals and point-source discharges in the future.

The updated 7Q10 discharges were compared for 63 streamgages across North Carolina for which (1) long-term streamflow record consisted of 30 or more climatic years of data available as of the 1998 climatic year, and (2) streamflows were not known to be regulated (table 4, fig. 9). The 63 streamgages consisted of 53 where streamflows are unregulated and 10 where streamflows are affected by varying degrees of minor regulations and (or) diversions upstream from the streamgages. Percentage changes were computed by comparing the 7Q10 discharge for the 2011 climatic year relative to the 1998 climatic year, just prior to the start of the droughts in the late 1990s (Weaver, 2005). For example, the 7Q10 discharge declined 31.1 percent at South Yadkin River near Mocksville (site 267, fig. 4) between the 1998 and 2011 climatic years (table 4., fig. 9).

Of the 63 streamgages compared, 7Q10 discharges did not change at 3 sites (sites 23, 321, and 452), increased at 5 sites, and decreased at 55 sites (table 4., fig. 9). Positive changes (increases) ranged from 4.3 percent (site 362) to 34.1 percent (site 112) with a median of 13.2 percent. Negative percentage changes (decreases) ranged from –3.3 percent (site 514) to –80.0 percent (site 308) with a median of –22.2 percent. The median percentage change for all 63 streamgages was –18.4 percent.

Where positive changes were determined (sites 76, 112, 304, 362, and 387; table 4; fig. 9), part of the increases were probably due to changes in diversions upstream from the streamgage as well as upstream development that could affect runoff characteristics during periods of low flow. However, the 7Q10 discharge did not increase at all streamgages included in the comparisons and that also were located downstream of a diversion or increased basin development. Still, these five streamgages are located in basins affected in part by upstream diversions and (or) recent development.

The 29 streamgages where the negative change exceeded the median of –22.2 percent were distributed throughout all parts of the State except the southern mountains. The 14 streamgages where the change exceeded –40.0 percent were distributed along a band extending from the southwest Piedmont toward the northern Coastal Plain. These observations are consistent with historical U.S. Drought Monitor depictions showing most of North Carolina affected by both the 1998–2002 and 2007–08 droughts.

Table 4. Differences between 7Q10 discharges determined for periods of record available through the 1998 and 2011 climatic years at U.S. Geological Survey continuous-record streamgaging stations in North Carolina with 30 or more climatic years as of the 1998 climatic year.

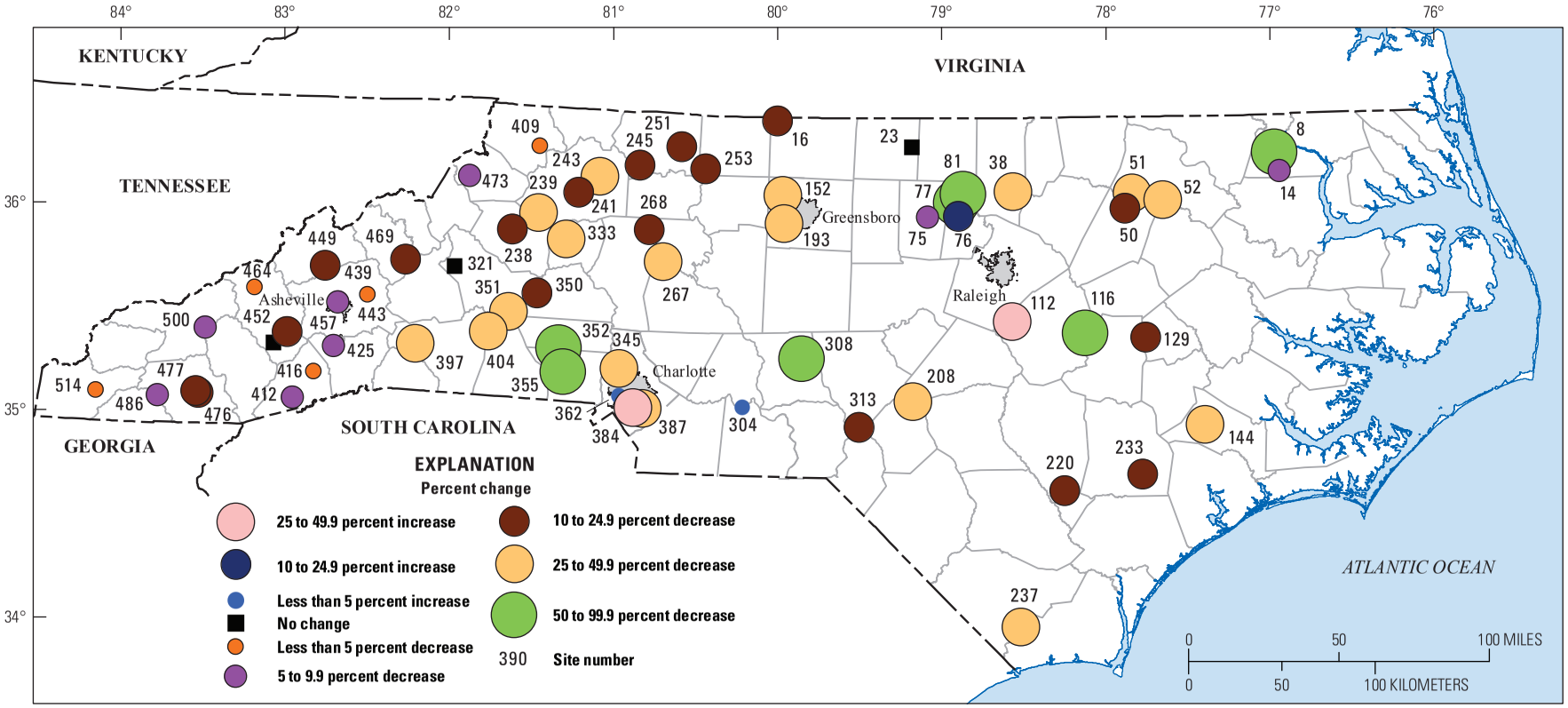
[USGS, U.S. Geological Survey; 7Q10, 7-day, 10-year low flow; ft^3/s, cubic foot per second]

Site index number (figs. 4, 5)	USGS station number	Period of record through 1998 climatic year		Period of record through 2011 climatic year		Percent difference from previous to current estimate
		7Q10, in ft^3/s	Number of climatic years	7Q10, in ft^3/s	Number of climatic years	
8	02053200	1.1	41	0.46	54	–58.2
11	02053500	1.5	34	1.4	47	–6.7
16	02070500	66.0	46	58.0	59	–12.1
23	02077200	0	34	0	47	No change
38	02081500	0.27	59	0.16	72	–40.7
50	02082770	4.7	32	3.6	45	–23.4
51	02082950	2.6	39	1.4	52	–46.2
52	02083000	20.0	70	12.0	83	–40.0
75	02085000	0.52	56	0.48	69	–7.7
76	02085070	0.76	35	0.86	48	13.2
77	0208521324	0.09	37	0.03	50	–66.7
81	02085500	0.82	36	0.23	49	–72.0
112	02088000	0.44	59	0.59	72	34.1
116	02088500	2.4	69	0.95	82	–60.4
129	02091000	2.7	44	2.1	57	–22.2
144	02092500	1.4	48	1.0	61	–28.6
152	02093800	3.4	43	1.9	56	–44.1
193	02099000	2.0	66	1.5	79	–25.0
208	02102908	3.8	30	2.6	43	–31.6
220	02106500	27.0	47	21.0	60	–22.2
233	02108000	12.0	58	9.7	71	–19.2
237	02109500	2.2	59	1.5	72	–31.8
238	02111000	9.3	59	8.2	72	–11.8
239	02111180	18.0	33	13.0	46	–27.8
241	02111500	38.0	59	31.0	72	–18.4
243	02112120	52.0	35	35.0	48	–32.7
245	02112360	36.0	35	28.0	48	–22.2
251	02113850	59.0	35	48.0	48	–18.6
253	02114450	3.9	38	3.2	51	–17.9
267	02118000	61.0	59	42.0	72	–31.1
268	02118500	37.0	48	28.0	61	–24.3
304	02126000	45.0	69	47.0	82	4.4

Table 4. Differences between 7Q10 discharges determined for periods of record available through the 1998 and 2011 climatic years at U.S. Geological Survey continuous-record streamgaging stations in North Carolina with 30 or more climatic years as of the 1998 climatic year.—Continued

[USGS, U.S. Geological Survey; 7Q10, 7-day, 10-year low flow; ft^3/s, cubic foot per second]

Site index number (figs. 4, 5)	USGS station number	Period of record through 1998 climatic year		Period of record through 2011 climatic year		Percent difference from previous to current estimate
		7Q10, in ft^3/s	Number of climatic years	7Q10, in ft^3/s	Number of climatic years	
308	02128000	1.3	45	0.26	58	–80.0
313	02133500	35.0	59	31.0	72	–11.4
321	02138500	17.0	76	17.0	89	No change
333	02142000	6.1	43	4.2	56	–31.1
345	02142900	0.73	32	0.42	45	–42.5
350	02143000	23.0	62	19.0	75	–17.4
351	02143040	9.0	37	5.1	50	–43.3
352	02143500	9.3	35	4.1	48	–55.9
355	02144000	2.0	46	0.92	59	–54.0
362	02146300	4.7	36	4.9	48	4.3
384	02146600	1.1	37	0.62	50	–43.6
387	02146700	0.04	37	0.05	50	25.0
397	02149000	34.0	48	25.0	61	–26.5
404	02152100	21.0	40	14.0	53	–33.3
409	03161000	108.0	70	103.0	83	–4.6
412	03439000	55.0	64	52.0	77	–5.5
416	03441000	24.0	74	23.0	87	–4.2
425	03446000	31.0	66	29.0	79	–6.5
439	03450000	0.63	63	0.6	76	–4.8
443	03451500	448.0	103	408.0	116	–8.9
449	03453500	534.0	56	465.0	69	–12.9
452	03455500	14.0	45	14.0	58	No change
457	03456500	19.0	45	17.0	58	–10.5
464	03460000	22.0	54	21.0	67	–4.5
469	03463300	17.0	41	14.0	54	–17.6
473	03479000	20.0	59	19.0	72	–5.0
476	03500000	82.0	55	71.0	68	–13.4
477	03500240	30.0	37	25.0	50	–16.7
486	03504000	40.0	58	38.0	71	–5.0
500	03512000	102.0	50	96.0	63	–5.9
514	03550000	30.0	87	29.0	100	–3.3



Base modified from digital files of:
U.S. Geological Survey, 1:100,000 scale

Figure 9. Differences between 7Q10 discharges determined for periods of record available through the 1998 and 2011 climatic years at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina with 30 or more climatic years as of the 1998 climatic year.

Access to Updated Low-Flow Characteristics Through StreamStats Application

Dissemination of streamflow data and statistics in a manner available to all users is critical for maintaining an informative database that can be used to manage the quantity and quality of streams and rivers. Changes in both computer infrastructure and software since the mid-1990s have resulted in opportunities to maintain and provide streamflow statistics in a more user-friendly and readily accessible format than previously available. The recent release of a USGS StreamStats application for North Carolina (*http://water.usgs.gov/osw/streamstats/north_carolina.html*) has provided one such opportunity for improved access to streamflow statistics, allowing users to access such information through a Web-based mapping application.

All low-flow characteristics for the streamgages were added into StreamStatsDB, which is a database accessible to users through the StreamStats application. The StreamStatsDB contains selected basin characteristics and streamflow information for USGS streamgage locations in North Carolina and can be accessed through the Gaging Station Information tool provided in the StreamStats application (fig. 10).

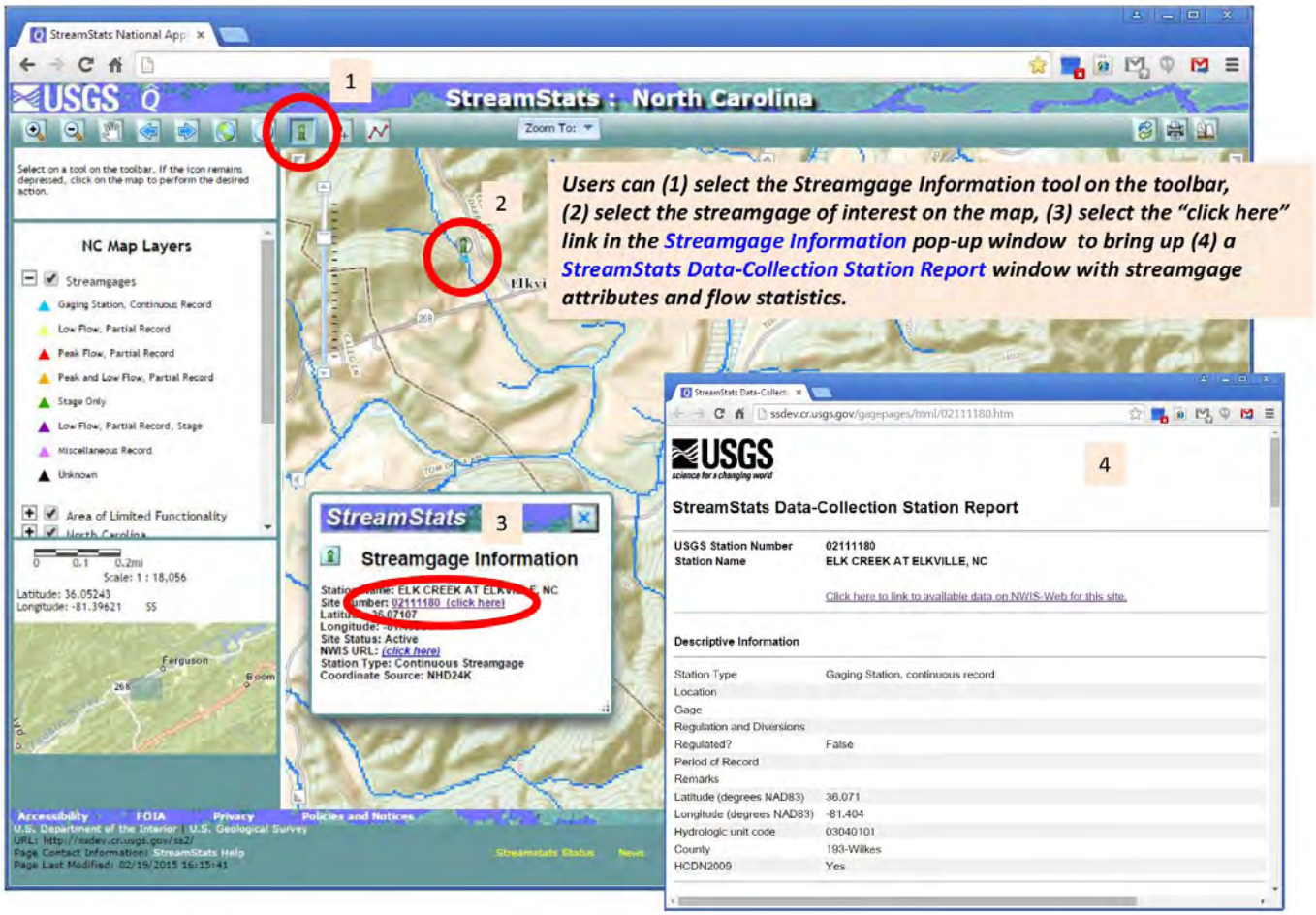


Figure 10. Screenshots of U.S. Geological Survey StreamStats application showing location of Gaging Station Information tool and sample pop-up window with streamgage attributes where updated streamflow statistics can be accessed.

Flow-Duration Statistics

For streamgages having sufficient record, the determination of minimum, mean, maximum, and flow-duration statistics of daily mean discharges for annual, seasonal, monthly, and calendar day periods provides a set of baseline statistics to evaluate historical and current streamflow conditions and to assess streamflow trends. Flow-duration statistics form the basis of the streamflow information presented in the online USGS WaterWatch pages (*http://waterwatch.usgs.gov/*). A summary and brief description of the flow-duration statistics compiled in this study are provided in table 2.

Computational Procedures for Flow-Duration Statistics

Flow-duration statistics are discharges associated with a percentile, which is a value on a scale of 1 to 100 indicating the percentage of a sample distribution that is equal to, greater than, or less than the discharge during a given time period. Flow-duration statistics are a summary of past hydrologic events. If a streamgage has a sufficiently long period of record, then the flow-duration statistics can be used as an indicator of probable future conditions (Searcy, 1959).

Although flow-duration statistics are commonly presented as exceedance percentiles (Searcy, 1959), flow-duration statistics may also be presented in the context of non-exceedance percentiles, which are used in the depiction of streamflow conditions provided on the USGS WaterWatch pages (*http://waterwatch.usgs.gov/*). Flow-duration statistics presented for non-exceedance percentiles are the discharges at or below which the percentage of the record has been observed. If an exceedance percentile is known, the non-exceedance percentile can quickly be determined by subtraction from 1. For example, the flow-duration statistic for the 25th exceedance percentile is the discharge value that was equaled or exceeded 25 percent of the time during the period of analysis. This is equivalent to the flow-duration statistic for the 75th non-exceedance percentile, which is the discharge value that was equaled or not met 75 percent of the time during the period of analysis. For this report, the flow-duration statistics are presented as non-exceedance percentiles (or simply as *XX*th percentiles as listed in table 5 back of report).

Flow-durations statistics are computed by sorting the daily mean discharges for categorical periods (such as the entire period of record, a given month, or a selected calendar day) from the largest value to the smallest value and assigning each streamflow value a rank, starting with a rank of 1 for the largest value. The frequencies of exceedance are then computed using the Weibull formula for computing plotting position (Helsel and Hirsch, 2002):

$$P = 100 * [M / (n+1)], \quad (2)$$

where

P is the probability that a given streamflow will be equaled or exceeded (percentage of time),
M is the ranked position (dimensionless), and
n is the number of observations for the period of record (dimensionless).

Examining an example flow-duration curve for the streamgage at Elk Creek at Elkville in Wilkes County (site 239, fig. 4), the flow-duration statistic for the 90th exceedance percentile is 26.0 ft^3/s based on the period of record at the streamgage (fig. 11). Daily mean discharges were 26.0 ft^3/s or higher 90 percent of the time during the available period of record (1966–2012 water years) analyzed for this streamgage in this study. But presented in the context of a non-exceedance percentile, 10 percent of the historical observations in the sample were at or below 26.0 ft^3/s during the period of record. In other words, the discharge value for the 90th exceedance percentile is also the same as the 10th non-exceedance percentile. An example of the application of non-exceedance percentiles is shown in a duration hydrograph available from the USGS WaterWatch pages (*http://waterwatch.usgs.gov/index.php?id=wwchart_sitedur*, fig. 12). The hydrograph shows recent daily mean discharges observed at Elk Creek (site 239, fig. 4) plotted against a background of the percentiles determined for each calendar day based on the historical streamflow recorded for each day.

The flow-duration statistics compiled in this study were computed using the same internal Perl routine used to handle manipulation of daily mean discharges at the streamgages and to compute the low-flow characteristics. The methods from Searcy (1959) described above were coded into the internal Perl routine to compute the non-exceedance percentiles.

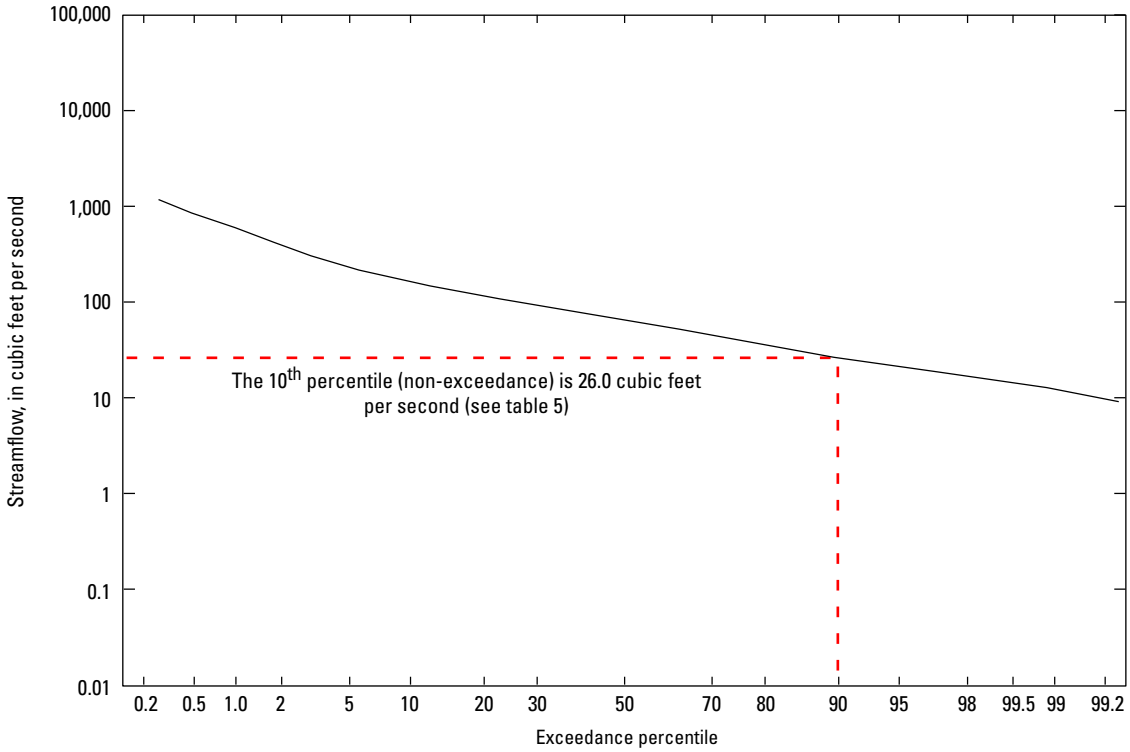


Figure 11. Flow-duration curve of daily mean discharge for 1966–2012 water years at Elk Creek at Elkville in Wilkes County, North Carolina (site 239, fig. 4).

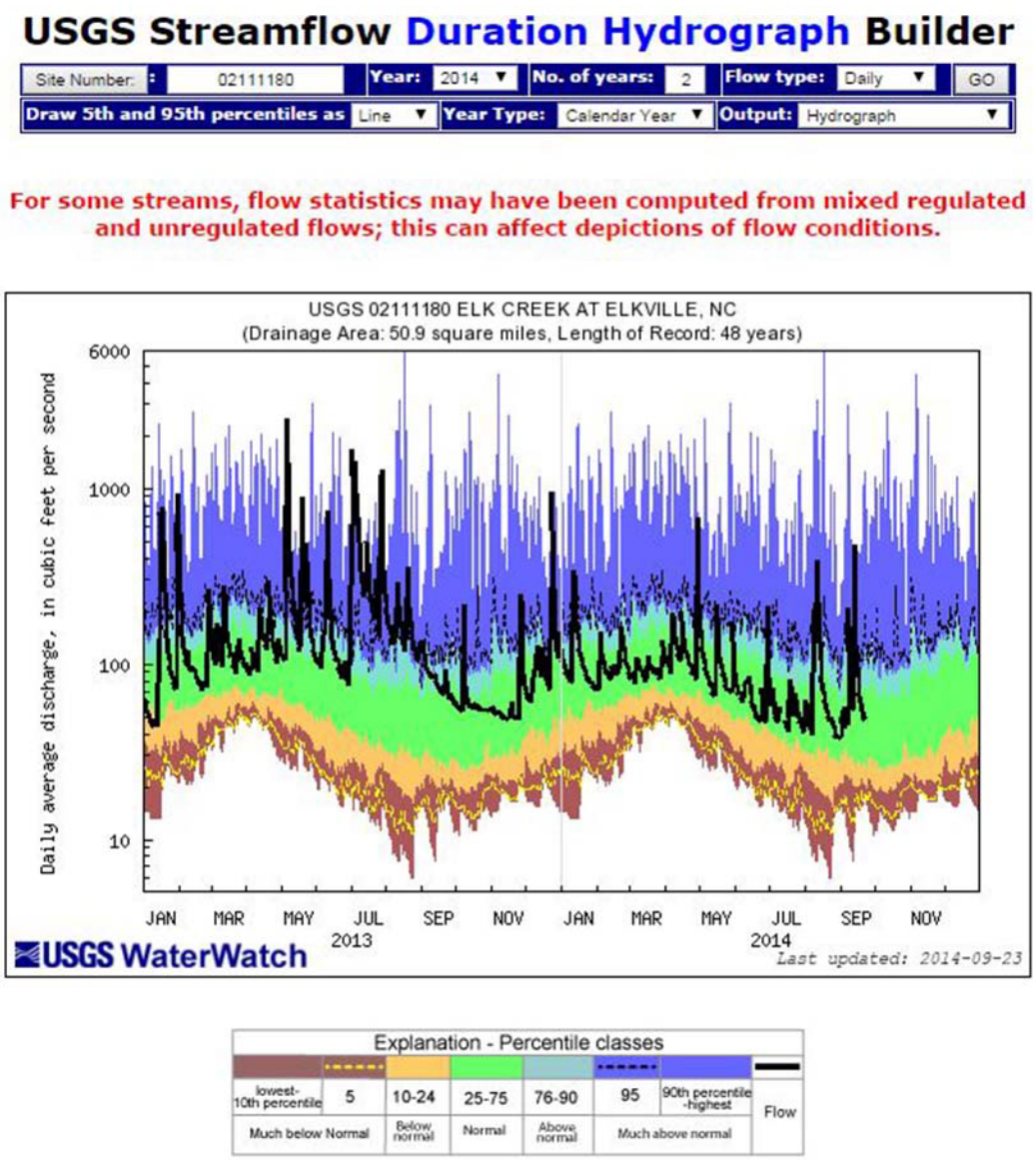


Figure 12. Duration hydrograph of daily mean discharge observed during the 2013–14 calendar years at Elk Creek at Elkville in Wilkes County, North Carolina (site 239, fig. 4), plotted against a background of non-exceedance percentiles based on historical streamflow records.

Compilation of Streamflow Statistics

Streamflow statistics determined as part of this compilation to allow ecological evaluations of streams include minimum, mean, maximum, and flow-duration statistics of daily mean discharges for categorical periods. For the same group of streamgages used to update low-flow characteristics, the streamflow statistics were compiled using streamflow records available through the 2012 water year. Flow-duration statistics based on the daily mean discharge records were compiled in this study for the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles.

The categorical periods used in the compilation of these streamflow statistics include the (1) available period of record (or selected period if flows were regulated) consisting of all complete water years of record, (2) *each* complete water year of record, (3) selected seasonal periods of complete record, as discussed below, (4) each complete month of the calendar year, and (5) each calendar day of the year. The streamflow statistics based on the entire period of available (or selected if regulated) record are presented only for the streamgages in table 5.

Six seasonal periods were selected as a part of this study and are named and specified as follows: Summer_USGS, lasting from April through October; Winter_USGS, from November through March; Spring_ECO(logical), from April through June; Summer_ECO(logical), from July through September; Fall_ECO(logical), October and November; and Winter_ECO(logical), from December through March. Of these periods, the 2 USGS "seasons" are the most consistent with the periods used in the compilation of low-flow characteristics in North Carolina, whereas the 4 ecological (ECO) "seasons" are based on those used as part of the ecological evaluations completed by the EF–SAB (North Carolina Ecological Flows Science Advisory Board, 2013).

In addition to the streamflow statistics compiled for each complete water year of record, the number of days the daily mean discharge was at or below the 10th percentile was summed as well as the number of events during the water year. An event is defined as one or more consecutive days the daily mean discharge(s) were at or below the 10th percentile. After the number of events were determined for a given water year, the duration (in days) of the longest event was identified for that water year.

Access to Streamflow Statistics Through the StreamStats Application

The volume of flow-duration statistics compiled across the various categorical periods was substantial and precluded the convenience of including the tables for each streamgage in this report. The minimum, mean, maximum, and flow-duration statistics of daily mean discharges based on the available period of record (table 5) were updated in the North Carolina StreamStatsDB for inclusion in the pop-up results window that presents selected site attributes and streamflow statistics for each of the streamgages. However, for selected seasonal, monthly, calendar day, and annual water year periods (figs. 13, fig. 14), tab-delimited American Standard Code for Information Interchange (ASCII) tables of the streamflow statistics are available online to users through the link provided near the top of the pop-up results window generated through use of the Gaging Station Information tool (fig. 10).

Site number	Statistics begin date	Statistics end date	Full water years summary	Month	Day	Number of values	Mean	Min	Min date CalYr	Percentile 5th	Percentile 10th	Percentile 25th	Percentile 50th (Median)	Percentile 75th	Percentile 90th	Percentile 95th	Max	Min date CalYr
02111180	10/1/1965	9/30/2012	1966–2012	1	1	47	111	14	2001	26	30	49	71	101	257	431	953	2007
02111180	10/1/1965	9/30/2012	1966–2012	1	2	47	98.1	14	2001	25	30	43	70	98	190	300	737	1979
02111180	10/1/1965	9/30/2012	1966–2012	1	3	47	85.1	14	2001	25	35	49	77	108	165	191	209	2007
02111180	10/1/1965	9/30/2012	1966–2012	1	4	47	91.5	14	2001	24	33	48	82	106	149	248	406	1982
02111180	10/1/1965	9/30/2012	1966–2012	1	5	47	84.6	14	2001	20	30	45	80	98	147	177	303	1993
02111180	10/1/1965	9/30/2012	1966–2012	1	6	47	80.3	13	2001	24	30	51	77	100	148	170	203	1993
02111180	10/1/1965	9/30/2012	1966–2012	1	7	47	93.1	13	2001	25	31	59	75	96	163	203	677	2009
02111180	10/1/1965	9/30/2012	1966–2012	1	8	47	123	13	2001	22	31	57	74	101	226	436	1,330	1998
02111180	10/1/1965	9/30/2012	1966–2012	1	9	47	100	13	2001	23	32	54	76	97	209	288	741	1978
02111180	10/1/1965	9/30/2012	1966–2012	1	10	47	85.3	13	2001	23	31	52	75	97	184	200	276	1978
02111180	10/1/1965	9/30/2012	1966–2012	1	11	47	91	13	2001	21	32	48	78	108	199	218	321	1991
02111180	10/1/1965	9/30/2012	1966–2012	1	12	47	99.3	13	2001	23	34	46	74	118	213	345	440	2012
02111180	10/1/1965	9/30/2012	1966–2012	1	13	47	91.3	13	2001	22	31	50	71	116	210	254	325	1975
02111180	10/1/1965	9/30/2012	1966–2012	1	14	47	146	13	2001	24	30	49	69	115	273	458	2,210	1995
02111180	10/1/1965	9/30/2012	1966–2012	1	15	47	136	13	2001	23	29	48	73	116	215	230	2,330	1995
02111180	10/1/1965	9/30/2012	1966–2012	1	16	47	97.1	13	2001	22	29	47	70	110	167	259	693	1995
02111180	10/1/1965	9/30/2012	1966–2012	1	17	47	88.8	13	2001	20	30	45	68	110	147	314	402	1995
02111180	10/1/1965	9/30/2012	1966–2012	1	18	47	93.8	13	2001	22	30	44	71	106	200	291	437	2006
02111180	10/1/1965	9/30/2012	1966–2012	1	19	47	112	19	1981	31	38	56	82	116	198	271	1,100	1996
02111180	10/1/1965	9/30/2012	1966–2012	1	20	47	103	20	1981	29	35	50	84	119	190	282	500	1979
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
02111180	10/1/1965	9/30/2012	1966–2012	12	20	47	69	19	2007	21	26	32	65	88	119	163	181	1992
02111180	10/1/1965	9/30/2012	1966–2012	12	21	47	72.8	19	2000	20	25	39	63	85	114	152	422	1973
02111180	10/1/1965	9/30/2012	1966–2012	12	22	47	81.8	17	2000	20	26	40	71	93	149	233	449	2006
02111180	10/1/1965	9/30/2012	1966–2012	12	23	47	95.8	17	2000	24	28	38	73	103	194	383	417	2006
02111180	10/1/1965	9/30/2012	1966–2012	12	24	47	106	16	2000	25	29	47	76	121	173	419	864	1986
02111180	10/1/1965	9/30/2012	1966–2012	12	25	47	106	16	2000	24	29	50	76	113	207	350	747	2009
02111180	10/1/1965	9/30/2012	1966–2012	12	26	47	108	15	2000	20	29	41	75	107	172	441	953	1973
02111180	10/1/1965	9/30/2012	1966–2012	12	27	47	90.4	15	2000	24	29	40	73	102	140	255	638	1973
02111180	10/1/1965	9/30/2012	1966–2012	12	28	47	82.6	15	2000	24	31	45	76	112	130	200	268	1973
02111180	10/1/1965	9/30/2012	1966–2012	12	29	47	80.1	14	2000	25	29	49	78	107	128	169	187	1973
02111180	10/1/1965	9/30/2012	1966–2012	12	30	47	76.1	14	2000	24	29	48	75	98	118	156	195	1969
02111180	10/1/1965	9/30/2012	1966–2012	12	31	47	95.4	14	2000	27	28	46	73	98	151	352	634	1969
02111180	10/1/1965	9/30/2012	1966–2012	1	NA	1,457	103	13	1/6/2001	26	33	51	76	113	181	236	2,330	1/15/1995
02111180	10/1/1965	9/30/2012	1966–2012	2	NA	1,328	111	19	2/1/1981	31	40	58	86	123	174	240	2,720	2/13/1966
02111180	10/1/1965	9/30/2012	1966–2012	3	NA	1,457	140	27	3/3/2001	46	51	67	96	148	240	361	2,280	3/17/1973
02111180	10/1/1965	9/30/2012	1966–2012	4	NA	1,410	134	27	4/30/2001	46	52	66	95	138	219	313	2,050	4/14/1980
02111180	10/1/1965	9/30/2012	1966–2012	5	NA	1,457	104	21	5/30/2002	33	40	56	80	117	177	241	3,040	5/28/1973
02111180	10/1/1965	9/30/2012	1966–2012	6	NA	1,410	94.7	15	6/21/2002	22	27	44	68	102	161	227	2,060	6/15/1969
02111180	10/1/1965	9/30/2012	1966–2012	7	NA	1,457	67.3	11	7/22/2008	19	25	34	52	74	112	168	1,070	7/2/2003
02111180	10/1/1965	9/30/2012	1966–2012	8	NA	1,457	73.7	5.5	8/24/2008	14	19	29	45	68	116	181	5,890	8/17/1994
02111180	10/1/1965	9/30/2012	1966–2012	9	NA	1,410	65.2	7	9/13/2002	18	20	27	40	66	116	176	2,950	9/8/2004
02111180	10/1/1965	9/30/2012	1966–2012	10	NA	1,457	68.4	10	10/3/2007	16	20	26	43	66	106	158	2,710	10/12/1990
02111180	10/1/1965	9/30/2012	1966–2012	11	NA	1,410	85.7	13	11/1/2000	19	22	32	54	88	145	219	4,400	11/6/1977
02111180	10/1/1965	9/30/2012	1966–2012	12	NA	1,457	90.6	14	12/29/2000	23	28	42	74	105	148	209	1,160	12/12/1983
02111180	10/1/1965	9/30/2012	1966–2012	POR	NA	17,167	94.6	5.5	8/24/2008	21	26	41	66	104	165	234	5,890	8/17/1994
02111180	10/1/1965	9/30/2012	1966–2012	Summer_USGS	NA	10,058	86.5	5.5	8/24/2008	19	24	36	58	94	152	219	5,890	8/17/1994
02111180	10/1/1965	9/30/2012	1966–2012	Winter_USGS	NA	7,109	106	13	1/6/2001	24	30	49	77	116	181	256	4,400	11/6/1977
02111180	10/1/1965	9/30/2012	1966–2012	Spring_Eco	NA	4,277	111	15	6/21/2002	29	38	55	81	122	187	260	3,040	5/28/1973
02111180	10/1/1965	9/30/2012	1966–2012	Summer_Eco	NA	4,324	68.7	5.5	8/24/2008	17	21	30	46	70	114	176	5,890	8/17/1994
02111180	10/1/1965	9/30/2012	1966–2012	Fall_Eco	NA	2,867	76.9	10	10/3/2007	18	21	28	47	77	128	189	4,400	11/6/1977
02111180	10/1/1965	9/30/2012	1966–2012	Winter_Eco	NA	5,699	111	13	1/6/2001	28	36	55	82	120	189	267	2,720	2/13/1966

Figure 13. Excerpt of sample table with minimum, mean, maximum, and flow-duration statistics of daily mean discharges for each calendar day and selected categorical periods at Elk Creek at Elkville in Wilkes County, North Carolina (site 239, fig. 4).

Site number	Statistics begin date	Statistics end date	Full water years summary	Water year	Statistic	No values	Mean	Min	Min date CalYr	Percentile 5th	Percentile 10th	Percentile 25th	Percentile 50th (Median)	Percentile 75th	Percentile 90th	Percentile 95th	Max	Min date CalYr	Days at or below 10th percentile	Events at or below 10th percentile	Max event duration
02111180	10/1/1965	9/30/1966	1966–2012	1966	Daily discharge	365	84.59726027	22	7/28/1966	30	32	38	53	78	136	218	2,720	2/13/1966	50	10	13
02111180	10/1/1966	9/30/1967	1966–2012	1967	Daily discharge	365	69.72054795	22	8/17/1967	27	33	47	62	80	110	136	324	10/19/1966	40	7	15
02111180	10/1/1967	9/30/1968	1966–2012	1968	Daily discharge	366	72.35245902	18	9/30/1968	22	27	42	60	86	128	158	516	3/12/1968	37	4	18
02111180	10/1/1968	9/30/1969	1966–2012	1969	Daily discharge	365	99.11506849	17	10/1/1968	34	40	50	72	96	163	239	2,060	6/15/1969	37	8	12
02111180	10/1/1969	9/30/1970	1966–2012	1970	Daily discharge	365	101.5260274	23	7/18/1970	31	42	55	75	100	138	211	2,100	8/9/1970	37	5	24
02111180	10/1/1970	9/30/1971	1966–2012	1971	Daily discharge	365	93.55616438	35	9/7/1971	42	46	58	70	101	150	213	820	10/30/1970	38	11	11
02111180	10/1/1971	9/30/1972	1966–2012	1972	Daily discharge	366	116.6174863	29	9/21/1972	36	47	68	91	117	170	300	1,930	6/21/1972	37	3	21
02111180	10/1/1972	9/30/1973	1966–2012	1973	Daily discharge	365	153.9945205	32	10/16/1972	36	49	70	106	169	247	322	3,040	5/28/1973	37	4	21
02111180	10/1/1973	9/30/1974	1966–2012	1974	Daily discharge	365	139.2	42	11/19/1973	47	56	81	113	150	209	300	1,870	4/4/1974	36	2	22
02111180	10/1/1974	9/30/1975	1966–2012	1975	Daily discharge	365	122.8958904	42	11/8/1974	47	52	65	87	124	212	323	1,920	3/14/1975	39	8	22
02111180	10/1/1975	9/30/1976	1966–2012	1976	Daily discharge	366	103.3469945	27	9/9/1976	32	40	57	79	101	151	235	1,120	10/17/1975	40	5	16
02111180	10/1/1976	9/30/1977	1966–2012	1977	Daily discharge	365	105.5561644	28	9/4/1977	35	42	53	72	100	147	210	1,840	3/13/1977	39	10	13
02111180	10/1/1977	9/30/1978	1966–2012	1978	Daily discharge	365	123.5287671	29	9/29/1978	37	41	54	87	123	183	297	4,400	11/6/1977	39	9	10
02111180	10/1/1978	9/30/1979	1966–2012	1979	Daily discharge	365	132.6	24	10/23/1978	25	26	51	87	134	237	414	1,770	3/4/1979	37	3	31
02111180	10/1/1979	9/30/1980	1966–2012	1980	Daily discharge	366	131.2868852	24	9/15/1980	29	34	66	92	136	226	324	2,050	4/14/1980	37	5	17
02111180	10/1/1980	9/30/1981	1966–2012	1981	Daily discharge	365	46.59452055	14	8/27/1981	17	20	26	33	49	76	109	713	5/27/1981	48	9	24
02111180	10/1/1981	9/30/1982	1966–2012	1982	Daily discharge	365	68.01643836	15	10/1/1981	15	19	35	58	75	107	157	1,160	2/3/1982	39	2	25
02111180	10/1/1982	9/30/1983	1966–2012	1983	Daily discharge	365	131.2164384	25	10/4/1982	32	35	52	97	151	242	341	1,640	2/2/1983	39	7	10
02111180	10/1/1983	9/30/1984	1966–2012	1984	Daily discharge	366	114.057377	25	10/3/1983	33	42	68	91	131	181	232	1,160	12/12/1983	42	5	17
02111180	10/1/1984	9/30/1985	1966–2012	1985	Daily discharge	365	54.67945205	22	1/21/1985	28	30	35	45	58	79	100	798	8/17/1985	38	9	13
02111180	10/1/1985	9/30/1986	1966–2012	1986	Daily discharge	365	62.83013699	17	7/20/1986	21	24	28	49	66	109	158	948	11/4/1985	56	14	13
02111180	10/1/1986	9/30/1987	1966–2012	1987	Daily discharge	365	105.1315068	18	10/9/1986	24	32	47	76	112	181	289	1,590	3/1/1987	38	4	15
02111180	10/1/1987	9/30/1988	1966–2012	1988	Daily discharge	366	43.6557377	12	7/18/1988	14	16	23	39	53	74	89	379	4/4/1988	38	11	13
02111180	10/1/1988	9/30/1989	1966–2012	1989	Daily discharge	365	80.5369863	18	10/13/1988	19	22	28	51	82	164	252	1,060	9/22/1989	37	7	15
02111180	10/1/1989	9/30/1990	1966–2012	1990	Daily discharge	365	133.7890411	37	7/8/1990	44	49	70	98	144	215	278	2,610	11/16/1989	38	5	10
02111180	10/1/1990	9/30/1991	1966–2012	1991	Daily discharge	365	133.4739726	26	9/29/1991	31	37	67	97	141	221	315	2,710	10/12/1990	37	3	16
02111180	10/1/1991	9/30/1992	1966–2012	1992	Daily discharge	366	87.96174863	26	10/1/1991	28	30	40	57	86	149	219	1,690	4/21/1992	47	7	14
02111180	10/1/1992	9/30/1993	1966–2012	1993	Daily discharge	365	136.2657534	23	9/14/1993	28	32	51	104	162	243	354	1,420	3/23/1993	37	11	7
02111180	10/1/1993	9/30/1994	1966–2012	1994	Daily discharge	365	118.7726027	21	10/29/1993	24	24	41	69	112	194	303	5,890	8/17/1994	39	8	10
02111180	10/1/1994	9/30/1995	1966–2012	1995	Daily discharge	365	120.9561644	33	9/8/1995	42	48	58	82	144	185	241	2,330	1/15/1995	40	8	11
02111180	10/1/1995	9/30/1996	1966–2012	1996	Daily discharge	366	108.7978142	32	7/30/1996	42	47	55	72	103	164	219	3,140	8/12/1996	45	14	9
02111180	10/1/1996	9/30/1997	1966–2012	1997	Daily discharge	365	102.5616438	24	9/21/1997	36	47	60	81	120	170	245	950	12/1/1996	37	5	12
02111180	10/1/1997	9/30/1998	1966–2012	1998	Daily discharge	365	108.890411	19	9/14/1998	23	26	32	62	118	221	325	1,330	1/8/1998	37	6	12
02111180	10/1/1998	9/30/1999	1966–2012	1999	Daily discharge	365	51.36986301	17	8/19/1999	19	21	24	40	68	91	111	499	1/24/1999	49	11	11
02111180	10/1/1999	9/30/2000	1966–2012	2000	Daily discharge	366	50.13934426	14	8/29/2000	16	20	26	40	58	87	117	461	3/20/2000	43	7	18
02111180	10/1/2000	9/30/2001	1966–2012	2001	Daily discharge	365	35.65479452	12	10/14/2000	13	14	18	26	39	60	98	401	3/30/2001	53	3	22
02111180	10/1/2001	9/30/2002	1966–2012	2002	Daily discharge	365	39.14246575	7	9/13/2002	10	14	18	25	48	74	91	586	9/27/2002	42	6	16
02111180	10/1/2002	9/30/2003	1966–2012	2003	Daily discharge	365	157.290411	21	10/8/2002	38	53	75	120	179	277	454	1,070	7/2/2003	37	5	15
02111180	10/1/2003	9/30/2004	1966–2012	2004	Daily discharge	366	104.0355191	26	8/8/2004	33	42	60	71	99	146	230	2,950	9/8/2004	40	10	12
02111180	10/1/2004	9/30/2005	1966–2012	2005	Daily discharge	365	110.8027397	33	9/22/2005	43	59	78	94	118	166	238	687	3/28/2005	37	5	28
02111180	10/1/2005	9/30/2006	1966–2012	2006	Daily discharge	365	67.78630137	20	8/28/2006	23	28	38	55	80	112	149	657	11/29/2005	41	8	12
02111180	10/1/2006	9/30/2007	1966–2012	2007	Daily discharge	365	66.14712329	9.7	9/10/2007	12	16	26	48	70	117	182	953	1/1/2007	41	6	13
02111180	10/1/2007	9/30/2008	1966–2012	2008	Daily discharge	366	41.58251366	5.5	8/24/2008	8.9	11	18	29	47	75	108	956	8/27/2008	40	7	12
02111180	10/1/2008	9/30/2009	1966–2012	2009	Daily discharge	365	81.35342466	20	10/23/2008	24	28	37	52	86	147	208	1,460	5/27/2009	41	8	13
02111180	10/1/2009	9/30/2010	1966–2012	2010	Daily discharge	365	102.8465753	17	9/24/2010	24	28	43	76	114	184	293	1,520	1/25/2010	38	7	13
02111180	10/1/2010	9/30/2011	1966–2012	2011	Daily discharge	365	61.89589041	16	9/2/2011	19	20	26	36	64	94	132	1,330	4/16/2011	44	9	14
02111180	10/1/2010	9/30/2011	1966–2012	2012	Daily discharge	366	69.01912568	22	8/29/2012	25	27	35	50	71	111	146	887	12/7/2011	46	9	11

Figure 14. Sample table with minimum, mean, maximum, and flow-duration statistics of daily mean discharges for each complete water year of record at Elk Creek at Elkville in Wilkes County, North Carolina (site 239, fig. 4).

Summary and Conclusions

In 2013, the U.S. Geological Survey, in cooperation with the North Carolina Division of Water Resources, compiled updated low-flow characteristics and flow-duration statistics at selected continuous-record streamgages in North Carolina. The compilation of updated streamflow statistics provides regulators and planners with relevant hydrologic information reflective of the recent droughts, which can be used to better manage the quantity and quality of water in streams in North Carolina. Where sufficient discharge records were available at streamgages, application of statistical techniques formed the basis for determining low-flow characteristics and other streamflow statistics.

A quality assurance and quality control (QAQC) analysis was completed for the annual minimum 7- and 30-day, winter minimum 7-day average streamflow data for the streamgages that had a minimum of 10 years of record. The data at each streamgage were reviewed for homogeneity, which implies relatively stable basin and (or) climatic conditions during the period of record. The Kendall's tau test was used to assess the homogeneity of the record at each streamgage. The annual minimum 7- and 30-day, winter minimum 7-day average streamflow data for all streamgages were tested for trends by using the Kendall tau test. Among the 76 sites where potential trends were detected, the indication of a trend at 60 streamgages was probably due to the period of record ending in a drought period, particularly those sites with records through the 2012 water year. Because the examination of trend and other plots resulted in a conclusion that the trends were attributed to the period of record ending during a drought period, a decision was made to publish the low-flow characteristics for those streamgages. For 16 of the 76 sites, examination of the plots resulted in a decision to refrain from publishing the low-flow characteristics.

Available streamflow records through the 2012 water year were used to determine the updated low-flow characteristics. Consequently, streamflow records available through March 31, 2012 (or the 2011 climatic year) were used to determine the updated low-flow characteristics. Of the 516 streamgages considered for this study, 224 remain active (as of the 2012 water year) and 292 have been discontinued. The presence of documented tidal effects resulted in the exclusion of 4 active and 15 discontinued streamgages from further analyses. Among the remaining 220 active and 277 discontinued sites, 180 and 139 sites, respectively, had 10 or more years of observed period of record. Initial analyses completed for these streamgages indicated 177 active and 119 discontinued streamgages had 10 or more climatic years recommended for completion of low-flow analyses. Exclusion of two additional discontinued streamgages (due to be located very close to other active stations) resulted in 177 active and 117 discontinued sites having 10 or more climatic years record where low-flow characteristics were determined.

Completion of the QAQC analyses resulted in the exclusion of (1) 16 sites because of trends, (2) 2 discontinued sites because of mixed, but insufficient length of unregulated and regulated streamflows in available period of record, (3) 1 discontinued site downstream from an active streamgage that has more recent period of record and basin conditions more reflective of the recent urbanization patterns observed in this area, and (4) 1 other discontinued site located immediately upstream from a wastewater treatment facility as well as a currently active streamgage along the same stream located downstream from the facility, and (5) 1 other discontinued site where the period of record is already included in the discharge records of an active streamgage located upstream on the same river. Further considerations of the periods of record used to determine low-flow characteristics also resulted in the identification of four discontinued streamgages where the statistics do not reflect current flow conditions. Daily mean discharges determined for another discontinued streamgage in western North Carolina downstream of an impoundment initially filled in early 1945 resulted in low-flow characteristics considered unreliable, and a decision was made not to publish the low-flow characteristics for this streamgage. Streamflow records for 5 pairs of active and discontinued streamgages were combined because the respective drainage areas for each pair of sites differ by less than 5 percent, providing a longer period of record available for the determination of low-flow characteristics and flow-duration statistics.

The removal of these 5 sites and combining discharge records at the 5 pairs of active and discontinued sites resulted in 171 active and 95 discontinued sites (266 sites total) for which low-flow characteristics were published. Low-flow characteristics were published for 177 unregulated sites, 56 regulated sites, and 33 sites known or considered to be affected by varying degrees of minor regulations and (or) diversions upstream from the streamgages.

The updated 7Q10 discharges were compared for 63 streamgages across North Carolina where (1) long-term streamflow record consisted of 30 or more climatic years of data available as of the 1998 climatic year, and (2) streamflows were not known to be regulated. Percentage changes were computed by comparing the 7Q10 discharge for the 2011 climatic year relative to the 1998 climatic year just prior to start of the droughts in the late 1990s. Among the 63 streamgages, the 7Q10 discharges did not change for 3 sites whereas increases and decreases were noted at 5 and 55 sites, respectively. Positive changes (increases) ranged from 4.3 percent (site 362) to 34.1 percent (site 112) with a median of 13.2 percent. Negative percentage changes (decreases) ranged from –3.3 percent (site 514) to –80.0 percent (site 308) with a median of –22.2 percent. The median percentage change for all 63 streamgages was –18.4 percent.

Flow characteristics determined as a part of this compilation and typically used for ecological evaluations of streams include minimum, mean, maximum, and

flow-duration statistics of daily mean discharges for categorical periods. For the same group of streamgages used to update low-flow characteristics, the streamflow statistics were compiled using streamflow records available through the 2012 water year (ending September 30, 2012). Flow-duration statistics based on the daily mean discharge records were compiled in this study for the 5th, 10th, 25th, 50th, 75th, 90th, and 95th percentiles. Flow-durations statistics were determined for each complete water year of record at a streamgage, the available period of record (or selected period if flow were regulated), selected seasonal, monthly, and calendar day periods. In addition to the streamflow statistics compiled for each of the water years, the number of days the daily mean discharge was at or below the 10th percentile was summed for each year as well as the number of multiday events during each water year.

All low-flow characteristics for the streamgages were added into the StreamStatsDB, which is a database accessible to users through the USGS StreamStats application for North Carolina. The StreamStatsDB contains selected basin characteristics and streamflow information for streamgage locations in North Carolina and can be accessed through the Gaging Station Information tool provided in the StreamStats application. The volume of flow-duration statistics compiled across the various categorical periods was substantial and precluded the convenience of including the tables for each streamgage in this report. The minimum, mean, maximum, and flow-duration statistics of daily mean discharges based on the available period of record were updated in the NC StreamStatsDB. However, for the selected seasonal, monthly, calendar day, and annual water year periods, tab-delimited American Standard Code for Information Interchange (ASCII) tables of the streamflow statistics are available online to users through the link provided near the top of the pop-up window generated through use of the Gaging Station Information tool.

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Glossary

base flow The contribution of flow to a stream from ground water or spring discharge.

climatic year The annual period from April 1 through March 31 that is used by the USGS for low-flow analyses at USGS continuous-record streamgages. The climatic year is designated by the year in which the period begins. For example, the 2011 climatic year is from April 1, 2011, through March 31, 2012. The year begins and ends during the period of increased streamflow so that all streamflow during a single dry season are included in annual values for that year.

drainage area The drainage area of a stream at a specified location is the area, measured in a horizontal plane, which is enclosed by a drainage divide.

gage height The water-surface elevation referenced to an arbitrary gage datum, often used interchangeably with the term "stage."

low flow Base flow or sustained fair-weather flow (see base flow).

recurrence interval The average interval of time in which the magnitude of an extreme event can be expected to be equaled or exceeded once (floods) or the average interval of time during which a flow value will be less than the indicated value over the N-day period at least once (low flow). The primary recurrence intervals for low-flow statistics used in this report are 2 years and 10 years. For example, if the 7-day, 10-year low-flow discharge is 5 cubic feet per second (ft^3/s), the annual minimum average streamflow for a 7-consecutive-day period would be 5 ft^3/s or lower, on average, 1 time in 10 years, 5 times in 50 years, or 10 times in 100 years. Expressed in terms of probability, there is a 10-percent probability (inverse of recurrence interval) that the streamflow will be less than or equal to the 7-day, 10-year low-flow discharge in any 1 year. In a similar manner, there is a 50-percent probability that the streamflow will be less than or equal to the 7-day, 2-year low-flow discharge in any 1 year. While recurrence intervals indicate the average frequency of occurrence for a particular hydrologic event, it should be noted that an event of any defined recurrence interval could occur more than once in a given year, in consecutive years, or not at all during the period specified by the recurrence interval.

streamgage A site on a stream where continuous records of **gage height** are collected and for which discharge records are computed.

unit flow Value of streamflow expressed in units of volume per time per square mile of drainage area. In this report, unit flow (sometimes used interchangeably with the term "yield") is expressed as cubic feet per second per square mile [$(ft^3/s)/mi^2$].

water year The annual period from October 1 through September 30 that is used by the USGS for the collection and processing of streamflow records. The water year is designated by the year in which the period ends. For example, the 2012 water year is from October 1, 2011, through September 30, 2012.

Tables 1 and 5

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.

[USGS, U.S. Geological Survey; °, degrees; ', minutes; ", seconds; NAD 27, North American Datum of 1927; NAD 83, North American Datum of 1983; mi², square mile. Drainage areas for some sites are indeterminate. The periods of record for active sites are provided using months and years, and the periods of record for discontinued are provided in years only. The flow condition indicates whether flows are unregulated, regulated, tidally affected, or some combination of other effects, including diversions upstream from the streamgage. Shaded rows indicate sites for which low-flow characteristics (table 3) and flow-duration statistics (table 5) are published in this report. Rows not shaded are sites for which low-flow characteristics and flow-duration statistics were excluded from publication (figs. 4, 5)]

Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
1	02043120[1]	Albemarle and Chesapeake Canal near Princess Anne, VA	36°43'04"	76°06'02"	NAD 27	Virginia Beach	Indeterminate	Tidally affected	Discontinued: 2006–07
2	02043200[1]	West Neck Creek at Indian River Road at Pungo, VA	36°43'16"	76°02'03"	NAD 27	Virginia Beach	Indeterminate	Tidally affected	Discontinued: 1998–99
3	02043270[1]	North Landing River near Creeks, VA	36°36'58"	76°02'57"	NAD 83	Virginia Beach	Indeterminate	Tidally affected	Discontinued: 2006–07
4	02043410	Northwest River above Mouth near Moyock, NC	36°30'44"	76°05'12"	NAD 83	Currituck	196	Tidally affected	Discontinued: 2006–07
5	02043415	Tull Creek at SR 1222 near Currituck, NC	36°29'47"	76°05'03"	NAD 83	Currituck	52.0	Tidally affected	Discontinued: 2006–07
6	0204343500	Intracoastal Waterway at Coinjock, NC	36°20'34"	75°57'15"	NAD 27	Currituck	Indeterminate	Tidally affected	Discontinued: 1964–73
7	0204382800	Pasquotank River near South Mills, NC	36°25'17"	76°20'33"	NAD 83	Camden	64.0	Tidally affected	Active: October 1995 to September 2012
8	02053200	Potecasi Creek near Union, NC	36°22'15"	77°01'32"	NAD 83	Hertford	225	Unregulated	Active: March 1958 to September 2012
9	02053400	Ahoskie Creek near Rich Square, NC	36°14'52"	77°14'12"	NAD 27	Northampton	3.86	Unregulated	Discontinued: 1964–73
10	02053450	Ahoskie Creek at Mintons Store, NC	36°16'52"	77°09'56"	NAD 27	Northampton	24.0	Unregulated	Discontinued: 1964–73
11	02053500	Ahoskie Creek at Ahoskie, NC	36°16'49"	76°59'58"	NAD 83	Hertford	63.3	Unregulated	Active: January 1950 to September 2012
12	02053510	Ahoskie Creek tributary at Poortown, NC	36°16'29"	77°00'38"	NAD 27	Hertford	2.04	Unregulated	Discontinued: 1963–73
13	02068000	Dan River near Asbury, NC	36°32'35"	80°24'42"	NAD 27	Stokes	71.4	Unregulated	Discontinued: 1924–26
14	02068500	Dan River near Francisco, NC	36°30'54"	80°18'11"	NAD 83	Stokes	129	Regulated	Active: August 1924 to September 1987; December 1991 to September 2012
15	02069000	Dan River at Pine Hall, NC	36°19'09"	80°03'01"	NAD 27	Stokes	501	Regulated	Active: October 1923 to March 1926; April 1986 to October 1990; December 2008 to September 2012
16	02070500	Mayo River near Price, NC	36°32'02"	79°59'29"	NAD 83	Rockingham	242	Unregulated	Active: July 1929 to September 1971; October 1993 to September 2012
17	02071000	Dan River near Wentworth, NC	36°24'45"	79°49'34"	NAD 83	Rockingham	1,053	Regulated	Active: October 1939 to September 2012
18	02071500	Dan River at Leaksville, NC	36°29'00"	79°46'00"	NAD 27	Rockingham	1,150	Unregulated	Discontinued: 1929–49
19	02074000	Smith River near Eden, NC	36°31'32"	79°45'56"	NAD 83	Rockingham	538	Regulated	Active: October 1939 to September 2012
20	02074218	Dan River near Mayfield, NC	36°32'29"	79°36'21"	NAD 27	Rockingham	1,778	Regulated	Discontinued: 1976–84
21	0207428225	Wolf Island Creek below SR 1998 at Reidsville, NC	36°22'26"	79°41'01"	NAD 83	Rockingham	3.75	Unregulated	Discontinued: 2003–05
22	02075160	Moon Creek near Yanceyville, NC	36°28'13"	79°23'05"	NAD 27	Caswell	32.8	Unregulated	Discontinued: 1961–74; 1988–89
23	02077200	Hyco Creek near Leasburg, NC	36°23'52"	79°11'48"	NAD 83	Caswell	45.9	Unregulated	Active: July 1964 to September 2012

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
24	02077230	South Hyco Creek near Hesters Store, NC	36°21'06"	79°08'29"	NAD 27	Person	29.9	Unregulated	Discontinued: 1964–67
25	02077240	Double Creek near Roseville, NC	36°21'44"	79°05'48"	NAD 27	Person	7.47	Unregulated	Discontinued: 1964–75; 1977–82
26	02077250	South Hyco Creek near Roseville, NC	36°23'09"	79°06'26"	NAD 27	Person	56.5	Unregulated	Discontinued: 1966–80
27	02077300	Hyco River at McGehees Mill, NC	36°31'02"	79°01'42"	NAD 27	Person	191	Regulated	Discontinued: 1964–73
28	02077303	Hyco River below Afterbay Dam near McGehees Mill, NC	36°31'21"	78°59'51"	NAD 83	Person	202	Regulated	Active: October 1973 to September 2012
29	02077660	Mayo Creek near Woodsdale, NC	36°31'48"	78°52'42"	NAD 27	Person	52.7	Unregulated	Discontinued: 1975–77
30	02077670	Mayo Creek near Bethel Hill, NC	36°32'27"	78°52'19"	NAD 83	Person	53.5	Regulated	Active: August 1977 to September 2012
31	02080500	Roanoke River at Roanoke Rapids, NC	36°27'36"	77°38'01"	NAD 83	Halifax	8,384	Regulated	Active: December 1911 to September 2012
32	02081000	Roanoke River near Scotland Neck, NC	36°12'33"	77°23'02"	NAD 83	Halifax	8,671	Regulated	Discontinued: 1940–56
33	02081022	Roanoke River near Oak City, NC	36°00'49"	77°12'55"	NAD 83	Martin	8,810	Regulated	Discontinued: 2006–07
34	02081054	Roanoke River near Williamston, NC	35°51'35"	77°02'25"	NAD 83	Martin	9,070	Regulated	Discontinued: 2006–07
35	0208111310	Cashie River at Secondary Road 1257 near Windsor, NC	36°02'52"	76°59'03"	NAD 83	Bertie	108	Unregulated	Active: January 1987 to September 2012
36	02081133	Cashie River above Sans Souci Ferry near Sans Souci, NC	35°55'39"	76°50'42"	NAD 83	Bertie	287	Tidally affected	Discontinued: 2007
37	0208113400	Cashie River at Sans Souci Ferry, NC	35°54'43"	76°49'03"	NAD 83	Bertie	293	Tidally affected	Discontinued: 2006–07
38	02081500	Tar River near Tar River, NC	36°11'39"	78°34'59"	NAD 83	Granville	167	Unregulated	Active: October 1939 to September 2012
39	02081747	Tar River at U.S. 401 at Louisburg, NC	36°05'35"	78°17'46"	NAD 83	Franklin	427	Unregulated	Active: October 1963 to September 2012
40	02081800	Cedar Creek near Louisburg, NC	36°03'14"	78°20'24"	NAD 27	Franklin	47.8	Unregulated	Discontinued: 1956–75
41	02081942	Tar River at NC 581 near Spring Hope, NC	35°52'55"	78°05'22"	NAD 83	Nash	671	Unregulated	Active: April 2012 to September 2012
42	02082000	Tar River near Nashville, NC	35°50'57"	77°55'51"	NAD 27	Nash	701	Unregulated	Discontinued: 1928–71
43	02082500	Sapony Creek near Nashville, NC	35°53'10"	77°54'40"	NAD 27	Nash	64.8	Unregulated	Discontinued: 1950–70
44	0208250410	Tar River below dam near Langley Cross-roads, NC	35°53'59"	77°53'04"	NAD 27	Nash	775	Regulated	Active: August 2011 to September 2012
45	02082506	Tar River below Tar River Reservoir near Rocky Mount, NC	35°54'02"	77°51'56"	NAD 83	Nash	777	Regulated	Active: August 1972 to September 2012
46	02082585	Tar River at NC 97 at Rocky Mount, NC	35°57'17"	77°47'14"	NAD 83	Edgecombe	925	Regulated	Active: August 1976 to September 2012
47	02082610	Tar River near Rocky Mount, NC	35°58'38"	77°45'35"	NAD 27	Edgecombe	930	Unregulated	Discontinued: 1971–73
48	0208273070	Devils Cradle Creek at NC 39 near Kearney, NC	36°12'47"	78°17'49"	NAD 27	Franklin	2.89	Unregulated	Discontinued: 1984–85

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
49	02082731	Devils Cradle Creek near Alert, NC	36°12'03"	78°14'19"	NAD 27	Franklin	13.4	Unregulated	Discontinued: 1993–97
50	02082770	Swift Creek at Hilliardston, NC	36°06'44"	77°55'12"	NAD 83	Nash	166	Unregulated	Active: July 1963 to September 2012
51	02082950	Little Fishing Creek near White Oak, NC	36°11'00"	77°52'34"	NAD 83	Halifax	177	Unregulated	Active: October 1959 to September 2012
52	02083000	Fishing Creek near Enfield, NC	36°09'02"	77°41'35"	NAD 83	Edgecombe	526	(²)	Active: October 1923 to September 2012
53	02083500	Tar River at Tarboro, NC	35°53'40"	77°31'59"	NAD 83	Edgecombe	2,183	Regulated	Active: July 1896 to December 1900; October 1931 to September 2012
54	0208378372	Conetoe Creek at Conetoe, NC	35°48'30"	77°26'48"	NAD 27	Edgecombe	65.4	Unregulated	Discontinued: 2002–03
55	02083800	Conetoe Creek near Bethel, NC	35°46'33"	77°27'45"	NAD 27	Pitt	78.1	Unregulated	Discontinued: 1956–2002
56	02083833	Pete Mitchell Swamp at Sr1409 near Penny Hill, NC	35°45'59"	77°29'35"	NAD 83	Pitt	18.0	Unregulated	Discontinued: 1993–97
57	02084000	Tar River at Greenville, NC	35°37'00"	77°22'22"	NAD 83	Pitt	2,660	Tidally affected	Active: May 1997 to September 2012
58	02084070	Green Mill Run at Arlington Boulevard at Greenville, NC	35°35'27"	77°22'44"	NAD 83	Pitt	9.10	Unregulated	Discontinued: 1980–85
59	02084160	Chicod Creek at Secondary Road 1760 near Simpson, NC	35°33'42"	77°13'51"	NAD 83	Pitt	45.0	Unregulated	Active: October 1975 to March 1987; May 1992 to September 2012
60	02084164	Juniper Branch near Simpson, NC	35°33'55"	77°14'43"	NAD 27	Pitt	7.50	Unregulated	Discontinued: 1975–86
61	0208423100	Flat Swamp at SR 1157 near Robersonville, NC	35°46'54"	77°15'26"	NAD 27	Martin	21.3	Unregulated	Discontinued: 1986–88
62	02084317	Black Swamp near Batts Crossroads, NC	35°42'32"	77°05'53"	NAD 27	Beaufort	1.02	Unregulated	Discontinued: 1982
63	02084472	Pamlico River at Washington, NC	35°32'36"	77°03'43"	NAD 83	Beaufort	3,200	Tidally affected	Discontinued: 1999–2008
64	02084500	Herring Run near Washington, NC	35°34'03"	77°01'09"	NAD 27	Beaufort	9.59	Unregulated	Discontinued: 1950–80
65	02084540	Durham Creek near Edwards, NC	35°19'26"	76°52'27"	NAD 83	Beaufort	26.0	Unregulated	Discontinued: 1950–2004
66	02084556	North Lake Canal above Pungo Lake near Wenona, NC	35°43'35"	76°31'01"	NAD 27	Washington	0.29	Unregulated	Discontinued: 1976–80
67	02084557	Van Swamp near Hoke, NC	35°43'51"	76°44'46"	NAD 83	Washington	23.0	Unregulated	Active: May 1977 to September 2012
68	02084558	Albemarle Canal near Swindell, NC	35°38'15"	76°40'42"	NAD 83	Beaufort	74.7	Tidally affected	Discontinued: 1977–81
69	0208463120	Outflow Ditch from Jennett Sedge at Buxton, NC	35°15'42"	75°34'31"	NAD 27	Dare	Indeterminate	Tidally affected	Discontinued: 1994–95
70	02084903	Sevenmile Creek tributary at SR 1120 near Buckhorn, NC	36°02'59"	79°11'16"	NAD 27	Orange	1.34	Unregulated	Discontinued: 1981–82
71	02084904	Sevenmile Creek tributary at I-85 near Miles, NC	36°04'39"	79°12'37"	NAD 27	Orange	0.14	Unregulated	Discontinued: 1981–82

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
72	02084905	Sevenmile Creek tributary at SR 1144 near Miles, NC	36°04'11"	79°12'07"	NAD 27	Orange	1.57	Unregulated	Discontinued: 1981–82
73	02084908	Sevenmile Creek tributary at I-85 near Efland, NC	36°04'18"	79°09'38"	NAD 27	Orange	0.29	Unregulated	Discontinued: 1981–82
74	02084909	Sevenmile Creek near Efland, NC	36°03'56"	79°08'39"	NAD 83	Orange	14.1	Unregulated	Discontinued: 1987–2004
75	02085000	Eno River at Hillsborough, NC	36°04'16"	79°05'44"	NAD 83	Orange	66.0	(²)	Active: October 1927 to August 1971; October 1985 to September 2012
76	02085070	Eno River near Durham, NC	36°04'20"	78°54'28"	NAD 83	Durham	141	(²)	Active: August 1963 to September 2012
77	0208521324	Little River at Secondary Road 1461 near Orange Factory, NC	36°08'30"	78°55'09"	NAD 83	Durham	78.2	Unregulated	Active: October 1987 to September 2012
78	02085220	Little River near Orange Factory, NC	36°08'20"	78°54'24"	NAD 27	Durham	80.4	Unregulated	Discontinued: 1962–87
79	0208524090	Mountain Creek at Secondary Road 1617 near Bahama, NC	36°08'59"	78°53'48"	NAD 83	Durham	7.97	Unregulated	Active: October 1994 to September 2012
80	0208524975	Little River below Little River tributary at Fairntosh, NC	36°06'48"	78°51'35"	NAD 83	Durham	98.9	Regulated	Active: October 1995 to September 2012
81	02085500	Flat River at Bahama, NC	36°10'58"	78°52'44"	NAD 83	Durham	149	Unregulated	Active: July 1925 to September 2012
82	02086000	Dial Creek near Bahama, NC	36°10'36"	78°51'24"	NAD 27	Durham	4.73	Unregulated	Discontinued: 1925–71; 1989–91
83	02086500	Flat River at Dam near Bahama, NC	36°08'55"	78°49'44"	NAD 83	Durham	168	Regulated	Active: September 1927 to September 1959; August 1961 to September 1966; October 1982 to September 1990; October 1992 to September 1993; current to September 2012
84	0208650112	Flat River tributary near Willardville, NC	36°07'55"	78°50'00"	NAD 83	Durham	1.14	Unregulated	Active: March 1988 to September 1990; October 1994 to September 2012
85	02086624	Knap of Reeds Creek near Butner, NC	36°07'40"	78°47'55"	NAD 27	Granville	43.0	(²)	Active: October 1982 to September 1995; February 2006 to September 2012
86	0208675010	Ellerbee Creek at Club Boulevard at Durham, NC	36°01'09"	78°53'41"	NAD 83	Durham	6.01	Unregulated	Active: August 2008 to September 2012
87	02086849	Ellerbee Creek near Gorman, NC	36°03'33"	78°49'58"	NAD 27	Durham	21.9	(²)	Active: October 1982 to April 1989; October 1991 to September 1995; January 2006 to September 2012
88	02087000	Neuse River near Northside, NC	36°02'54"	78°44'59"	NAD 27	Durham	535	Unregulated	Discontinued: 1927–80

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

[USGS, U.S. Geological Survey; °, degrees; ', minutes; ", seconds; NAD 27, North American Datum of 1927; NAD 83, North American Datum of 1983; mi², square mile. Drainage areas for some sites are indeterminate. The periods of record for active sites are provided using months and years, and the periods of record for discontinued are provided in years only. The flow condition indicates whether flows are unregulated, regulated, tidally affected, or some combination of other effects, including diversions upstream from the streamgage. Shaded rows indicate sites for which low-flow characteristics (table 3) and flow-duration statistics (table 5) are published in this report. Rows not shaded are sites for which low-flow characteristics and flow-duration statistics were excluded from publication (figs. 4, 5)]

Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
89	0208700780	Little Lick Creek above Secondary Road 1814 near Oak Grove, NC	35°59'11"	78°47'58"	NAD 27	Durham	10.1	Unregulated	Discontinued: 1982–95
90	0208705200	Smith Creek at Grissom, NC	36°05'18"	78°36'08"	NAD 27	Granville	6.23	Unregulated	Discontinued: 1984–85
91	02087183	Neuse River near Falls, NC	35°56'24"	78°34'51"	NAD 83	Wake	771	Regulated	Active: July 1970 to September 2012
92	02087190	Neuse River near Neuse, NC	35°54'32"	78°33'18"	NAD 27	Wake	792	(²)	Discontinued: 1969–71
93	0208721055	Perry Creek at SR 2012 near Millbrook, NC	35°52'30"	78°35'48"	NAD 27	Wake	2.43	Unregulated	Discontinued: 1986–89
94	0208721290	Perry Creek tributary at Neuse, NC	35°53'47"	78°34'46"	NAD 27	Wake	1.07	Unregulated	Discontinued: 1985–89
95	0208726005	Crabtree Creek at Ebeneezer Church Road near Raleigh, NC	35°50'43"	78°43'28"	NAD 83	Wake	76.0	Regulated	Active: December 1987 to September 1992; May 1997 to September 2012
96	02087275	Crabtree Creek at U.S. Highway 70 near Raleigh, NC	35°50'17"	78°40'27"	NAD 83	Wake	97.6	Regulated	Active: June 1997 to September 2012
97	02087324	Crabtree Creek at U.S. Highway 1 at Raleigh, NC	35°48'40"	78°36'39"	NAD 83	Wake	121	Regulated	Active: July 1990 to September 2012
98	0208732534	Pigeon House Creek near Cameron Village at Raleigh, NC	35°47'15"	78°39'17"	NAD 83	Wake	0.29	Unregulated	Active: October 1996 to September 2012
99	0208732810	Marsh Creek at SR 2030 at Millbrook, NC	35°51'13"	78°36'12"	NAD 27	Wake	1.44	Unregulated	Discontinued: 1986–89
100	0208732885	Marsh Creek near New Hope, NC	35°49'01"	78°35'35"	NAD 83	Wake	6.84	Unregulated	Active: January 1984 to September 2012
101	0208735012	Rocky Branch below Pullen Park at Raleigh, NC	35°46'48"	78°39'59"	NAD 83	Wake	1.17	Unregulated	Active: October 1996 to September 2012
102	02087359	Walnut Creek at Sunnybrooke Drive at Raleigh, NC	35°45'30"	78°34'59"	NAD 83	Wake	29.8	Unregulated	Active: May 1996 to September 2012
103	0208739674	Neuse River Trib at North Raleigh WWTP (CMP Site) near Auburn, NC	35°43'18"	78°30'08"	NAD 83	Wake	2.24	Unregulated	Discontinued: 2007–08
104	0208739678	Neuse River Trib at North Raleigh WWTP, (Central Site) near Auburn, NC	35°43'25"	78°29'34"	NAD 83	Wake	0.23	Unregulated	Discontinued: 2007–08
105	0208741400	Neuse River Trib at North Raleigh WWTP, (Eastern Site) near Auburn, NC	35°42'43"	78°29'12"	NAD 83	Wake	0.52	Unregulated	Discontinued: 2007–08
106	02087500	Neuse River near Clayton, NC	35°38'50"	78°24'19"	NAD 83	Johnston	1,150	Regulated	Active: July 1927 to September 2012
107	02087570	Neuse River at Smithfield, NC	35°30'45"	78°20'58"	NAD 83	Johnston	1,206	Unregulated	Discontinued: 1959–90
108	02087580	Swift Creek near Apex, NC	35°43'08"	78°45'08"	NAD 83	Wake	21.0	Unregulated	Active: March 2002 to September 2012
109	0208758850	Swift Creek near McCullar's Crossroads, NC	35°41'37"	78°41'32"	NAD 83	Wake	35.8	Regulated	Active: December 1987 to September 2012

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
110	0208762750	Unnamed trib to Swift Creek near Yates Mill Pond, NC	35°43'55"	78°40'34"	NAD 83	Wake	0.21	Unregulated	Discontinued: 2002–04
111	0208773375	Swift Creek at Secondary Road 1555 near Clayton, NC	35°34'30"	78°29'55"	NAD 83	Johnston	114	(²)	Active: October 2008 to September 2012
112	02088000	Middle Creek near Clayton, NC	35°34'15"	78°35'26"	NAD 83	Johnston	83.5	Unregulated	Active: October 1939 to September 2012
113	02088315	Beaverdam Creek near Grantham, NC	35°17'08"	78°15'17"	NAD 27	Wayne	5.01	Unregulated	Discontinued: 1978–82
114	02088383	Little River near Zebulon, NC	35°49'19"	78°21'08"	NAD 83	Wake	55.0	Unregulated	Active: October 2008 to September 2012
115	02088470	Little River near Kenly, NC	35°35'20"	78°11'18"	NAD 27	Johnston	191	Unregulated	Discontinued: 1964–89
116	02088500	Little River near Princeton, NC	35°30'41"	78°09'37"	NAD 83	Johnston	232	Unregulated	Active: February 1930 to September 2012
117	02088682	Big Ditch at Retha Street at Goldsboro, NC	35°22'16"	78°00'15"	NAD 27	Wayne	2.46	Unregulated	Discontinued: 1980–84
118	02089000	Neuse River near Goldsboro, NC	35°20'15"	77°59'51"	NAD 83	Wayne	2,399	Regulated	Active: February 1930 to September 2012
119	02089216	Daileys Creek near Liddell, NC	35°12'30"	77°48'32"	NAD 27	Lenoir	3.80	Unregulated	Discontinued: 1978–81
120	02089222	Bear Creek near Parkstown, NC	35°22'22"	77°48'10"	NAD 27	Greene	4.27	Unregulated	Discontinued: 1978–82
121	0208925200	Bear Creek at Mays Store, NC	35°16'29"	77°47'40"	NAD 83	Lenoir	57.7	Unregulated	Active: October 1987 to September 2012
122	02089500	Neuse River at Kinston, NC	35°15'28"	77°35'08"	NAD 83	Lenoir	2,692	Regulated	Active: February 1930 to September 2012
123	02090380	Contentnea Creek near Lucama, NC	35°41'28"	78°06'35"	NAD 83	Wilson	161	Regulated	Active: September 1964 to September 2012
124	02090500	Contentnea Creek near Wilson, NC	35°41'10"	77°56'50"	NAD 27	Wilson	236	Regulated	Discontinued: 1930–54
125	02090512	Hominy Swamp at Phillips Street at Wilson, NC	35°42'39"	77°55'01"	NAD 27	Wilson	8.20	Unregulated	Discontinued: 1978–85
126	02090625	Turner Swamp near Eureka, NC	35°34'14"	77°52'47"	NAD 27	Wayne	2.10	Unregulated	Discontinued: 1968–87
127	02090960	Nahunta Swamp near Pikeville, NC	35°30'49"	77°58'53"	NAD 27	Wayne	19.0	Unregulated	Discontinued: 2000–03
128	0209096970	Moccasin Run near Patetown, NC	35°28'46"	77°54'37"	NAD 27	Wayne	3.01	Unregulated	Discontinued: 1988–98
129	02091000	Nanunta Swamp near Shine, NC	35°29'20"	77°48'22"	NAD 83	Greene	80.4	Unregulated	Active: April 1954 to September 2012
130	02091500	Contentnea Creek at Hookerton, NC	35°25'44"	77°34'57"	NAD 83	Greene	733	Regulated	Active: November 1928 to September 2012
131	02091700	Little Contentnea Creek near Farmville, NC	35°32'40"	77°30'41"	NAD 27	Pitt	93.3	Unregulated	Discontinued: 1956–87
132	0209173150	Unnamed Trib to Sandy Run at SR1335 near Lizzie, NC	35°31'03"	77°33'52"	NAD 27	Greene	0.34	Unregulated	Discontinued: 2006–09
133	0209173190	Unnamed Tributary to Sandy Run near Lizzie, NC	35°31'31"	77°33'46"	NAD 83	Greene	0.57	Unregulated	Discontinued: 1999–2009
134	0209173192	Drainage ditch to tributary to Sandy Run near Lizzie, NC	35°31'30"	77°33'46"	NAD 27	Greene	0.02	Unregulated	Discontinued: 1999–2002

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
135	0209173200	Sandy Run near Lizzie, NC	35°31'53"	77°33'32"	NAD 27	Greene	28.6	Unregulated	Discontinued: 1999–2000
136	02091736	Middle Swamp near Farmville, NC	35°31'58"	77°32'43"	NAD 83	Greene	53.7	Unregulated	Discontinued: 1999–2005
137	02091737	Little Contentnea Creek near Willow Green, NC	35°31'30"	77°31'15"	NAD 27	Greene	145	Unregulated	Discontinued: 1999–2002
138	02091814	Neuse River near Fort Barnwell, NC	35°18'50"	77°18'10"	NAD 83	Craven	3,900	Tidally affected	Active: October 1996 to September 2012
139	02091960	Creeping Swamp near Calico, NC	35°25'42"	77°11'12"	NAD 27	Beaufort	9.80	Unregulated	Discontinued: 1971–77
140	02091970	Creeping Swamp near Vanceboro, NC	35°23'30"	77°13'46"	NAD 27	Craven	27.0	Unregulated	Discontinued: 1971–85
141	02092000	Swift Creek near Vanceboro, NC	35°20'42"	77°11'45"	NAD 27	Craven	182	Unregulated	Discontinued: 1950–89
142	02092020	Palmetto Swamp near Vanceboro, NC	35°20'18"	77°10'16"	NAD 27	Craven	24.0	Unregulated	Discontinued: 1971–76
143	0209205053	Swift Cr at NC 43 near Streets Ferry, NC	35°13'51"	77°06'50"	NAD 83	Craven	269	Tidally affected	Discontinued: 1996–2009
144	02092500	Trent River near Trenton, NC	35°03'51"	77°27'41"	NAD 83	Jones	168	Unregulated	Active: January 1951 to September 2012
145	02092554	Trent River at Pollocksville, NC	35°00'36"	77°13'08"	NAD 83	Jones	370	Tidally affected	Discontinued: 1996–2009
146	0209257120	W. P. Brice Creek below SR 1101 near Riverdale, NC	34°58'09"	77°02'55"	NAD 27	Craven	11.2	Unregulated	Discontinued: 1986–91
147	02093000	New River near Gum Branch, NC	34°50'57"	77°31'10"	NAD 83	Onslow	94.0	Tidally affected	Active: August 1949 to September 1973; July 1987 to September 2012
148	02093229	Hewletts Creek at SR 102 near Wilmington, NC	34°11'28"	77°53'32"	NAD 27	New Hanover	2.08	Unregulated	Discontinued: 1977–90
149	0209330990	Brooks Lake tributary near Browns Summit, NC	36°13'40"	79°43'20"	NAD 27	Guilford	0.06	Unregulated	Discontinued: 1985–90
150	0209331325	Candy Creek at SR 2700 near Monticello, NC	36°14'02"	79°39'43"	NAD 27	Guilford	1.10	Unregulated	Discontinued: 1985–90
151	02093500	Haw River near Benaja, NC	36°15'00"	79°34'00"	NAD 27	Rockingham	168	Unregulated	Discontinued: 1928–71
152	02093800	Reedy Fork near Oak Ridge, NC	36°10'21"	79°57'10"	NAD 83	Guilford	20.6	(²)	Active: October 1955 to September 2012
153	02093877	Brush Creek at Muirfield Road near Greensboro, NC	36°07'41"	79°55'26"	NAD 83	Guilford	5.30	Unregulated	Active: April 2004 to September 2012
154	0209387778	Brush Creek at Fleming Road at Greensboro, NC	36°08'25"	79°54'50"	NAD 83	Guilford	7.41	Unregulated	Discontinued: 1999–2004
155	0209399200	Horsepen Creek at U.S. 220 near Greensboro, NC	36°08'16"	79°51'36"	NAD 83	Guilford	15.9	Unregulated	Active: June 1999 to September 2012
156	02094000	Horsepen Creek at Battle Ground, NC	36°08'34"	79°51'24"	NAD 27	Guilford	15.9	Unregulated	Discontinued: 1925–31; 1934–59
157	02094412	Reedy Fork near Browns Summit, NC	36°10'46"	79°38'51"	NAD 27	Guilford	125	Regulated	Discontinued: 1999–2001

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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158	02094500	Reedy Fork near Gibsonville, NC	36°10'23"	79°36'51"	NAD 83	Guilford	131	Regulated	Active: September 1928 to September 2012
159	02094659	South Buffalo Creek near Pomona, NC	36°02'58"	79°51'19"	NAD 83	Guilford	7.33	Unregulated	Active: June 1999 to September 2012
160	02094770	South Buffalo Creek at U.S. 220 at Greensboro, NC	36°02'17"	79°47'59"	NAD 83	Guilford	15.4	Unregulated	Active: August 1998 to September 2012
161	02094775	Ryan Creek below U.S. 220 at Greensboro, NC	36°01'52"	79°47'46"	NAD 83	Guilford	4.12	Unregulated	Active: August 1998 to September 2012
162	02095000	South Buffalo Creek near Greensboro, NC	36°03'36"	79°43'33"	NAD 83	Guilford	34.0	Unregulated	Active: August 1928 to September 1958; August 1998 to September 2012
163	0209509100	South Buffalo Creek at SR 2821 at McLeansville, NC	36°06'45"	79°40'19"	NAD 27	Guilford	43.5	Unregulated	Discontinued: 1986–88
164	02095181	North Buffalo Creek at Westover Terrace at Greensboro, NC	36°04'45"	79°48'46"	NAD 83	Guilford	9.55	Unregulated	Active: June 1999 to September 2012
165	02095271	North Buffalo Creek at Church Street at Greensboro, NC	36°05'52"	79°46'57"	NAD 83	Guilford	14.2	Unregulated	Active: August 1998 to September 2012
166	02095500	North Buffalo Creek near Greensboro, NC	36°07'14"	79°42'29"	NAD 83	Guilford	37.1	(²)	Active: August 1928 to October 1990; August 1998 to September 2012
167	0209553650	Buffalo Creek at SR 2819 near McLeansville, NC	36°07'41"	79°39'42"	NAD 83	Guilford	88.5	Unregulated	Active: August 1998 to September 2012
168	0209555450	Buffalo Creek at SR 2719 near Osceola, NC	36°09'11"	79°36'51"	NAD 27	Guilford	97.4	Unregulated	Discontinued: 1986–87
169	0209560800	Reedy Fork Creek at NC 61 near Osceola, NC	36°10'44"	79°34'36"	NAD 27	Guilford	243	Unregulated	Discontinued: 1986–88
170	02096000	Stony Creek near Burlington, NC	36°11'00"	79°25'00"	NAD 27	Alamance	44.2	Unregulated	Discontinued: 1952–59
171	02096500	Haw River at Haw River, NC	36°05'14"	79°21'58"	NAD 83	Alamance	606	Regulated	Active: October 1928 to September 2012
172	02096700	Big Alamance Creek near Elon College, NC	36°02'21"	79°31'29"	NAD 27	Alamance	116	Unregulated	Discontinued: 1957–80
173	02096842	Cane Creek 0.1 mile above SR 1126 near Buckhorn, NC	36°01'33"	79°10'30"	NAD 27	Orange	0.64	Unregulated	Discontinued: 1979–81
174	02096846	Cane Creek near Orange Grove, NC	35°59'14"	79°12'22"	NAD 83	Orange	7.54	Unregulated	Active: November 1988 to September 2012
175	02096850	Cane Creek near Teer, NC	35°56'34"	79°14'46"	NAD 27	Orange	33.7	Unregulated	Discontinued: 1959–73
176	0209691590	Collins Creek above Secondary Road 1006 near White Cross, NC	35°56'46"	79°11'41"	NAD 83	Orange	1.65	Unregulated	Active: March 2011 to September 2012
177	0209691611	Collins Creek at Highway 54 near White Cross, NC	35°55'53"	79°12'21"	NAD 83	Orange	3.22	Unregulated	Active: March 2011 to September 2012
178	02096960	Haw River near Bynum, NC	35°45'55"	79°08'09"	NAD 83	Chatham	1,275	Regulated	Active: October 1973 to September 2012

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
179	02097000	Haw River near Pittsboro, NC	35°42'07"	79°05'12"	NAD 27	Chatham	1,310	(²)	Discontinued: 1928–73
180	0209722970	Sandy Creek at Cornwallis Road near Durham, NC	35°58'59"	78°57'24"	NAD 83	Durham	4.67	Unregulated	Active: August 2008 to September 2012
181	02097243	Third Fork Creek at Durham, NC	35°58'43"	78°54'48"	NAD 27	Durham	1.68	Unregulated	Discontinued: 1968–73
182	02097280	Third Fork Creek at Woodcroft Parkway near Blands, NC	35°55'21"	78°57'08"	NAD 83	Durham	14.8	Unregulated	Active: August 2008 to September 2012
183	02097314	New Hope Creek near Blands, NC	35°53'06"	78°57'55"	NAD 83	Durham	75.9	(²)	Active: October 1982 to September 2012
184	0209736050	Battle Branch near Chapel Hill, NC	35°55'02"	79°01'57"	NAD 27	Orange	0.42	Unregulated	Discontinued: 1996–2001
185	0209741955	Northeast Creek at Secondary Road 1100 near Genlee, NC	35°52'20"	78°54'47"	NAD 83	Durham	21.1	(²)	Active: October 1982 to January 1994; August 1995 to September 2012
186	02097464	Morgan Creek near White Cross, NC	35°55'25"	79°06'54"	NAD 83	Orange	8.35	Unregulated	Active: November 1988 to September 2012
187	02097500	Morgan Creek near Chapel Hill, NC	35°53'51"	79°05'28"	NAD 27	Orange	30.1	Regulated	Discontinued: 1923–32
188	02097517	Morgan Creek near Chapel Hill, NC	35°53'36"	79°01'11"	NAD 83	Orange	41.0	Regulated	Active: November 1982 to September 2012
189	0209782150	New Hope River tributary at SR 1716 near Farrington, NC	35°45'50"	79°03'08"	NAD 27	Chatham	2.05	Unregulated	Discontinued: 1986–88
190	0209782609	White Oak Creek at mouth near Green Level, NC	35°45'37"	78°55'13"	NAD 83	Wake	11.9	Unregulated	Active: October 1999 to September 2012
191	02098000	New Hope River near Pittsboro, NC	35°44'12"	79°01'36"	NAD 27	Chatham	285	(²)	Discontinued: 1949–73
192	02098500	West Fork Deep River near High Point, NC	36°00'15"	79°58'42"	NAD 27	Guilford	32.1	(²)	Discontinued: 1923–26; 1928–58
193	02099000	East Fork Deep River near High Point, NC	36°02'14"	79°56'44"	NAD 83	Guilford	14.8	Unregulated	Active: July 1928 to March 1994; October 1997 to September 2012
194	02099500	Deep River near Randleman, NC	35°54'13"	79°51'10"	NAD 83	Randolph	125	(²)	Discontinued: 1929–2004
195	02100000	Muddy Creek near Archdale, NC	35°52'35"	79°52'43"	NAD 27	Randolph	16.7	Unregulated	Discontinued: 1934–41
196	02100500	Deep River at Ramseur, NC	35°43'35"	79°39'20"	NAD 83	Randolph	349	Regulated	Active: November 1922 to September 2012
197	02101000	Bear Creek at Robbins, NC	35°26'03"	79°35'39"	NAD 27	Moore	137	Unregulated	Discontinued: 1939–71
198	0210106600	Deep River near Glendon, NC	35°29'20"	79°25'15"	NAD 27	Moore	859	(²)	Discontinued: 1993–96
199	0210108450	Suck Creek tributary near Zion Grove, NC	35°20'17"	79°35'57"	NAD 27	Moore	0.67	Unregulated	Discontinued: 1986–88
200	0210166029	Rocky River near Crutchfield Crossroads, NC	35°48'25"	79°31'39"	NAD 83	Chatham	7.42	Unregulated	Active: May 1988 to September 2012
201	02101726	Rocky River at US Highway 64 near Siler City, NC	35°44'06"	79°25'24"	NAD 27	Chatham	68.7	Unregulated	Active: February 2009 to September 2012

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

[USGS, U.S. Geological Survey; °, degrees; ', minutes; ", seconds; NAD 27, North American Datum of 1927; NAD 83, North American Datum of 1983; mi², square mile. Drainage areas for some sites are indeterminate. The periods of record for active sites are provided using months and years, and the periods of record for discontinued are provided in years only. The flow condition indicates whether flows are unregulated, regulated, tidally affected, or some combination of other effects, including diversions upstream from the streamgage. Shaded rows indicate sites for which low-flow characteristics (table 3) and flow-duration statistics (table 5) are published in this report. Rows not shaded are sites for which low-flow characteristics and flow-duration statistics were excluded from publication (figs. 4, 5)]

Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
202	02101800	Tick Creek near Mount Vernon Springs, NC	35°39'35"	79°24'06"	NAD 83	Chatham	15.5	Unregulated	Active: June 1958 to September 1981; January 1994 to September 2012
203	02102000	Deep River at Moncure, NC	35°37'37"	79°06'58"	NAD 83	Lee	1,434	Regulated	Active: July 1930 to September 2012
204	02102094	Cape Fear power plant discharge canal near Brickhaven, NC	35°35'05"	79°02'28"	NAD 83	Chatham	Indeterminate	(2)	Active: April 2008 to September 2012
205	02102192	Buckhorn Creek near Corinth, NC	35°33'35"	78°58'25"	NAD 83	Chatham	76.3	Regulated	Active: June 1972 to September 2012
206	02102500	Cape Fear River at Lillington, NC	35°24'22"	78°48'48"	NAD 83	Harnett	3,464	Regulated	Active: December 1923 to September 2012
207	02102897	Lower Little River near Lobelia, NC	35°12'13"	79°12'59"	NAD 27	Moore	110	Unregulated	Discontinued: 2003–04
208	02102908	Flat Creek near Inverness, NC	35°10'58"	79°10'39"	NAD 83	Hoke	7.63	Unregulated	Active: June 1968 to September 2012
209	02103000	Little River at Manchester, NC	35°11'36"	78°59'08"	NAD 83	Cumberland	348	Unregulated	Active: October 1938 to September 1950; July 2002 to September 2012
210	02103500	Little River at Linden, NC	35°15'46"	78°46'35"	NAD 27	Harnett	459	(2)	Discontinued: 1928–71
211	02104000	Cape Fear River at Fayetteville, NC	35°03'02"	78°51'30"	NAD 83	Cumberland	4,395	Unregulated	Discontinued: 1889–1903; 1928–40
212	02104220	Rockfish Creek at Raeford, NC	34°59'59"	79°12'53"	NAD 83	Hoke	93.1	Unregulated	Active: July 1988 to September 2012
213	02104387	Buckhead Creek near Owens, NC	35°01'37"	78°57'08"	NAD 27	Cumberland	2.85	Unregulated	Discontinued: 1976–80
214	02104500	Rockfish Creek near Hope Mills, NC	34°57'57"	78°55'04"	NAD 27	Cumberland	292	(2)	Discontinued: 1929–31; 1939–54
215	02105500	Cape Fear River at William O. Huske Lock 3 near Tarheel, NC	34°50'08"	78°49'25"	NAD 83	Bladen	4,852	Regulated	Active: October 1937 to September 2012
216	02105524	Ellis Creek tributary at SR 1325 near White Oak, NC	34°46'02"	78°41'24"	NAD 27	Bladen	1.81	Unregulated	Discontinued: 1979–81
217	02105769	Cape Fear River at Lock 1 near Kelly, NC	34°24'16"	78°17'37"	NAD 83	Bladen	5,255	Regulated	Active: July 1969 to September 2012
218	02105900	Hood Creek near Leland, NC	34°16'43"	78°07'31"	NAD 83	Brunswick	21.6	Unregulated	Discontinued: 1956–73; 1993–2010
219	02106000	Little Coharie Creek near Roseboro, NC	34°57'13"	78°29'17"	NAD 27	Sampson	92.8	Unregulated	Discontinued: 1950–92
220	02106500	Black River near Tomahawk, NC	34°45'18"	78°17'19"	NAD 83	Sampson	676	Unregulated	Active: October 1951 to September 2012
221	02106681	Black River near Dunn, NC	35°16'58"	78°38'16"	NAD 27	Harnett	48.3	Unregulated	Discontinued: 1976–77
222	02107000	South River near Parkersburg, NC	34°48'45"	78°27'26"	NAD 27	Bladen	379	Unregulated	Discontinued: 1951–86
223	02107500	Colly Creek near Kelly, NC	34°27'48"	78°15'26"	NAD 27	Bladen	108	Unregulated	Discontinued: 1950–71
224	02107544	Black River near Currie, NC	34°25'54"	78°08'37"	NAD 83	Pender	1,405	Tidally affected	Discontinued: 2004–05
225	02107600	Northeast Cape Fear River near Seven Springs, NC	35°10'20"	77°55'56"	NAD 27	Wayne	47.5	Unregulated	Discontinued: 1958–75
226	0210782005	Nahunga Creek at SR 1301 near Warsaw, NC	35°01'36"	78°00'41"	NAD 27	Duplin	8.30	Unregulated	Discontinued: 1983–90

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
227	0210783230	Herrings Marsh Run near Summerlins Crossroads, NC	35°05'37"	77°56'35"	NAD 27	Duplin	2.25	Unregulated	Discontinued: 1991–99
228	0210783240	Herrings Marsh Run Tributary near Summerlins Crossroads, NC	35°05'49"	77°56'01"	NAD 27	Duplin	1.49	Unregulated	Discontinued: 1991–2000
229	0210783273	Herrings Marsh Run Tributary at Red Hill, NC	35°04'32"	77°54'49"	NAD 27	Duplin	1.14	Unregulated	Discontinued: 1991–97
230	0210783276	Herrings Marsh Run below SR 1306 at Red Hill, NC	35°04'25"	77°54'50"	NAD 27	Duplin	9.11	Unregulated	Discontinued: 1991–99
231	0210789100	Grove Creek at Kenansville, NC	34°58'13"	77°57'32"	NAD 27	Duplin	22.6	Unregulated	Discontinued: 1983–90
232	0210797940	Limestone Creek at NC 24 near Hadley, NC	34°54'55"	77°41'34"	NAD 27	Duplin	1.61	Unregulated	Discontinued: 1986–88
233	02108000	Northeast Cape Fear River near Chinquapin, NC	34°49'44"	77°49'56"	NAD 83	Duplin	599	Unregulated	Active: July 1940 to September 2012
234	02108500	Rockfish Creek near Wallace, NC	34°44'32"	78°02'22"	NAD 27	Duplin	69.3	Unregulated	Discontinued: 1955–81
235	02108548	Little Rockfish Creek at Wallace, NC	34°44'02"	77°58'03"	NAD 27	Duplin	7.80	Unregulated	Discontinued: 1976–92
236	02108566	Northeast Cape Fear River near Burgaw, NC	34°35'54"	77°52'31"	NAD 83	Pender	920	Tidally affected	Discontinued: 2003–05
237	02109500	Waccamaw River near Freeland, NC	34°05'42"	78°32'54"	NAD 83	Brunswick	680	Unregulated	Active: July 1939 to September 2012
238	02111000	Yadkin River at Patterson, NC	35°59'27"	81°33'30"	NAD 83	Caldwell	28.8	Unregulated	Active: October 1939 to September 2012
239	02111180	Elk Creek at Elkville, NC	36°04'17"	81°24'11"	NAD 83	Wilkes	50.9	Unregulated	Active: October 1965 to September 2012
240	0211139110	Yadkin River below W. Kerr Scott dam near Buck, NC	36°08'10"	81°13'24"	NAD 83	Wilkes	367	Regulated	Active: November 2007 to September 2012
241	02111500	Reddies River at North Wilkesboro, NC	36°10'30"	81°10'08"	NAD 83	Wilkes	89.2	Unregulated	Active: October 1939 to September 2012
242	02112000	Yadkin River at Wilkesboro, NC	36°09'09"	81°08'44"	NAD 83	Wilkes	504	Regulated	Active: April 1903 to June 1909; October 1920 to September 2012
243	02112120	Roaring River near Roaring River, NC	36°15'01"	81°02'40"	NAD 83	Wilkes	128	Unregulated	Active: April 1964 to September 2012
244	02112250	Yadkin River at Elkin, NC	36°14'25"	80°50'56"	NAD 83	Yadkin	866	Regulated	Active: April 1964 to September 2012
245	02112360	Mitchell River near State Road, NC	36°18'41"	80°48'26"	NAD 83	Surry	78.8	Unregulated	Active: April 1964 to September 2012
246	02112500	Fisher River near Dobson, NC	36°23'05"	80°40'20"	NAD 27	Surry	116	Unregulated	Discontinued: 1920–32
247	02113000	Fisher River near Copeland, NC	36°20'28"	80°41'09"	NAD 83	Surry	128	Unregulated	Discontinued: 1931–2010
248	02113500	Yadkin River at Siloam, NC	36°16'55"	80°33'46"	NAD 27	Surry	1,226	Regulated	Discontinued: 1976–87
249	0211351575	Hogan Creek at SR2038 near Siloam, NC	36°19'20"	80°35'38"	NAD 83	Surry	3.32	Unregulated	Discontinued: 2004–07
250	0211371675	Pauls Creek above SR1625 near Pine Ridge, NC	36°32'29"	80°40'16"	NAD 83	Surry	20.7	Unregulated	Discontinued: 2004–07

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
251	02113850	Ararat River at Ararat, NC	36°24'16"	80°33'42"	NAD 83	Surry	231	Unregulated	Active: April 1964 to September 2012
252	0211397263	Bull Creek at Ash Hill, NC	36°23'23"	80°34'40"	NAD 83	Surry	3.30	Unregulated	Discontinued: 2004–07
253	02114450	Little Yadkin River at Dalton, NC	36°17'57"	80°24'53"	NAD 83	Stokes	42.8	Unregulated	Active: August 1960 to September 2012
254	02115360	Yadkin River at Enon, NC	36°07'54"	80°26'38"	NAD 83	Forsyth	1,694	Regulated	Active: July 1964 to September 2012
255	02115500	Forbush Creek near Yadkinville, NC	36°08'00"	80°33'00"	NAD 27	Yadkin	22.1	Unregulated	Discontinued: 1940–71
256	02115750	Muddy Creek near Lewisville, NC	36°03'10"	80°22'10"	NAD 27	Forsyth	82.8	Unregulated	Discontinued: 1964–70
257	02115800	Silas Creek near Clemmons, NC	36°02'44"	80°21'15"	NAD 27	Forsyth	11.8	Unregulated	Discontinued: 1964–70
258	02115842	Tar Branch tributary at First Street at Winston-Salem, NC	36°05'40"	80°14'42"	NAD 83	Forsyth	0.04	Unregulated	Discontinued: 1979–82
259	02115850	Salem Creek at Winston-Salem, NC	36°04'06"	80°15'46"	NAD 27	Forsyth	51.3	Unregulated	Discontinued: 1964–70
260	02115854	Salem Creek tributary at Hawthorne Road, Winston-Salem, NC	36°04'40"	80°17'05"	NAD 83	Forsyth	0.50	Unregulated	Discontinued: 1979–82
261	02115856	Salem Creek near Atwood, NC	36°02'10"	80°18'35"	NAD 27	Forsyth	65.6	Unregulated	Discontinued: 1971–82
262	02115860	Muddy Creek near Muddy Creek, NC	36°00'01"	80°20'25"	NAD 83	Forsyth	186	Unregulated	Discontinued: 1964–79; 1988–91; 2007–10
263	02115900	South Fork Muddy Creek near Clemmons, NC	36°00'22"	80°18'07"	NAD 27	Forsyth	42.9	Unregulated	Discontinued: 1964–79; 1988–91
264	02116500	Yadkin River at Yadkin College, NC	35°51'24"	80°23'13"	NAD 83	Davie	2,280	Regulated	Active: July 1928 to September 2012
265	02117030	Humpy Creek near Fork, NC	35°51'17"	80°26'24"	NAD 27	Davie	1.05	Unregulated	Discontinued: 1968–83
266	02117500	Rocky Creek at Turnersburg, NC	35°54'00"	80°48'00"	NAD 27	Iredell	101	Unregulated	Discontinued: 1940–71
267	02118000	South Yadkin River near Mocksville, NC	35°50'42"	80°39'32"	NAD 83	Rowan	306	(²)	Active: October 1938 to September 2012
268	02118500	Hunting Creek near Harmony, NC	36°00'02"	80°44'44"	NAD 83	Iredell	155	Unregulated	Active: October 1950 to September 2012
269	02119000	South Yadkin River at Cooleemee, NC	35°48'10"	80°33'22"	NAD 27	Davie	569	(²)	Discontinued: 1928–65
270	02119400	Third Creek near Stony Point, NC	35°52'04"	81°04'00"	NAD 27	Alexander	4.84	Unregulated	Discontinued: 1956–69
271	02120500	Third Creek at Cleveland, NC	35°44'38"	80°40'54"	NAD 27	Rowan	87.4	Unregulated	Discontinued: 1940–71
272	02120780	Second Creek near Barber, NC	35°43'03"	80°35'45"	NAD 83	Rowan	118	Unregulated	Active: April 1979 to September 2012
273	02121000	Yadkin River near Salisbury, NC	35°43'30"	80°23'50"	NAD 27	Rowan	3,450	Unregulated	Discontinued: 1895–1927
274	02121180	North Potts Creek at Linwood, NC	35°45'28"	80°19'24"	NAD 27	Davidson	9.62	Unregulated	Discontinued: 1980–90
275	02121493	Leonard Creek near Bethesda, NC	35°53'14"	80°12'30"	NAD 27	Davidson	5.16	Unregulated	Discontinued: 1978–81
276	02121500	Abbotts Creek at Lexington, NC	35°48'25"	80°14'05"	NAD 83	Davidson	174	(²)	Active: March 1940 to December 1957; October 1988 to September 2012

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
277	02122500	Yadkin River at High Rock, NC	35°35'46"	80°13'59"	NAD 27	Davidson	4,000	Unregulated	Discontinued: 1919–27
278	02123000	Uwharrie River near Trinity, NC	35°52'05"	79°59'31"	NAD 27	Randolph	11.3	Unregulated	Discontinued: 1934–41
279	02123500	Uwharrie River near Eldorado, NC	35°25'47"	80°01'04"	NAD 83	Montgomery	342	Unregulated	Discontinued: 1938–71
280	02123567	Dutchmans Creek near Uwharrie, NC	35°22'45"	80°01'49"	NAD 83	Montgomery	3.44	Unregulated	Discontinued: 1982–83; 1986–2004
281	0212393300	West Branch Rocky River below mouth of South Prong River near Cornelius, NC	35°28'04"	80°47'25"	NAD 83	Mecklenburg	20.8	Unregulated	Active: July 2004 to September 2012
282	02124080	Clarke Creek near Harrisburg, NC	35°24'51"	80°45'07"	NAD 83	Cabarrus	21.9	(²)	Active: July 2003 to September 2012
283	0212414900	Mallard Creek below Stony Creek near Harrisburg, NC	35°19'58"	80°42'57"	NAD 83	Mecklenburg	34.6	Unregulated	Active: December 1994 to September 2012
284	0212419274	Coddle Creek at Secondary Road 1612 near Davidson, NC	35°30'14"	80°44'11"	NAD 83	Cabarrus	22.7	Unregulated	Active: October 2002 to September 2012
285	02124269	Back Creek at Secondary Road 1173 near Harrisburg, NC	35°18'33"	80°40'25"	NAD 83	Cabarrus	7.45	Unregulated	Active: May 2009 to September 2012
286	0212427947	Reedy Cr at SR2803 near Charlotte, NC	35°15'23"	80°42'02"	NAD 83	Mecklenburg	2.50	Unregulated	Discontinued: 2001–07
287	0212429930	Wiberly Branch near Wilgrove, NC	35°13'40"	80°41'34"	NAD 27	Mecklenburg	0.35	Unregulated	Discontinued: 1984–93
288	0212429960	Reedy Creek tributary No. 2 below Wiberly Branch near Mint Hill, NC	35°13'47"	80°41'37"	NAD 27	Mecklenburg	1.00	Unregulated	Discontinued: 1988–93
289	0212430293	Reedy Creek below I-485 near Pine Ridge, NC	35°15'31"	80°39'46"	NAD 83	Mecklenburg	12.6	Unregulated	Active: September 2007 to September 2012
290	0212430653	McKee Creek at Secondary Road 2804 near Wilgrove, NC	35°15'14"	80°38'53"	NAD 83	Mecklenburg	5.76	Unregulated	Active: July 2007 to September 2012
291	0212433550	Rocky River above Irish Buffalo Creek near Rocky River, NC	35°19'18"	80°32'27"	NAD 83	Cabarrus	278	(²)	Active: April 2000 to September 2012
292	02124471	Dutch Buffalo Creek at NC 49 near Mount Pleasant, NC	35°25'37"	80°24'40"	NAD 27	Cabarrus	45.1	Unregulated	Discontinued: 1985–87
293	0212466000	Clear Creek at Secondary Road 3181 near Mint Hill, NC	35°12'30"	80°34'48"	NAD 83	Mecklenburg	12.6	Unregulated	Active: October 2002 to September 2012
294	0212467451	Goose Creek at Secondary Road 1524 near Indian Trail, NC	35°07'49"	80°37'53"	NAD 27	Union	8.50	Unregulated	Active: March 2009 to September 2012
295	0212467595	Goose Creek near Indian Trail, NC	35°07'30"	80°36'10"	NAD 83	Union	11.0	Unregulated	Active: October 2003 to September 2012
296	02124692	Goose Creek near Fairview, NC	35°09'13"	80°32'07"	NAD 83	Union	24.0	Unregulated	Active: November 1999 to September 2012
297	02124742	Rocky River near Stanfield, NC	35°10'10"	80°28'23"	NAD 83	Union	628	(²)	Active: April 2000 to September 2012
298	02125000	Big Bear Creek near Richfield, NC	35°20'05"	80°20'08"	NAD 83	Stanly	55.6	Unregulated	Discontinued: 1954–2010

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
299	02125500	Richardson Creek near Marshville, NC	35°05'55"	80°23'05"	NAD 27	Union	170	Unregulated	Discontinued: 1940–44
300	02125557	Gourdvine Creek at SR 1715 near Olive Branch, NC	35°06'02"	80°20'11"	NAD 27	Union	8.75	Unregulated	Discontinued: 1978–82
301	02125696	Lane Creek at SR 2115 near Trinity, NC	34°50'39"	80°28'49"	NAD 27	Union	3.98	Unregulated	Discontinued: 1969–79
302	02125699	Wicker Branch at SR 1940 near Trinity, NC	34°52'53"	80°26'24"	NAD 27	Union	5.83	Unregulated	Discontinued: 1978–82
303	02125816	Lane's Creek near Marshville, NC	34°58'31"	80°18'14"	NAD 27	Union	87.8	Unregulated	Discontinued: 1985–87
304	02126000	Rocky River near Norwood, NC	35°08'56"	80°10'33"	NAD 83	Stanly	1,372	(²)	Active: October 1929 to September 2012
305	02126500	Little Brown Creek near Polkton, NC	34°58'28"	80°11'26"	NAD 27	Anson	13.5	Unregulated	Discontinued: 1935–41
306	02127000	Brown Creek near Polkton, NC	35°02'00"	80°09'00"	NAD 27	Anson	110	Unregulated	Discontinued: 1937–71
307	02127500	Pee Dee River near Ansonville, NC	35°05'07"	79°59'57"	NAD 27	Anson	6,320	Regulated	Discontinued: 1938–42
308	02128000	Little River near Star, NC	35°23'14"	79°49'53"	NAD 83	Montgomery	106	Unregulated	Active: April 1954 to September 2012
309	02129000	Pee Dee River near Rockingham, NC	34°56'45"	79°52'11"	NAD 83	Richmond	6,863	Regulated	Active: August 1906 to January 1912; October 1927 to September 2012
310	02129500	North Fork Jones Creek near Wadesboro, NC	34°55'09"	80°04'27"	NAD 27	Anson	9.43	Unregulated	Discontinued: 1935–41
311	0213228795	Jordan Creek near Silver Hill, NC	34°58'12"	79°31'35"	NAD 27	Scotland	0.36	Unregulated	Discontinued: 1983–93
312	02132320	Big Shoe Heel Creek near Laurinburg, NC	34°45'02"	79°23'12"	NAD 83	Scotland	83.3	Unregulated	Active: June 1987 to September 2012
313	02133500	Drowning Creek near Hoffman, NC	35°03'40"	79°29'38"	NAD 83	Richmond	183	(²)	Active: October 1939 to September 2012
314	02133624	Lumber River near Maxton, NC	34°46'22"	79°19'55"	NAD 83	Robeson	365	Unregulated	Active: June 1987 to September 2012
315	02134170	Lumber River at Lumberton, NC	34°37'13"	79°00'40"	NAD 83	Robeson	708	Unregulated	Active: July 2000 to September 2012
316	02134480	Big Swamp near Tarheel, NC	34°42'37"	78°50'11"	NAD 83	Robeson	229	Unregulated	Active: October 1985 to September 2012
317	02134500	Lumber River at Boardman, NC	34°26'33"	78°57'37"	NAD 83	Robeson	1,228	Unregulated	Active: September 1929 to September 2012
318	02137000	Mill Creek at Old Fort, NC	35°37'59"	82°11'14"	NAD 27	McDowell	20.6	Unregulated	Discontinued: 1960–75
319	02137727	Catawba River near Pleasant Gardens, NC	35°41'09"	82°03'37"	NAD 83	McDowell	126	Unregulated	Active: October 1980 to September 2012
320	02138000	Catawba River near Marion, NC	35°42'26"	82°02'00"	NAD 27	McDowell	172	Unregulated	Discontinued: 1941–81
321	02138500	Linville River near Nebo, NC	35°47'41"	81°53'24"	NAD 83	Burke	66.7	Unregulated	Active: May 1907 to August 1908; June 1922 to September 2012
322	02138520	Catawba River at Secondary Road 1223 below Lake James near Bridgewater, NC	35°44'25"	81°50'04"	NAD 83	Burke	386	Regulated	Active: December 2008 to September 2012
323	0213875850	High Shoals Creek near Dysartsville, NC	35°35'57"	81°54'19"	NAD 27	McDowell	2.38	Unregulated	Discontinued: 1986–88
324	0213903612	Catawba River at Calvin, NC	35°44'22"	81°43'45"	NAD 83	Burke	508	Regulated	Discontinued: 1991–2009

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

[USGS, U.S. Geological Survey; °, degrees; ', minutes; ", seconds; NAD 27, North American Datum of 1927; NAD 83, North American Datum of 1983; mi², square mile. Drainage areas for some sites are indeterminate. The periods of record for active sites are provided using months and years, and the periods of record for discontinued are provided in years only. The flow condition indicates whether flows are unregulated, regulated, tidally affected, or some combination of other effects, including diversions upstream from the streamgage. Shaded rows indicate sites for which low-flow characteristics (table 3) and flow-duration statistics (table 5) are published in this report. Rows not shaded are sites for which low-flow characteristics and flow-duration statistics were excluded from publication (figs. 4, 5)]

Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
325	02139200	Bailey Fork near Morganton, NC	35°43'11"	81°43'30"	NAD 27	Burke	7.86	Unregulated	Discontinued: 1966–70
326	02139650	East Prong near Morganton, NC	35°44'29"	81°39'39"	NAD 27	Burke	8.94	Unregulated	Discontinued: 1966–74
327	0214042720	North Harper Creek near Kawana, NC	36°00'31"	81°51'13"	NAD 27	Avery	1.25	Unregulated	Discontinued: 1986–88
328	02140991	Johns River at Arneys Store, NC	35°50'01"	81°42'43"	NAD 83	Burke	201	Unregulated	Active: May 1985 to September 2012
329	02141150	Lower Creek at Mulberry Street at Lenoir, NC	35°54'20"	81°31'59"	NAD 27	Caldwell	28.6	Unregulated	Discontinued: 1966–78
330	02141245	Lower Creek at SR1501 near Morganton, NC	35°49'31"	81°38'10"	NAD 27	Burke	89.5	Unregulated	Discontinued: 1993–94
331	0214183365	Upper Little River at SR1740 near Petra Mills, NC	35°50'31"	81°21'43"	NAD 27	Caldwell	33.9	Unregulated	Discontinued: 1993–94
332	0214192500	Middle Little River at Moretz Dam near Bethlehem, NC	35°50'45"	81°16'46"	NAD 27	Alexander	46.1	Unregulated	Discontinued: 1993–94
333	02142000	Lower Little River at All Healing Springs, NC	35°56'44"	81°14'13"	NAD 83	Alexander	28.2	Unregulated	Active: January 1953 to September 1995; October 1997 to September 2012
334	02142500	Catawba River at Catawba, NC	35°43'00"	81°03'59"	NAD 27	Catawba	1,535	Regulated	Discontinued: 1896–99; 1935–62
335	0214253361	Balls Creek near Long Island, NC	35°41'13"	81°00'54"	NAD 83	Catawba	15.6	Unregulated	Discontinued: 2007–2010
336	0214253830	Norwood Creek nr Troutman, NC	35°40'50"	80°56'43"	NAD 83	Iredell	7.18	Unregulated	Discontinued: 1983–2006
337	02142600	Mountain Creek near Terrell, NC	35°34'02"	80°59'46"	NAD 27	Catawba	42.4	Unregulated	Discontinued: 1957–62
338	02142651	McDowell Creek at Westmoreland Road near Cornelius, NC	35°27'50"	80°52'35"	NAD 83	Mecklenburg	2.35	Unregulated	Discontinued: 1994–97
339	02142654	McDowell Creek near Huntersville, NC	35°24'25"	80°53'26"	NAD 83	Mecklenburg	10.2	Unregulated	Active: May 2006 to September 2012
340	0214265808	Torrence Creek at Bradford Hill Lane near Huntersville, NC	35°24'13"	80°52'58"	NAD 83	Mecklenburg	7.29	Unregulated	Active: August 2007 to September 2012
341	0214266000	McDowell Creek near Charlotte, NC	35°23'22"	80°55'15"	NAD 83	Mecklenburg	26.3	Unregulated	Active: November 1996 to September 2012
342	0214266075	Gar Creek at Secondary Road 2120 near Oakdale, NC	35°21'55"	80°53'11"	NAD 83	Mecklenburg	2.67	Unregulated	Discontinued: 1994–97
343	0214266080	Gar Creek near Croft, NC	35°21'41"	80°53'51"	NAD 83	Mecklenburg	3.55	Unregulated	Active: October 2002 to September 2012
344	0214269560	Killian Creek near Mariposa, NC	35°26'03"	81°01'48"	NAD 83	Lincoln	36.4	(²)	Active: October 1990 to June 1993; December 1994 to September 2012
345	02142900	Long Creek near Paw Creek, NC	35°19'43"	80°54'35"	NAD 83	Mecklenburg	16.4	(²)	Active: June 1965 to September 2012
346	02142914	Gum Branch near Thrift, NC	35°17'58"	80°56'47"	NAD 83	Mecklenburg	5.28	Unregulated	Active: May 2004 to September 2012
347	0214291555	Long Creek near Rhyne, NC	35°18'02"	80°58'22"	NAD 83	Mecklenburg	31.5	(²)	Active: October 1998 to September 2012

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
348	0214295600	Paw Creek at Wilkinson Boulevard near Charlotte, NC	35°14'25"	80°58'28"	NAD 83	Mecklenburg	10.4	Unregulated	Active: October 1994 to September 2012
349	0214297160	Beaverdam Creek above Windy Gap Road near Shopton, NC	35°10'11"	80°59'16"	NAD 83	Mecklenburg	4.47	(²)	Active: January 2003 to September 2012
350	02143000	Henry Fork near Henry River, NC	35°41'04"	81°24'12"	NAD 83	Catawba	83.2	Unregulated	Active: July 1925 to November 1931; December 1941 to September 2012
351	02143040	Jacob Fork at Ramsey, NC	35°35'26"	81°34'01"	NAD 83	Burke	25.7	Unregulated	Active: October 1961 to September 2012
352	02143500	Indian Creek near Laboratory, NC	35°25'14"	81°15'55"	NAD 83	Lincoln	69.2	(²)	Active: August 1951 to September 2012
353	0214399575	Long Creek Tributary at Headwaters near Bessemer City, NC	35°18'12"	81°16'42"	NAD 27	Gaston	0.16	Unregulated	Discontinued: 1993–2001
354	0214399580	Long Creek Tributary below Headwaters near Bessemer City, NC	35°18'20"	81°16'32"	NAD 27	Gaston	0.22	Unregulated	Discontinued: 1993–2001
355	02144000	Long Creek near Bessemer City, NC	35°18'23"	81°14'05"	NAD 83	Gaston	31.8	(²)	Active: October 1952 to September 2012
356	02145000	South Fork Catawba River at Lowell, NC	35°17'07"	81°06'04"	NAD 83	Gaston	628	Regulated	Active: January 1942 to September 1971; October 1983 to September 2012
357	0214620760	Irwin Creek at Starita Road at Charlotte, NC	35°16'33"	80°49'34"	NAD 83	Mecklenburg	4.40	Unregulated	Discontinued: 1989–94
358	0214620805	Irwin Creek tributary below Starita Road at Charlotte, NC	35°16'20"	80°49'30"	NAD 27	Mecklenburg	0.02	Unregulated	Discontinued: 1994–98
359	02146211	Irwin Creek at Statesville Avenue at Charlotte, NC	35°15'43"	80°50'13"	NAD 83	Mecklenburg	5.97	Unregulated	Active: October 1981 to September 1994; November 1997 to September 2001; June 2004 to September 2012
360	0214627970	Stewart Creek at State Street at Charlotte, NC	35°14'25"	80°52'06"	NAD 83	Mecklenburg	9.07	Unregulated	Active: June 2000 to September 2012
361	02146285	Stewart Creek at West Morehead Street at Charlotte, NC	35°13'42"	80°52'09"	NAD 83	Mecklenburg	11.1	Unregulated	Active: October 2000 to September 2012
362	02146300	Irwin Creek near Charlotte, NC	35°11'52"	80°54'16"	NAD 83	Mecklenburg	30.7	Unregulated	Active: May 1962 to September 2012
363	02146315	Taggart Creek at West Boulevard Near Charlotte, NC	35°12'24"	80°55'19"	NAD 83	Mecklenburg	5.71	Unregulated	Active: July 1998 to September 2012
364	02146348	Coffey Creek near Charlotte, NC	35°08'45"	80°55'37"	NAD 83	Mecklenburg	9.14	Unregulated	Active: October 1998 to September 2012
365	0214635212	Unnamed tributary to Sugar Creek at Crompton Street near Charlotte, NC	35°06'57"	80°54'49"	NAD 83	Mecklenburg	0.06	Unregulated	Discontinued: 1995–98
366	02146381	Sugar Creek at NC 51 near Pineville, NC	35°05'27"	80°53'58"	NAD 83	Mecklenburg	65.3	(²)	Active: October 1994 to September 2012
367	02146409	Little Sugar Creek at Medical Center Drive at Charlotte, NC	35°12'13"	80°50'13"	NAD 83	Mecklenburg	11.8	Unregulated	Active: October 1994 to September 2012

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
368	0214642825	Briar Creek (above Shamrock Road) near Charlotte, NC	35°14'10"	80°46'16"	NAD 83	Mecklenburg	5.20	Unregulated	Active: April 1998 to September 2012
369	0214643820	Edwards Branch at Sheffield Drive at Charlotte, NC	35°12'12"	80°46'20"	NAD 83	Mecklenburg	1.03	Unregulated	Active: July 2004 to September 2012
370	0214643840	Edwards Branch tributary storm drain at Charlotte, NC	35°11'53"	80°47'01"	NAD 27	Mecklenburg	0.02	Unregulated	Discontinued: 1994–98
371	02146450	Briar Creek at Sharon Road, Charlotte, NC	35°10'47"	80°49'46"	NAD 27	Mecklenburg	18.5	Unregulated	Discontinued: 1962–73
372	0214645022	Briar Creek above Colony Road near Charlotte, NC	35°10'31"	80°49'51"	NAD 83	Mecklenburg	19.0	Unregulated	Active: December 1995 to September 2012
373	0214645075	Tributary to Briar Creek at Colony Road at Charlotte, NC	35°10'08"	80°49'51"	NAD 83	Mecklenburg	1.03	Unregulated	Active: October 2005 to September 2012
374	0214645080	Tributary to Briar Creek at Runnymeade Lane at Charlotte, NC	35°10'01"	80°50'12"	NAD 83	Mecklenburg	1.19	Unregulated	Active: June 2005 to September 2012
375	02146470	Little Hope Creek at Seneca Place near Charlotte, NC	35°09'52"	80°51'11"	NAD 83	Mecklenburg	2.63	Unregulated	Active: December 1982 to September 1990; October 1994 to September 2012
376	02146500	Little Sugar Creek near Charlotte, NC	35°09'13"	80°51'18"	NAD 27	Mecklenburg	41.0	Unregulated	Discontinued: 1924–78
377	0214650690	Little Sugar Creek tributary at Rose Valley Drive near Charlotte, NC	35°08'54"	80°51'40"	NAD 27	Mecklenburg	0.12	Unregulated	Discontinued: 1993–98
378	02146507	Little Sugar Creek at Archdale Drive at Charlotte, NC	35°08'53"	80°51'28"	NAD 83	Mecklenburg	42.6	[2]	Active: January 1978 to September 2012
379	02146530	Little Sugar Creek at Highway 51 at Pineville, NC	35°05'07"	80°52'56"	NAD 83	Mecklenburg	49.2	[2]	Active: June 1997 to September 2012
380	0214655255	McAlpine Creek at SR 3150 near Idlewild, NC	35°10'33"	80°43'09"	NAD 83	Mecklenburg	7.33	Unregulated	Active: June 1999 to September 2012
381	02146562	Campbell Creek near Charlotte, NC	35°11'12"	80°44'12"	NAD 83	Mecklenburg	5.71	Unregulated	Active: June 1999 to September 2012
382	02146579	Irvin's Creek at Lebanon Road near Mint Hill, NC	35°09'58"	80°41'24"	NAD 27	Mecklenburg	5.27	Unregulated	Discontinued: 1983–90
383	0214657975	Irvins Creek at SR 3186 near Charlotte, NC	35°09'31"	80°42'48"	NAD 83	Mecklenburg	8.37	Unregulated	Active: June 1999 to September 2012
384	02146600	McAlpine Creek at Sardis Road near Charlotte, NC	35°08'16"	80°46'03"	NAD 83	Mecklenburg	38.6	Unregulated	Active: April 1962 to September 2012
385	0214666925	Four Mile Creek tributary near Providence, NC	35°03'48"	80°48'36"	NAD 27	Mecklenburg	0.27	Unregulated	Discontinued: 1994–98
386	0214669980	McMullen Creek tributary near Charlotte, NC	35°08'47"	80°48'34"	NAD 27	Mecklenburg	0.13	Unregulated	Discontinued: 1993–98

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
387	02146700	McMullen Creek at Sharon View Road near Charlotte, NC	35°08'27"	80°49'12"	NAD 83	Mecklenburg	6.95	Unregulated	Active: April 1962 to September 2012
388	02146750	McAlpine Creek below McMullen Creek near Pineville, NC	35°03'59"	80°52'11"	NAD 83	Mecklenburg	92.4	Unregulated	Active: April 1974 to September 2012
389	0214676115[1]	McAlpine Creek at Secondary Road 2964 near Camp Cox, SC	35°02'27"	80°53'30"	NAD 83	Lancaster	95.9	Regulated	Active: October 2005 to September 2012
390	0214677974	Steele Creek above Secondary Road 1344 near Shopton, NC	35°07'45"	80°57'12"	NAD 27	Mecklenburg	3.57	Unregulated	Discontinued: 1990–98
391	0214678175	Steele Creek at SR 1441 (Carowinds Boulevard) near Pineville, NC	35°06'18"	80°57'13"	NAD 83	Mecklenburg	6.91	Unregulated	Active: May 1998 to September 2012
392	0214678230	Walker Branch at SR1123 near Pine Harbor, NC	35°05'48"	80°58'22"	NAD 27	Mecklenburg	4.52	Unregulated	Discontinued: 1991–94
393	0214685800	Six Mile Creek near Pineville, NC	35°00'37"	80°49'42"	NAD 83	Mecklenburg	20.3	Unregulated	Active: October 2007 to September 2012
394	02146900	Twelve Mile Creek near Waxhaw, NC	34°57'07"	80°45'21"	NAD 83	Union	76.5	Unregulated	Discontinued: 1960–2004
395	02147126	Waxhaw Creek at Secondary Road 1103 near Jackson, NC	34°50'13"	80°47'30"	NAD 83	Union	35.1	Unregulated	Active: May 2002 to September 2012
396	02148500	Broad River near Chimney Rock, NC	35°25'29"	82°10'54"	NAD 27	Rutherford	97.0	Regulated	Discontinued: 1927–58
397	02149000	Cove Creek near Lake Lure, NC	35°25'24"	82°06'42"	NAD 83	Rutherford	79.0	Unregulated	Active: October 1950 to September 2012
398	02149702	Green River near Saluda, NC	35°18'20"	82°16'31"	NAD 27	Polk	104	Regulated	Discontinued: 1972–75
399	02150000	Green River near Mill Spring, NC	35°20'10"	82°04'55"	NAD 27	Polk	174	Regulated	Discontinued: 1940–54
400	02150495	Second Broad River near Logan, NC	35°24'16"	81°52'21"	NAD 83	Rutherford	86.2	Unregulated	Active: October 1998 to September 2012
401	02151000	Second Broad River at Cliffside, NC	35°14'08"	81°45'57"	NAD 27	Rutherford	220	(²)	Discontinued: 1925–97
402	02151500	Broad River near Boiling Springs, NC	35°12'39"	81°41'51"	NAD 83	Cleveland	875	Regulated	Active: June 1925 to September 2012
403	02152000	Sandy Run Creek near Boiling Springs, NC	35°13'30"	81°41'50"	NAD 27	Cleveland	67.0	Unregulated	Discontinued: 1925–28
404	02152100	First Broad River near Casar, NC	35°29'35"	81°40'56"	NAD 83	Cleveland	60.5	Unregulated	Active: March 1959 to September 2012
405	02152285	First Broad River at SR1512 near Lawndale, NC	35°26'32"	81°36'47"	NAD 83	Cleveland	129	Unregulated	Discontinued: 2008–09
406	02152474	First Broad River at Lawndale, NC	35°24'55"	81°33'42"	NAD 83	Cleveland	190	Unregulated	Active: April 2008 to September 2012
407	02152500	First Broad River near Lawndale, NC	35°22'50"	81°32'40"	NAD 27	Cleveland	200	Unregulated	Discontinued: 1940–71
408	02152610	Sugar Branch near Boiling Springs, NC	35°15'00"	81°37'15"	NAD 27	Cleveland	1.44	Unregulated	Discontinued: 1968–87
409	03161000	South Fork New River at Jefferson, NC	36°23'36"	81°24'25"	NAD 83	Ashe	205	Unregulated	Active: October 1924 to September 2012

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Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
410	03161500	South Fork New River near Crumpler, NC	36°32'05"	81°20'35"	NAD 27	Ashe	325	Unregulated	Discontinued: 1908–16
411	03162500	North Fork New River at Crumpler, NC	36°30'15"	81°23'24"	NAD 83	Ashe	277	Unregulated	Discontinued: 1908–16; 1928–58
412	03439000	French Broad River near Rosman, NC	35°08'36"	82°49'29"	NAD 83	Transylvania	67.9	Unregulated	Active: May 1907 to June 1909; October 1935 to September 2012
413	03439500	French Broad River at Calvert, NC	35°08'55"	82°47'59"	NAD 27	Transylvania	103	Unregulated	Discontinued: 1924–55
414	03440000	Catheys Creek near Brevard, NC	35°12'40"	82°47'00"	NAD 27	Transylvania	11.7	Unregulated	Discontinued: 1944–55; 1986–2004
415	03440500	Davidson River near Davidson River, NC	35°17'12"	82°44'15"	NAD 27	Transylvania	31.0	Unregulated	Discontinued: 1904–09
416	03441000	Davidson River near Brevard, NC	35°16'23"	82°42'21"	NAD 83	Transylvania	40.4	Unregulated	Active: October 1920 to September 1990; October 1993 to September 2012
417	03441440	Little River above High Falls near Cedar Mountain, NC	35°11'32"	82°36'49"	NAD 27	Transylvania	26.8	Unregulated	Discontinued: 1963–90
418	03441500	Little River near Penrose, NC	35°13'23"	82°38'07"	NAD 27	Transylvania	41.4	Unregulated	Discontinued: 1942–55
419	03442000	Crab Creek near Penrose, NC	35°14'02"	82°36'39"	NAD 27	Transylvania	10.9	Unregulated	Discontinued: 1942–55
420	03443000	French Broad River at Blantyre, NC	35°17'57"	82°37'26"	NAD 83	Transylvania	296	(²)	Active: October 1920 to September 2012
421	03444000	Boylston Creek near Horseshoe, NC	35°22'10"	82°33'50"	NAD 27	Henderson	14.8	Unregulated	Discontinued: 1942–55
422	03444500	South Fork Mills River at the Pink Beds, NC	35°21'58"	82°44'22"	NAD 27	Transylvania	9.99	Unregulated	Discontinued: 1926–49; 1965–73
423	03445000	South Fork Mills River near Sitton, NC	35°22'55"	82°36'48"	NAD 27	Henderson	40.0	Unregulated	Discontinued: 1904–09; 1925–26
424	03445500	North Fork Mills River at Pinkbed, NC	35°23'37"	82°37'30"	NAD 27	Henderson	23.1	Unregulated	Discontinued: 1904–09
425	03446000	Mills River at Mills River, NC	35°23'53"	82°35'42"	NAD 83	Henderson	66.7	(²)	Active: September 1924 to September 1926; October 1933 to September 2012
426	03446500	Clear Creek near Hendersonville, NC	35°21'14"	82°26'40"	NAD 27	Henderson	42.2	Unregulated	Discontinued: 1945–55
427	03447000	Mud Creek at Naples, NC	35°23'14"	82°30'14"	NAD 27	Henderson	109	Unregulated	Discontinued: 1938–55
428	03447500	Cane Creek at Fletcher, NC	35°26'08"	82°29'23"	NAD 27	Henderson	63.1	Unregulated	Discontinued: 1942–58
429	03447687	French Broad River near Fletcher, NC	35°25'39"	82°32'53"	NAD 83	Henderson	640	(²)	Active: July 2001 to September 2012
430	0344789265	Boyd Branch at Bent Creek Gap Road near Lake Powhatan, NC	35°28'54"	82°38'05"	NAD 83	Buncombe	1.03	Unregulated	Discontinued: 2004–05
431	03447894	Bent Creek at Bent Creek Gap near Glen Bald, NC	35°29'37"	82°36'40"	NAD 83	Buncombe	8.74	Unregulated	Discontinued: 2001–10
432	03448000	French Broad River at Bent Creek, NC	35°30'07"	82°35'33"	NAD 27	Buncombe	676	(²)	Discontinued: 1933–86
433	03448500	Hominy Creek at Candler, NC	35°32'28"	82°40'35"	NAD 27	Buncombe	79.8	Unregulated	Discontinued: 1942–77

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

[USGS, U.S. Geological Survey; °, degrees; ', minutes; ", seconds; NAD 27, North American Datum of 1927; NAD 83, North American Datum of 1983; mi², square mile. Drainage areas for some sites are indeterminate. The periods of record for active sites are provided using months and years, and the periods of record for discontinued are provided in years only. The flow condition indicates whether flows are unregulated, regulated, tidally affected, or some combination of other effects, including diversions upstream from the streamgage. Shaded rows indicate sites for which low-flow characteristics (table 3) and flow-duration statistics (table 5) are published in this report. Rows not shaded are sites for which low-flow characteristics and flow-duration statistics were excluded from publication (figs. 4, 5)]

Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
434	03448800	Swannanoa River at Interstate 40 at Black Mountain, NC	35°37'08"	82°18'28"	NAD 83	Buncombe	4.24	Unregulated	Discontinued: 2009–10
435	0344894205	North Fork Swannanoa River near Walkertown, NC	35°41'00"	82°19'59"	NAD 83	Buncombe	14.5	Unregulated	Active: February 1989 to September 2012
436	03448960	North Fork Swannanoa River below Burnett Reservoir near Black Mountain, NC	35°39'28"	82°20'51"	NAD 27	Buncombe	22.1	Regulated	Discontinued: 1976–77
437	03449000	North Fork Swannanoa River near Black Mountain, NC	35°39'11"	82°21'04"	NAD 27	Buncombe	23.8	(²)	Discontinued: 1926–58
438	03449500	Swannanoa River at Swannanoa, NC	35°36'11"	82°23'42"	NAD 27	Buncombe	58.8	(²)	Discontinued: 1907–09; 1926–31
439	03450000	Beetree Creek near Swannanoa, NC	35°39'11"	82°24'19"	NAD 83	Buncombe	5.46	Unregulated	Active: February 1926 to September 1975; October 1979 to September 1981; October 1985 to September 1986; May 1987 to September 2012
440	0345092550	Ross Creek at Beaucatcher Road at Asheville, NC	35°35'15"	82°31'49"	NAD 27	Buncombe	2.46	Unregulated	Discontinued: 1986–89
441	03451000	Swannanoa River at Biltmore, NC	35°34'06"	82°32'41"	NAD 83	Buncombe	130	(²)	Active: October 1920 to September 1926; May 1934 to September 2012
442	0345112600	Nasty Branch at Asheville, NC	35°34'44"	82°33'35"	NAD 27	Buncombe	1.19	Unregulated	Discontinued: 1986–89
443	03451500	French Broad River at Asheville, NC	35°36'32"	82°34'41"	NAD 83	Buncombe	945	(²)	Active: Oct 1895 to September 2012
444	03451510	Reed Creek above Barnard Avenue at Asheville, NC	35°36'52"	82°33'41"	NAD 27	Buncombe	2.13	Unregulated	Discontinued: 1986–89
445	03451690	Newfound Creek near Alexander, NC	35°39'59"	82°38'04"	NAD 83	Buncombe	34.2	Unregulated	Discontinued: 2000–06
446	03452000	Sandymush Creek near Alexander, NC	35°43'49"	82°40'11"	NAD 27	Madison	79.5	Unregulated	Discontinued: 1942–55
447	03452001	Sandymush Creek 1.1 mile above mouth near Alexander, NC	35°43'55"	82°40'22"	NAD 27	Buncombe	79.5	Unregulated	Discontinued: 1975–77
448	03453000	Ivy River near Marshall, NC	35°46'11"	82°37'15"	NAD 83	Madison	158	(²)	Active: October 1933 to September 1973; July 1994 to September 2012
449	03453500	French Broad River at Marshall, NC	35°47'11"	82°39'39"	NAD 83	Madison	1,332	(²)	Active: October 1942 to September 2012
450	03454000	Big Laurel Creek near Stackhouse, NC	35°55'11"	82°45'42"	NAD 27	Madison	126	Unregulated	Discontinued: 1934–71
451	03454500	French Broad River at Hot Springs, NC	35°53'23"	82°49'16"	NAD 27	Madison	1,567	(²)	Discontinued: 1934–49
452	03455500	West Fork Pigeon River above Lake Logan near Hazelwood, NC	35°23'46"	82°56'15"	NAD 83	Haywood	27.6	Unregulated	Active: February 1954 to September 2012
453	0345577330	West Fork Pigeon River near Retreat, NC	35°25'36"	82°55'11"	NAD 83	Haywood	33.5	Regulated	Active: March 1988 to September 2012

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

[USGS, U.S. Geological Survey; °, degrees; ', minutes; ", seconds; NAD 27, North American Datum of 1927; NAD 83, North American Datum of 1983; mi², square mile. Drainage areas for some sites are indeterminate. The periods of record for active sites are provided using months and years, and the periods of record for discontinued are provided in years only. The flow condition indicates whether flows are unregulated, regulated, tidally affected, or some combination of other effects, including diversions upstream from the streamgage. Shaded rows indicate sites for which low-flow characteristics (table 3) and flow-duration statistics (table 5) are published in this report. Rows not shaded are sites for which low-flow characteristics and flow-duration statistics were excluded from publication (figs. 4, 5)]

Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
454	03456000	West Fork Pigeon River below Lake Logan near Waynesville, NC	35°26'38"	82°54'46"	NAD 27	Haywood	55.3	Regulated	Discontinued: 1954–80
455	03456100	West Fork Pigeon River at Bethel, NC	35°27'50"	82°54'00"	NAD 83	Haywood	58.4	Regulated	Active: January 1981 to September 2012
456	0345638607	Unnamed tributary to Pisgah Creek at Flat Laurel Gap, NC	35°24'19"	82°45'23"	NAD 27	Haywood	0.07	Unregulated	Discontinued: 2001–03
457	03456500	East Fork Pigeon River near Canton, NC	35°27'42"	82°52'11"	NAD 83	Haywood	51.5	Unregulated	Active: March 1954 to September 2012
458	03456991	Pigeon River near Canton, NC	35°31'23"	82°50'48"	NAD 83	Haywood	130	Regulated	Active: May 1907 to June 1909; October 1928 to September 2012
459	03457000	Pigeon River at Canton, NC	35°31'30"	82°50'28"	NAD 27	Haywood	133	Regulated	Discontinued: 1907–09; 1928–83
460	03457500	Allen Creek near Hazelwood, NC	35°25'49"	83°00'30"	NAD 27	Haywood	14.4	Unregulated	Discontinued: 1949–72
461	03458500	Pigeon River near Crabtree, NC	35°34'37"	82°57'07"	NAD 27	Haywood	243	Regulated	Discontinued: 1920–29
462	03459000	Jonathan Creek near Cove Creek, NC	35°37'22"	83°00'26"	NAD 27	Haywood	65.3	Unregulated	Discontinued: 1930–72
463	03459500	Pigeon River near Hepco, NC	35°38'06"	82°59'24"	NAD 83	Haywood	350	Regulated	Active: July 1927 to September 2012
464	03460000	Cataloochee Creek near Cataloochee, NC	35°40'03"	83°04'25"	NAD 83	Haywood	49.2	Unregulated	Active: October 1933 to September 1952; October 1962 to September 2012
465	03460500	Pigeon River near Mount Sterling, NC	35°43'25"	83°01'42"	NAD 27	Haywood	460	Regulated	Discontinued: 1924–30
466	03460795	Pigeon River near Waterville, NC	35°47'01"	83°06'43"	NAD 83	Haywood	538	Regulated	Active: February 1997 to September 2012
467	03462000	North Toe River at Altapass, NC	35°53'59"	82°01'50"	NAD 27	Mitchell	104	Unregulated	Discontinued: 1938–57
468	03462500	North Toe River above Spruce Pine, NC	35°54'32"	82°03'03"	NAD 27	Mitchell	111	Unregulated	Discontinued: 1934–38
469	03463300	South Toe River near Celo, NC	35°49'53"	82°11'03"	NAD 83	Yancey	43.3	Unregulated	Active: July 1957 to September 2012
470	03463500	South Toe River at Newdale, NC	35°54'22"	82°11'19"	NAD 27	Yancey	60.8	Unregulated	Discontinued: 1934–52
471	03464000	Cane River near Sioux, NC	36°00'52"	82°19'40"	NAD 27	Yancey	157	Unregulated	Discontinued: 1934–71
472	03464500	Nolichucky River at Poplar, NC	36°04'28"	82°20'42"	NAD 27	Mitchell	608	Unregulated	Discontinued: 1925–55
473	03479000	Watauga River near Sugar Grove, NC	36°14'21"	81°49'20"	NAD 83	Watauga	92.1	Unregulated	Active: October 1939 to September 2012
474	03480500	Elk River near Banner Elk, NC	36°10'07"	81°54'33"	NAD 27	Avery	17.8	Unregulated	Discontinued: 1934–40
475	03481000	Elk River near Elk Park, NC	36°11'01"	81°57'45"	NAD 27	Avery	42.0	Unregulated	Discontinued: 1934–55
476	03500000	Little Tennessee River near Prentiss, NC	35°09'00"	83°22'47"	NAD 83	Macon	140	Unregulated	Active: October 1943 to September 2012
477	03500240	Cartoogechaye Creek near Franklin, NC	35°09'32"	83°23'39"	NAD 83	Macon	57.1	Unregulated	Active: June 1961 to September 2012
478	03500500	Cullasaja River at Highlands, NC	35°04'14"	83°13'57"	NAD 27	Macon	14.9	Regulated	Discontinued: 1931–71

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

[USGS, U.S. Geological Survey; °, degrees; ', minutes; ", seconds; NAD 27, North American Datum of 1927; NAD 83, North American Datum of 1983; mi², square mile. Drainage areas for some sites are indeterminate. The periods of record for active sites are provided using months and years, and the periods of record for discontinued are provided in years only. The flow condition indicates whether flows are unregulated, regulated, tidally affected, or some combination of other effects, including diversions upstream from the streamgage. Shaded rows indicate sites for which low-flow characteristics (table 3) and flow-duration statistics (table 5) are published in this report. Rows not shaded are sites for which low-flow characteristics and flow-duration statistics were excluded from publication (figs. 4, 5)]

Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
479	0350056050	Cullasaja River at Secondary Road 1620 near Highlands, NC	35°04'34"	83°14'56"	NAD 83	Macon	18.8	Regulated	Discontinued: 2001–10
480	03501000	Cullasaja River at Cullasaja, NC	35°09'59"	83°19'25"	NAD 27	Macon	86.5	Regulated	Discontinued: 1907–09; 1921–71
481	03501500	Little Tennessee River at Franklin, NC	35°11'10"	83°22'20"	NAD 27	Macon	295	Regulated	Discontinued: 1909–10; 1921–25
482	03502000	Little Tennessee River at Iotla, NC	35°14'03"	83°23'42"	NAD 27	Macon	323	Regulated	Discontinued: 1929–45
483	03502500	Little Tennessee River at Etna, NC	35°16'42"	83°26'55"	NAD 27	Macon	374	Regulated	Discontinued: 1926–29
484	03503000	Little Tennessee River at Needmore, NC	35°20'11"	83°31'37"	NAD 83	Swain	436	Regulated	Active: October 1943 to December 1981; October 1983 to September 2012
485	03503500	Little Tennessee River at Almond, NC	35°22'53"	83°33'13"	NAD 27	Swain	451	Regulated	Discontinued: 1912–17
486	03504000	Nantahala River at Rainbow Springs, NC	35°07'39"	83°37'07"	NAD 83	Macon	51.9	Unregulated	Active: October 1940 to September 2012
487	03505500	Nantahala River at Nantahala, NC	35°17'55"	83°39'21"	NAD 27	Swain	144	Regulated	Discontinued: 1942–81
488	03505550	Nantahala River near Hewitt, NC	35°18'18"	83°39'08"	NAD 83	Swain	145	Regulated	Active: December 2004 to September 2012
489	03506500	Nantahala River at Almond, NC	35°22'32"	83°33'59"	NAD 27	Swain	174	Regulated	Discontinued: 1912–17; 1920–43
490	03507000	Little Tennessee River at Judson, NC	35°24'30"	83°33'26"	NAD 27	Swain	664	Regulated	Discontinued: 1912–44
491	03508000	Tuckasegee River at Tuckasegee, NC	35°16'55"	83°07'37"	NAD 27	Jackson	143	Regulated	Discontinued: 1934–76
492	03508050	Tuckasegee River at Secondary Road 1172 near Cullowhee, NC	35°17'16"	83°08'38"	NAD 83	Jackson	147	Regulated	Active: September 2004 to September 2012
493	03508136	Caney Fork near Cowarts, NC	35°18'41"	83°05'23"	NAD 27	Jackson	32.0	Unregulated	Discontinued: 1975–76
494	03508910	Scott Creek at Willets-Ochre Hill, NC	35°23'51"	83°07'46"	NAD 27	Jackson	22.4	Unregulated	Discontinued: 1993–95
495	03509000	Scott Creek above Sylva, NC	35°23'02"	83°12'51"	NAD 27	Jackson	51.0	Unregulated	Discontinued: 1941–75; 1993–95
496	03509500	Scott Creek at Sylva, NC	35°22'25"	83°13'05"	NAD 27	Jackson	55.0	Unregulated	Discontinued: 1928–41
497	03510500	Tuckasegee River at Dillsboro, NC	35°22'00"	83°15'37"	NAD 27	Jackson	347	Regulated	Discontinued: 1933–81
498	03510577	Tuckasegee River at Barkers Creek, NC	35°23'04"	83°17'30"	NAD 83	Jackson	360	Regulated	Active: July 2004 to September 2012
499	03511000	Oconaluftee River at Cherokee, NC	35°29'04"	83°18'56"	NAD 27	Swain	131	Unregulated	Discontinued: 1921–49
500	03512000	Oconaluftee River at Birdtown, NC	35°27'41"	83°21'13"	NAD 83	Swain	184	Unregulated	Active: July 1945 to September 1946; July 1948 to September 2012
501	03513000	Tuckasegee River at Bryson City, NC	35°25'39"	83°26'49"	NAD 83	Swain	655	Regulated	Active: Oct 1897 to December 1981; October 1983 to January 1995; April 1996 to September 2012
502	03513500	Noland Creek near Bryson City, NC	35°29'05"	83°30'15"	NAD 27	Swain	13.8	Unregulated	Discontinued: 1935–71

Table 1. Summary of active and discontinued U.S. Geological Survey continuous-record streamgaging stations in North Carolina with streamflow data available through the 2012 water year that were considered for computation of low-flow and flow-duration statistics.—Continued

[USGS, U.S. Geological Survey; °, degrees; ', minutes; ", seconds; NAD 27, North American Datum of 1927; NAD 83, North American Datum of 1983; mi², square mile. Drainage areas for some sites are indeterminate. The periods of record for active sites are provided using months and years, and the periods of record for discontinued are provided in years only. The flow condition indicates whether flows are unregulated, regulated, tidally affected, or some combination of other effects, including diversions upstream from the streamgage. Shaded rows indicate sites for which low-flow characteristics (table 3) and flow-duration statistics (table 5) are published in this report. Rows not shaded are sites for which low-flow characteristics and flow-duration statistics were excluded from publication (figs. 4, 5)]

Site index number (figs. 4, 5)	USGS station number	Station name	Latitude	Longitude	Horizontal datum	County	Drainage area, in mi²	Flow condition	Site status and period of record
503	03514000	Hazel Creek at Proctor, NC	35°28'38"	83°42'58"	NAD 27	Swain	44.4	Unregulated	Discontinued: 1942–52
504	03515000	Little Tennessee River at Fontana Dam, NC	35°26'45"	83°48'20"	NAD 27	Graham	1,571	Regulated	Discontinued: 1938–55
505	03516000	Snowbird Creek near Robbinsville, NC	35°18'40"	83°51'35"	NAD 27	Graham	42.0	Unregulated	Discontinued: 1942–52
506	03517000	Cheoah River at Johnson, NC	35°23'02"	83°51'49"	NAD 27	Graham	177	Unregulated	Discontinued: 1912–18; 1920–26
507	0351706800	Cheoah River near Bearpen Gap near Tapoco, NC	35°26'18"	83°55'08"	NAD 83	Graham	206	Regulated	Active: October 1999 to September 2012
508	03517500	Cheoah River at Tapoco, NC	35°26'44"	83°56'17"	NAD 27	Graham	215	Unregulated	Discontinued: 1924–27
509	03546000	Shooting Creek near Hayesville, NC	35°01'29"	83°42'27"	NAD 27	Clay	37.6	Unregulated	Discontinued: 1922–24; 1942–45; 1946–55
510	03547000	Hiwassee River below Chatuge Dam near Hayesville, NC	35°01'45"	83°47'45"	NAD 27	Clay	190	Regulated	Discontinued: 1942–74
511	03548000	Hiwassee River below Hayesville, NC	35°04'47"	83°49'54"	NAD 27	Clay	252	Regulated	Discontinued: 1934–45
512	03548330	Brasstown Creek near Brasstown, NC	35°02'24"	83°57'33"	NAD 83	Clay	83.1	Unregulated	Discontinued: 1944; 1947; 1953–55; 1960–64; 1988; 2000–07
513	03548500	Hiwassee River above Murphy, NC	35°04'53"	84°00'10"	NAD 83	Cherokee	406	Regulated	Discontinued: 1897–2004
514	03550000	Valley River at Tomotla, NC	35°08'20"	83°58'50"	NAD 83	Cherokee	104	Unregulated	Active: June 1904 to December 1909; January 1914 to April 1917; October 1918 to September 2012
515	03554000	Nottely River near Ranger, NC	35°01'37"	84°06'55"	NAD 27	Cherokee	272	Unregulated	Discontinued: 1901–05; 1914–17; 1919–29; 1932–45
516	03555000	Hiwassee River at Hiwassee Dam, NC	35°08'44"	84°11'09"	NAD 27	Cherokee	968	Regulated	Discontinued: 1934–43

[1]Streamgage operated and maintained by USGS North Carolina Water Science Center.

[2]Flow characteristics reflect effects of some minor regulation and (or) diurnal fluctuation during periods of low flow caused by municipalities, power plants, industries, and (or) small impoundments upstream from the station. At some sites, low-flow characteristics may reflect the effects of diversions upstream from the station.

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second. Water year is the annual period used in flow-duration analyses in this report and lasts from October 1 through September 30, designated by the year in which the period ends. Flows are listed for selected non-exceedance percentiles indicating percentage of time flow was equal to or less than indicated discharge]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
8	02053200	1959–2012	0 (7/28/2011)	222 (.99)	15,200 (9/17/1999)	2.9	4.9	15.0	73.0	252.0	612.0	937.0
11	02053500	1965–2012	0.59 (8/29/2010)	60.1 (.95)	7,710 (9/17/1999)	3.0	4.0	7.2	17.0	48.0	126.0	248.0
14	02068500	1950–84; 1986–87; 1993–2012	21 (9/4/1999)	190 (1.47)	6,830 (9/22/1979)	65.0	76.0	104.0	150.0	219.0	318.0	420.0
16	02070500	1930–71; 1994–2012	33 (8/11/2002)	310 (1.28)	11,400 (9/18/1945)	101.0	122.0	164.0	231.0	336.0	492.0	687.0
17	02071000	1950–2012	63 (8/12/2002)	1170 (1.11)	47,800 (6/22/1972)	301.0	378.0	541.0	802.0	1,230.0	1,970.0	2,950.0
19	02074000	1951–2012	46 (8/14/1967)	639 (1.19)	16,700 (6/21/1972)	176.0	222.0	319.0	457.0	753.0	1,170.0	1,540.0
22	02075160	1962–74; 1989	0.21 (10/3/1968)	26.9 (.82)	1,950 (6/21/1972)	1.6	3.0	7.2	14.0	26.0	49.0	87.0
23	02077200	1965–2012	0 (7/9/1966)	44.7 (.97)	7,400 (8/28/1995)	0	0.68	4.0	15.0	37.0	84.0	160.0
25	02077240	1965–75; 1978–82	0 (3/22/1977)	7.51 (1.01)	994 (7/13/1975)	0.46	0.77	1.4	3.0	6.2	12.0	23.0
26	02077250	1967–78	0 (8/24/1968)	55.5 (.98)	3,660 (7/14/1975)	0.91	2.4	6.4	19.0	45.0	100.0	199.0
28	02077303	1974–2012	0.27 (11/2/1997)	154 (.76)	9,280 (7/14/1975)	4.1	8.2	14.0	24.0	103.0	343.0	696.0
30	02077670	1984–2012	0.27 (8/21/1999)	35.8 (.67)	2,260 (9/7/1996)	2.1	2.6	3.1	5.6	40.0	97.0	147.0
31	02080500	1964–93; 1995; 1997–2012	818 (11/15/1970)	7,680 (.92)	36,000 (9/11/1996)	1,750.0	2,040.0	2,550.0	5,710.0	10,200.0	18,700.0	20,100.0
35	0208111310	1988–2012	0 (7/30/1987)	110 (1.02)	14,500 (9/17/1999)	0	0.02	2.2	30.0	109.0	257.0	445.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second. Water year is the annual period used in flow-duration analyses in this report and lasts from October 1 through September 30, designated by the year in which the period ends. Flows are listed for selected non-exceedance percentiles indicating percentage of time flow was equal to or less than indicated discharge]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
38	02081500	1940–2012	0 (9/7/2007)	151 (.9)	10,800 (9/7/1996)	1.2	2.8	11.0	42.0	117.0	314.0	616.0
39	02081747	1974–2012	2.1 (8/14/2002)	410 (.96)	22,400 (9/17/1999)	20.0	31.0	68.0	161.0	372.0	829.0	1,660.0
40	02081800	1957–75	0.85 (9/25/1968)	50.4 (1.05)	2,100 (6/29/1973)	9.3	12.0	18.0	31.0	52.0	86.0	143.0
43	02082500	1951–69	0.02 (9/3/1954)	64.2 (.99)	2,700 (10/6/1964)	0.4	1.1	5.0	26.0	72.0	158.0	252.0
45	02082506	1973–2011	4.1 (10/28/2007)	771 (.99)	25,000 (9/17/1999)	69.0	87.0	138.0	360.0	831.0	1,830.0	3,050.0
46	02082585	1977–93; 1996–2012	3.4 (12/14/2007)	893 (.97)	31,500 (9/17/1999)	64.0	87.0	153.0	436.0	972.0	2,090.0	3,550.0
50	02082770	1964–93; 1997–2012	0.6 (9/25/1968)	159 (.96)	22,000 (9/17/1999)	13.0	21.0	44.0	88.0	164.0	330.0	529.0
51	02082950	1960–2012	0.14 (10/17/2007)	159 (.9)	20,000 (9/17/1999)	6.4	12.0	29.0	74.0	159.0	340.0	580.0
52	02083000	1927–93; 1995; 1997–2012	0.21 (9/22/2010)	478 (.91)	29,200 (9/18/1999)	41.0	62.0	122.0	262.0	503.0	1,050.0	1,740.0
53	02083500	1972–93; 1997–2012	28 (10/17/2007)	2,190 (1.)	70,500 (9/19/1999)	168.0	230.0	439.0	1,150.0	2,540.0	5,520.0	7,970.0
55	02083800	1958–93; 1995; 1997–2001	0.74 (8/25/1993)	79.7 (1.02)	15,000 (9/18/1999)	3.6	5.4	12.0	33.0	86.0	180.0	286.0
59	02084160	1976–86; 1993; 1995; 1997–2012	0 (7/19/1976)	52.9 (1.18)	4,860 (10/1/2010)	0	0.3	3.0	14.0	44.0	114.0	206.0
64	02084500	1951–80	0.5 (9/27/1978)	10.6 (1.11)	400 (11/7/1977)	0.8	0.93	1.4	4.1	12.0	26.0	38.0
65	02084540	1966–93	0 (9/22/1968)	35.2 (1.35)	1,880 (10/1/1971)	0.01	0.28	4.2	16.0	42.0	89.0	130.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second. Water year is the annual period used in flow-duration analyses in this report and lasts from October 1 through September 30, designated by the year in which the period ends. Flows are listed for selected non-exceedance percentiles indicating percentage of time flow was equal to or less than indicated discharge]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
67	02084557	1978–2012	0 (8/21/1983)	24.4 (1.06)	385 (11/7/1977)	0	0.06	0.97	8.8	32.0	69.0	100.0
74	02084909	1988–2004	0 (8/3/1988)	13.5 (.96)	1,080 (9/6/1996)	0.08	0.24	1.3	4.4	11.0	26.0	49.0
75	02085000	1928–71; 1986–2012	0.02 (7/10/1986)	58.7 (.89)	4,600 (9/6/1996)	2.2	3.6	9.5	24.0	53.0	110.0	204.0
76	02085070	1964–2012	0.08 (8/14/1977)	123 (.87)	9,900 (9/6/1996)	3.7	6.3	18.0	49.0	106.0	250.0	462.0
77	0208521324	1962–2011[1]	0 (8/19/1988)	70.4 (.9)	6,500 (9/6/1996)	0.81	2.2	8.0	24.0	59.0	135.0	248.0
79	0208524090	1995–2012	0 (8/3/1999)	6.47 (.81)	1,000 (9/6/1996)	0.05	0.1	0.4	1.8	5.0	11.0	21.0
80	0208524975	1997–2012	0.41 (11/22/1998)	59.4 (.6)	10,300 (9/6/1996)	1.0	1.9	2.8	6.2	27.0	104.0	216.0
81	02085500	1963–2012	0 (10/12/2007)	135 (.91)	21,800 (9/6/1996)	2.3	4.9	14.0	45.0	108.0	264.0	492.0
82	02086000	1926–71; 1990–91	0 (10/1/1925)	4.16 (.88)	389 (5/24/1940)	0.04	0.2	0.72	1.8	3.9	7.9	14.0
84	0208650112	1989–90; 1995–2012	0 (6/22/1988)	0.89 (.78)	225 (9/6/1996)	0	0	0.03	0.19	0.59	1.5	3.0
85	02086624	1983–95; 2007–12	0.99 (6/12/2008)	38.1 (.89)	2,920 (3/4/1993)	2.4	2.9	4.3	7.6	24.0	67.0	154.0
89	0208700780	1983–95	0.03 (9/30/1995)	11.7 (1.16)	740 (6/29/1995)	0.32	0.48	0.93	2.2	6.2	20.0	46.0
91	02087183	1984–2012	26 (3/4/2008)	576 (.75)	7,420 (9/16/1996)	67.0	78.0	126.0	171.0	405.0	1,910.0	2,970.0
95	0208726005	1989–92; 1998–2012	2.1 (12/18/1990)	89.4 (1.18)	3,400 (6/14/2006)	8.0	9.6	17.0	37.0	85.0	198.0	348.0
96	02087275	1998–2012	4.9 (6/13/2002)	120 (1.23)	5,030 (9/16/1999)	12.0	15.0	25.0	51.0	112.0	265.0	458.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
97	02087324	1991–2012	1.9 (10/8/1994)	144 (1.19)	7,730 (9/6/1996)	16.0	20.0	36.0	68.0	138.0	313.0	512.0
98	0208732534	1997–2012	0 (6/24/2002)	0.41 (1.41)	22 (6/14/2006)	0.02	0.02	0.04	0.08	0.22	0.94	2.1
100	0208732885	1985–2012	0 (8/3/1999)	9.36 (1.37)	890 (9/6/1996)	0.81	1.2	1.9	3.2	6.2	18.0	38.0
101	0208735012	1997–2012	0 (10/6/1998)	2.14 (1.83)	194 (6/14/2006)	0.19	0.22	0.33	0.53	1.1	4.2	9.5
102	02087359	1997–2012	0.5 (8/8/2002)	35 (1.17)	3,600 (9/6/1996)	3.1	4.5	8.1	14.0	27.0	68.0	130.0
106	02087500	1984–2012	105 (9/16/1985)	1,010 (.88)	19,700 (9/17/1999)	227.0	253.0	302.0	450.0	1,060.0	2,850.0	3,830.0
108	02087580	2003–12	0 (8/3/2002)	23 (1.1)	1,180 (11/22/2006)	0.43	0.76	1.9	5.9	16.0	48.0	98.0
109	0208758850	1989–92; 1994–96; 1998–2012	0 (7/28/2008)	34.8 (.97)	2,700 (9/6/1996)	0.12	0.51	4.5	14.0	29.0	69.0	121.0
112	02088000	1940–2012	0 (10/11/1954)	90 (1.08)	6,660 (6/15/2006)	5.0	8.6	19.0	46.0	95.0	193.0	314.0
115	02088470	1965–89	0.18 (10/6/1968)	188 (.98)	4,850 (10/6/1964)	8.8	15.0	33.0	92.0	220.0	467.0	694.0
116	02088500	1931–2012	0 (8/12/2002)	244 (1.05)	17,600 (9/17/1999)	9.4	18.0	44.0	112.0	276.0	606.0	912.0
118	02089000	1984–2012	165 (9/18/1985)	2,290 (.95)	38,200 (9/20/1999)	330.0	399.0	618.0	1,240.0	2,900.0	5,770.0	7,750.0
121	0208925200	1988–2012	5.6 (9/25/2010)	70.3 (1.22)	8,000 (9/16/1999)	13.0	16.0	24.0	40.0	72.0	139.0	217.0
122	02089500	1984–2012	200 (9/20/1985)	2,640 (.98)	35,800 (9/23/1999)	426.0	517.0	801.0	1,530.0	3,420.0	6,340.0	8,440.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
123	02090380	1977–94; 1997–2012	0.05 (7/29/1977)	148 (.92)	13,000 (9/17/1999)	6.7	11.0	21.0	57.0	154.0	356.0	577.0
124	02090500	1931–54	0.1 (9/23/1954)	235 (1.)	4,510 (1/31/1937)	2.3	7.0	32.0	109.0	276.0	582.0	892.0
126	02090625	1969–87	0.06 (9/17/1987)	2.23 (1.06)	116 (11/6/1977)	0.34	0.43	0.6	1.0	2.3	4.5	7.0
128	0209096970	1989–98	0.02 (7/4/1998)	3.23 (1.07)	122 (9/6/1996)	0.23	0.32	0.73	1.5	3.0	6.4	11.0
129	02091000	1955–93; 1995–2012	0.3 (9/16/2010)	81.4 (1.01)	7,000 (9/17/1999)	6.4	10.0	20.0	43.0	87.0	168.0	272.0
130	02091500	1977–94; 1997–2012	14 (9/24/2010)	750 (1.02)	31,500 (9/19/1999)	53.0	72.0	157.0	405.0	952.0	1,800.0	2,610.0
131	02091700	1957–87	0.01 (7/25/1977)	114 (1.22)	4,600 (10/6/1964)	1.9	3.6	10.0	38.0	122.0	312.0	497.0
140	02091970	1972–85	0 (6/26/1971)	35.7 (1.32)	1,460 (10/2/1971)	0	0	0.45	10.0	39.0	92.0	147.0
141	02092000	1965–89	4.3 (11/3/1983)	204 (1.12)	4,070 (9/16/1984)	9.9	13.0	28.0	85.0	228.0	503.0	795.0
144	02092500	1952–2012	0.18 (8/27/2008)	189 (1.13)	12,000 (9/17/1999)	4.0	7.2	24.0	78.0	222.0	467.0	678.0
151	02093500	1929–71	0.6 (10/8/1954)	152 (.9)	7,990 (9/25/1947)	22.0	30.0	53.0	94.0	163.0	311.0	451.0
152	02093800	1956–2012	0.42 (8/25/2008)	23.2 (1.13)	1,250 (7/28/1984)	4.8	6.2	9.2	14.0	22.0	37.0	62.0
155	0209399200	2000–12	0.14 (8/25/2002)	18.8 (1.18)	827 (3/20/2003)	1.6	2.5	4.6	8.0	15.0	36.0	66.0
158	02094500	1970–2012	0 (9/9/2007)	92.3 (.7)	5,230 (9/6/1996)	3.9	5.4	9.5	20.0	60.0	234.0	435.0
159	02094659	2000–12	0.07 (6/19/2008)	12 (1.64)	761 (8/27/2008)	0.46	0.69	1.3	2.4	5.6	24.0	55.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
160	02094770	1999; 2000–12	0.1 (8/14/2002)	22.9 (1.49)	1,640 (9/2/2000)	1.1	1.7	3.0	5.2	12.0	46.0	99.0
161	02094775	1999; 2000–12	0 (8/6/2002)	5.11 (1.24)	393 (9/15/2000)	0.17	0.26	0.54	1.2	2.4	9.4	23.0
162	02095000	1999; 2000–12	0.42 (8/4/2002)	52 (1.53)	2,270 (3/20/2003)	2.6	3.7	6.4	12.0	28.0	104.0	227.0
164	02095181	2000–12	0 (8/9/2002)	12.3 (1.29)	561 (8/27/2008)	0.55	0.98	1.8	3.3	6.3	25.0	57.0
166	02095500	1999; 2000–12	8 (6/7/2011)	56.6 (1.53)	1,930 (3/20/2003)	14.0	17.0	21.0	29.0	44.0	103.0	185.0
167	0209553650	1999; 2000–12	28 (8/20/2008)	156 (1.76)	4,680 (11/12/2009)	46.0	50.0	60.0	77.0	118.0	272.0	534.0
171	02096500	1973–2012	44 (8/11/2002)	636 (1.05)	42,000 (9/7/1996)	87.0	106.0	161.0	288.0	585.0	1,370.0	2,310.0
172	02096700	1958–80	0.39 (9/18/1968)	114 (.98)	4,690 (3/14/1975)	6.5	9.6	21.0	48.0	103.0	220.0	411.0
174	02096846	1990–2012	0 (9/17/1990)	5.68 (.75)	516 (3/4/1993)	0	0.02	0.22	1.3	4.4	10.0	20.0
175	02096850	1960–73	0.09 (9/23/1968)	30.9 (.92)	1,720 (2/2/1973)	1.3	2.2	4.8	12.0	26.0	57.0	110.0
178	02096960	1929–2011[2]	0.18 (9/10/1983)	1,200 (.94)	74,500 (9/18/1945)	100.0	146.0	260.0	567.0	1,170.0	2,540.0	4,300.0
183	02097314	1983–2012	0.39 (12/30/1988)	92.5 (1.22)	6,300 (9/6/1996)	11.0	13.0	17.0	33.0	81.0	203.0	342.0
186	02097464	1990–2012	0 (6/16/2002)	6.1 (.73)	737 (9/6/1996)	0.02	0.1	0.5	2.0	5.2	12.0	21.0
188	02097517	1984–2012	0.6 (11/26/1982)	39.2 (.96)	2,600 (9/6/1996)	9.8	11.0	13.0	18.0	32.0	70.0	121.0
190	0209782609	2000–12	0 (5/28/2002)	11.3 (.95)	1,240 (6/14/2006)	0	0.01	0.59	2.7	8.6	23.0	48.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
192	02098500	1924–26; 1929–58	0.6 (9/1/1932)	31.5 (.98)	2,000 (9/24/1947)	4.2	5.3	8.3	14.0	24.0	52.0	105.0
193	02099000	1929–93; 1998–2012	0.23 (8/20/2008)	17.6 (1.19)	1,670 (9/24/1947)	2.9	3.5	4.7	7.1	12.0	27.0	55.0
196	02100500	1924–2012	0.7 (11/29/1941)	347 (.99)	27,800 (9/18/1945)	26.0	37.0	69.0	149.0	304.0	668.0	1,240.0
197	02101000	1940–71	0 (10/23/1941)	144 (1.05)	18,800 (7/20/1956)	5.0	9.7	23.0	58.0	125.0	271.0	484.0
200	0210166029	1989–2012	0 (8/20/1988)	6.74 (.91)	531 (9/6/1996)	0.17	0.28	0.74	2.0	4.7	12.0	27.0
202	02101800	1959–81; 1995–2012	0 (9/2/1962)	13.1 (.85)	1,570 (9/6/1996)	0.01	0.05	0.63	3.1	9.0	23.0	46.0
203	02102000	1931–2012	6 (10/9/1954)	1,390 (.97)	66,400 (9/18/1945)	65.0	95.0	206.0	510.0	1,230.0	3,160.0	6,160.0
205	02102192	1984–2012	0 (8/13/2009)	48.6 (.64)	1,940 (9/6/1996)	0.2	0.45	1.2	7.8	52.0	142.0	231.0
208	02102908	1969–2012	0.94 (8/13/2002)	11.3 (1.48)	278 (9/6/2008)	4.1	5.0	6.7	9.2	13.0	19.0	25.0
209	02103000	1939–50; 2003–12	19 (8/11/2002)	388 (1.11)	9,000 (9/18/1945)	51.0	73.0	137.0	277.0	487.0	832.0	1,080.0
210	02103500	1930–71	31 (8/1/1940)	557 (1.21)	13,000 (9/18/1945)	82.0	109.0	195.0	382.0	712.0	1,220.0	1,590.0
212	02104220	1989–2012	20 (7/22/2002)	110 (1.18)	1,270 (9/7/2008)	43.0	51.0	67.0	92.0	131.0	185.0	233.0
214	02104500	1930–31; 1940–54	2.8 (11/23/1941)	377 (1.29)	6,980 (9/18/1945)	51.0	113.0	223.0	337.0	466.0	640.0	800.0
218	02105900	1957–73; 1994–2010	0 (9/10/1997)	34.7 (1.61)	3,000 (9/16/1999)	0.4	1.3	4.8	14.0	34.0	76.0	122.0
219	02106000	1951–91	0.1 (9/12/1954)	115 (1.24)	2,820 (10/7/1964)	6.9	12.0	28.0	70.0	152.0	266.0	353.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
220	02106500	1952–2012	7 (7/23/2011)	774 (1.14)	27,300 (9/18/1999)	64.0	101.0	227.0	495.0	1,010.0	1,720.0	2,300.0
222	02107000	1952–86	0.1 (10/3/1954)	415 (1.09)	5,900 (10/10/1964)	13.0	25.0	85.0	260.0	581.0	1,010.0	1,310.0
223	02107500	1951–71	0 (10/27/1951)	113 (1.05)	1,010 (8/18/1971)	0.8	3.2	21.0	74.0	167.0	273.0	338.0
225	02107600	1959–75	3.2 (10/4/1968)	63.3 (1.33)	2,100 (10/6/1964)	8.8	12.0	19.0	38.0	77.0	130.0	186.0
233	02108000	1941–2012	2.9 (7/18/2011)	708 (1.18)	29,900 (9/18/1999)	30.0	55.0	145.0	396.0	891.0	1,660.0	2,340.0
234	02108500	1956–81	0.5 (8/9/1955)	94.9 (1.37)	4,000 (11/7/1977)	5.1	7.2	15.0	39.0	108.0	231.0	356.0
235	02108548	1977–92	0 (6/19/1978)	9.71 (1.24)	354 (8/17/1992)	0.11	0.21	0.68	3.2	9.4	23.0	39.0
237	02109500	1940–2012	0.1 (8/30/1954)	704 (1.04)	30,600 (9/21/1999)	10.0	25.0	93.0	342.0	881.0	1,840.0	2,590.0
238	02111000	1940–2012	3.6 (9/12/2002)	48.9 (1.7)	2,130 (8/13/1940)	12.0	16.0	23.0	36.0	56.0	86.0	119.0
239	02111180	1966–2012	5.5 (8/24/2008)	94.6 (1.86)	5,890 (8/17/1994)	21.0	26.0	41.0	66.0	104.0	165.0	234.0
241	02111500	1940–2012	13 (8/14/2002)	138 (1.55)	7,600 (8/14/1940)	45.0	55.0	75.0	108.0	156.0	225.0	301.0
242	02112000	1963–2012	114 (12/8/1970)	807 (1.6)	7,990 (8/10/1970)	256.0	315.0	441.0	616.0	921.0	1,390.0	1,970.0
243	02112120	1965–2012	13 (8/12/2008)	181 (1.41)	7,460 (8/17/1994)	55.0	70.0	96.0	139.0	204.0	300.0	400.0
244	02112250	1965–2012	184 (7/17/2008)	1,310 (1.51)	21,500 (8/10/1970)	447.0	550.0	735.0	1,020.0	1,480.0	2,220.0	3,200.0
245	02112360	1965–2012	14 (8/21/2008)	124 (1.57)	3,260 (8/10/1970)	43.0	52.0	72.0	100.0	140.0	197.0	258.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
246	02112500	1921–32	17 (8/30/1925)	160 (1.38)	5,550 (8/16/1928)	43.0	54.0	85.0	127.0	173.0	242.0	320.0
247	02113000	1932–2010	11 (9/12/2002)	180 (1.41)	12,100 (9/22/1979)	52.0	65.0	92.0	134.0	191.0	286.0	405.0
251	02113850	1965–2012	13 (8/19/1999)	308 (1.33)	13,600 (9/22/1979)	93.0	119.0	164.0	236.0	346.0	500.0	680.0
253	02114450	1961–2012	1.4 (8/21/2002)	44.7 (1.04)	3,350 (6/21/1972)	8.0	11.0	17.0	25.0	40.0	72.0	122.0
254	02115360	1965–2012	221 (8/23/2008)	2,390 (1.41)	48,400 (9/22/1979)	764.0	952.0	1,300.0	1,850.0	2,680.0	4,050.0	5,640.0
255	02115500	1941–71	0.6 (8/16/1956)	22.8 (1.03)	1,650 (8/10/1970)	5.3	6.8	9.7	14.0	21.0	35.0	55.0
261	02115856	1972–82	12 (9/4/1977)	71.3 (1.09)	2,730 (6/21/1972)	18.0	21.0	27.0	37.0	60.0	120.0	228.0
262	02115860	1965–79; 1989–91; 2008–10	35 (10/6/1968)	235 (1.26)	8,130 (6/22/1972)	69.0	80.0	105.0	144.0	211.0	375.0	653.0
264	02116500	1963–96; 1999–2012	236 (8/12/2002)	2,930 (1.29)	66,000 (6/22/1972)	926.0	1,150.0	1,570.0	2,200.0	3,210.0	5,030.0	7,100.0
265	02117030	1969–83	0.09 (7/25/1977)	1.04 (.99)	51 (6/21/1972)	0.19	0.24	0.4	0.62	0.93	1.6	2.5
266	02117500	1941–71	8.8 (8/17/1956)	112 (1.11)	4,740 (9/18/1945)	36.0	42.0	56.0	81.0	117.0	180.0	258.0
267	02118000	1939–2012	3 (8/13/2002)	333 (1.08)	11,800 (3/21/2003)	84.0	107.0	157.0	230.0	348.0	570.0	867.0
268	02118500	1952–2012	5.4 (9/13/2002)	197 (1.27)	10,400 (9/22/1979)	52.0	65.0	93.0	137.0	210.0	324.0	459.0
269	02119000	1929–65	23 (10/12/1941)	639 (1.12)	14,000 (10/18/1964)	171.0	211.0	297.0	440.0	654.0	1,140.0	1,780.0
270	02119400	1957–69	0 (5/10/1956)	6.44 (1.33)	75 (10/17/1964)	2.4	2.7	3.2	4.3	6.3	10.0	15.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
271	02120500	1941–71	10 (9/18/1956)	90.5 (1.04)	2,500 (9/19/1945)	26.0	31.0	42.0	60.0	89.0	148.0	233.0
272	02120780	1980–2012	1 (9/30/2007)	98.6 (.84)	5,280 (8/28/1995)	9.8	16.0	32.0	59.0	96.0	159.0	257.0
274	02121180	1980–90	0.64 (8/19/1988)	9.69 (1.01)	568 (5/28/1990)	1.8	2.3	3.5	5.2	8.6	15.0	25.0
276	02121500	1989–2012	2.7 (9/4/1990)	172 (.99)	8,000 (9/23/2003)	11.0	16.0	32.0	73.0	149.0	319.0	600.0
279	02123500	1939–71	0.5 (10/13/1941)	324 (.95)	20,000 (9/18/1945)	17.0	26.0	53.0	124.0	280.0	635.0	1,270.0
280	02123567	1982–83; 1986–2004	0 (6/22/2002)	3.48 (1.01)	206 (4/21/1992)	0.17	0.31	0.79	1.7	3.1	5.9	10.0
283	0212414900	1996–2012	0.01 (8/13/2002)	38.6 (1.12)	3,710 (8/27/2008)	2.1	3.1	6.1	12.0	25.0	66.0	147.0
296	02124692	2001–12	0 (8/12/2002)	17.3 (.72)	2,000 (11/22/2006)	0.23	0.47	1.3	3.4	8.9	27.0	60.0
298	02125000	1955–2010	0 (9/12/1954)	57.2 (1.03)	5,240 (10/11/1990)	0.05	0.37	2.2	11.0	39.0	113.0	229.0
304	02126000	1930–2012	19 (10/28/1931)	1,310 (.95)	85,600 (9/18/1945)	84.0	104.0	171.0	392.0	1,010.0	2,800.0	5,510.0
306	02127000	1938–71	0 (10/10/1938)	89.5 (.81)	12,100 (9/18/1945)	0.01	0.16	1.3	11.0	59.0	248.0	467.0
308	02128000	1955–2012	0 (8/12/2002)	106 (1.)	9,800 (7/23/1997)	4.1	7.5	19.0	47.0	92.0	185.0	355.0
309	02129000	1928–2012	58 (12/2/1951)	7,770 (1.13)	242,000 (9/18/1945)	715.0	1,440.0	3,280.0	5,450.0	9,200.0	14,000.0	21,300.0
312	02132320	1988–2012	1 (8/14/2002)	89.6 (1.08)	1,150 (10/20/1999)	19.0	26.0	43.0	69.0	112.0	168.0	224.0
313	02133500	1940–2012	0 (8/14/2002)	239 (1.31)	8,530 (9/18/1945)	47.0	67.0	112.0	191.0	314.0	465.0	570.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
314	02133624	1988–2012	28 (8/13/2002)	430 (1.18)	3,070 (3/22/1998)	107.0	137.0	205.0	355.0	564.0	820.0	1,040.0
315	02134170	2001–12	51 (8/13/2002)	649 (.92)	7,030 (9/11/2004)	112.0	162.0	258.0	505.0	877.0	1,280.0	1,640.0
316	02134480	1986–2012	0 (8/31/1993)	200 (.87)	3,300 (9/17/1999)	3.2	10.0	40.0	120.0	268.0	448.0	614.0
317	02134500	1930–2010; 2012	42 (8/14/2002)	1,290 (1.05)	13,400 (9/24/1945)	208.0	283.0	481.0	935.0	1,670.0	2,760.0	3,570.0
318	02137000	1961–75	7.5 (10/20/1963)	42.4 (2.06)	687 (2/13/1966)	13.0	17.0	23.0	33.0	48.0	71.0	93.0
319	02137727	1981–2012	12 (8/23/2008)	229 (1.82)	15,100 (9/8/2004)	59.0	72.0	107.0	167.0	261.0	402.0	555.0
320	02138000	1942–81	29 (9/30/1954)	348 (2.02)	8,060 (8/28/1949)	98.0	123.0	183.0	270.0	393.0	585.0	798.0
321	02138500	1923–2012	8 (9/7/1925)	150 (2.25)	16,600 (9/8/2004)	29.0	38.0	60.0	99.0	160.0	265.0	385.0
324	0213903612	1992–2009	36 (9/12/2002)	847 (1.67)	34,700 (9/9/2004)	194.0	247.0	357.0	608.0	1,100.0	1,700.0	2,290.0
328	02140991	1986–2012	19 (9/13/2002)	349 (1.74)	19,400 (9/8/2004)	87.0	103.0	156.0	250.0	395.0	612.0	824.0
329	02141150	1967–78	7.7 (7/17/1970)	42.5 (1.49)	2,210 (8/10/1970)	13.0	16.0	21.0	28.0	41.0	63.0	99.0
333	02142000	1954–95; 1998–2012	1.5 (9/12/2002)	36.5 (1.29)	2,270 (8/10/1970)	7.8	10.0	16.0	25.0	39.0	64.0	90.0
334	02142500	1936–62	89 (9/15/1957)	2,210 (1.44)	101,000 (8/14/1940)	167.0	252.0	1,030.0	1,970.0	3,000.0	4,150.0	4,790.0
336	0214253830	1985–2006	0.48 (8/10/2002)	7.93 (1.1)	550 (3/20/2003)	1.7	2.3	3.6	5.1	7.4	11.0	17.0
341	0214266000	1998–2012	0.59 (9/25/1999)	25.8 (.98)	2,050 (8/27/2008)	2.7	3.4	5.6	10.0	20.0	47.0	93.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
345	02142900	1966–86; 1988–2012	0.03 (8/14/2002)	18.5 (1.13)	1,600 (10/9/1976)	1.3	1.8	3.0	6.3	13.0	31.0	60.0
347	0214291555	1999; 2000–12	0 (8/23/2008)	31.2 (.99)	2,920 (8/27/2008)	1.5	2.6	4.9	9.8	19.0	51.0	107.0
348	0214295600	1995–2012	0.06 (10/30/2001)	9.92 (.95)	835 (7/23/1997)	0.59	0.85	1.6	3.3	7.1	18.0	39.0
350	02143000	1926–31; 1943–2012	4 (11/15/1942)	129 (1.55)	10,100 (10/2/1929)	29.0	39.0	59.0	90.0	138.0	214.0	310.0
351	02143040	1962–2012	0.87 (8/13/2002)	47 (1.83)	2,450 (9/8/2004)	9.2	12.0	19.0	31.0	50.0	83.0	125.0
352	02143500	1964–2012	0.32 (8/12/2002)	82.6 (1.19)	4,350 (8/10/1970)	13.0	19.0	31.0	52.0	84.0	139.0	213.0
355	02144000	1954–2012	0.05 (8/14/2002)	32.2 (1.01)	2,940 (10/16/1971)	2.9	5.0	9.8	19.0	32.0	53.0	82.0
356	02145000	1943–71; 1984–96; 1998–2012	25 (8/15/2002)	774 (1.23)	21,700 (8/11/1970)	193.0	249.0	359.0	546.0	820.0	1,330.0	2,060.0
359	02146211	1982–94; 1999–2001; 2005–12	0.16 (8/1/1986)	6.99 (1.17)	800 (8/5/2011)	0.47	0.64	1.1	2.1	4.5	13.0	27.0
360	0214627970	2001–12	2.1 (9/13/2011)	15.7 (1.73)	1,110 (8/5/2011)	4.7	5.3	6.4	8.0	11.0	23.0	46.0
362	02146300	1963–2005; 2007–12	3.1 (9/25/1983)	43.9 (1.43)	5,010 (7/23/1997)	7.2	8.8	12.0	18.0	32.0	79.0	160.0
363	02146315	1999; 2000–12	0.01 (8/8/2002)	5.64 (.99)	388 (5/22/2003)	0.21	0.3	0.62	1.3	2.9	10.0	26.0
364	02146348	1999; 2000–12	0.05 (8/28/2001)	9.82 (1.07)	626 (5/22/2003)	0.41	0.67	1.3	2.6	5.9	19.0	43.0
366	02146381	1995–2012	17 (11/11/2007)	92.5 (1.42)	4,790 (7/23/1997)	24.0	26.0	32.0	43.0	70.0	156.0	291.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
367	02146409	1995–2012	1 (8/11/2002)	19.2 (1.63)	1,970 (7/23/1997)	2.4	2.7	3.7	5.4	9.6	38.0	88.0
368	0214642825	1999; 2000–12	0 (8/17/1999)	5.1 (.98)	677 (8/27/2008)	0.05	0.21	0.65	1.6	3.1	8.3	16.0
372	0214645022	1997–2012	0.18 (8/14/2002)	22.5 (1.18)	2,610 (7/23/1997)	1.5	2.1	3.5	6.1	13.0	41.0	92.0
375	02146470	1984–90; 1995–2012	0 (7/14/1986)	3.11 (1.18)	282 (7/23/1997)	0.13	0.22	0.43	0.81	1.6	5.8	14.0
378	02146507	1978–2012	15 (9/20/1981)	82.2 (1.93)	6,160 (7/23/1997)	23.0	26.0	30.0	38.0	56.0	142.0	289.0
379	02146530	1998–2012	20 (6/5/2008)	86.2 (1.75)	6,780 (7/23/1997)	26.0	28.0	32.0	39.0	59.0	161.0	294.0
380	0214655255	2000–12	0 (7/10/2002)	6.61 (.9)	654 (6/7/2003)	0.19	0.38	0.84	1.9	4.0	11.0	23.0
381	02146562	2000–12	0 (8/8/2002)	5.54 (.97)	439 (6/7/2003)	0.13	0.26	0.7	1.4	3.1	11.0	23.0
383	0214657975	2000–12	0 (8/13/2002)	6.45 (.77)	544 (9/28/2004)	0.11	0.23	0.69	1.7	3.5	8.3	20.0
384	02146600	1963–2012	0.01 (8/14/2002)	42.9 (1.11)	4,490 (8/27/1995)	2.4	3.4	6.2	12.0	27.0	74.0	167.0
388	02146750	1975–2012	0.3 (10/13/2007)	124 (1.34)	7,740 (8/27/1995)	5.0	7.8	15.0	30.0	67.0	240.0	612.0
391	0214678175	1999; 2000–12	0.05 (8/20/2001)	7.14 (1.03)	519 (3/20/2003)	0.24	0.35	0.64	1.4	3.8	12.0	28.0
394	02146900	1961–2003	0 (10/6/1968)	72.7 (.95)	6,700 (8/27/1995)	1.1	2.3	6.0	18.0	46.0	131.0	305.0
396	02148500	1928–58	0.8 (9/13/1928)	169 (1.74)	12,000 (8/16/1928)	4.2	6.8	78.0	145.0	226.0	335.0	445.0
397	02149000	1952–2012	8.1 (8/14/2002)	131 (1.66)	4,340 (9/8/2004)	37.0	45.0	69.0	100.0	146.0	220.0	298.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
399	02150000	1941–54	25 (7/6/1940)	387 (2.22)	6,000 (10/7/1949)	55.0	71.0	205.0	324.0	465.0	698.0	900.0
400	02150495	1999; 2000–12	6.6 (9/12/2002)	95.1 (1.1)	3,320 (9/8/2004)	24.0	29.0	42.0	66.0	107.0	162.0	228.0
401	02151000	1926–96	6 (6/9/1940)	313 (1.42)	13,200 (8/16/1928)	93.0	116.0	160.0	229.0	333.0	510.0	740.0
402	02151500	1926–2012	83 (9/13/2002)	1,450 (1.66)	63,900 (8/16/1928)	414.0	525.0	778.0	1,130.0	1,650.0	2,440.0	3,300.0
404	02152100	1960–2012	3.9 (8/15/2002)	86.3 (1.43)	5,870 (9/8/2004)	21.0	28.0	41.0	60.0	92.0	143.0	208.0
407	02152500	1941–71	17 (8/11/1956)	278 (1.39)	19,900 (8/14/1940)	83.0	101.0	133.0	189.0	281.0	452.0	678.0
408	02152610	1969–87	0 (7/18/1986)	2.07 (1.44)	94 (10/16/1971)	0.34	0.46	0.77	1.3	2.0	3.0	5.3
409	03161000	1925–26; 1929–86; 1988–2012	65 (9/9/1925)	424 (2.07)	27,700 (8/14/1940)	141.0	167.0	235.0	342.0	495.0	700.0	920.0
411	03162500	1909–16; 1929–58	53 (9/19/1932)	472 (1.7)	36,000 (8/14/1940)	114.0	144.0	213.0	340.0	541.0	874.0	1,220.0
412	03439000	1908; 1936–2012	33 (8/21/2007)	235 (3.46)	5,630 (10/4/1964)	72.0	85.0	122.0	188.0	279.0	409.0	536.0
413	03439500	1925–55	54 (9/17/1925)	344 (3.34)	5,980 (8/13/1940)	106.0	128.0	183.0	277.0	412.0	590.0	778.0
414	03440000	1945–55; 1988–2004	4.7 (9/11/2002)	35.8 (3.06)	814 (8/17/1994)	10.0	13.0	19.0	29.0	43.0	62.0	80.0
416	03441000	1921–90; 1994–2012	14 (9/28/1954)	128 (3.17)	3,940 (9/8/2004)	34.0	42.0	62.0	99.0	151.0	227.0	303.0
417	03441440	1963–90	8.1 (10/3/1981)	104 (3.88)	2,840 (10/4/1964)	26.0	32.0	51.0	80.0	123.0	185.0	253.0
418	03441500	1943–55	0.3 (10/24/1943)	146 (3.53)	2,310 (3/11/1952)	25.0	45.0	68.0	125.0	172.0	255.0	345.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
419	03442000	1943–55	4.8 (9/29/1954)	28.4 (2.61)	422 (12/7/1950)	9.1	11.0	15.0	23.0	34.0	48.0	63.0
420	03443000	1921–2012	120 (8/12/2008)	978 (3.3)	22,700 (10/5/1964)	282.0	348.0	521.0	794.0	1,150.0	1,700.0	2,300.0
421	03444000	1943–55	5.7 (9/29/1954)	32.8 (2.22)	479 (12/7/1950)	10.0	13.0	18.0	26.0	38.0	54.0	72.0
422	03444500	1927–49; 1966–73	1.9 (9/1/1930)	32.2 (3.22)	900 (8/13/1940)	6.7	8.9	14.0	24.0	37.0	59.0	83.0
425	03446000	1925–26; 1935–2012	18 (9/30/1954)	167 (2.5)	4,470 (8/13/1940)	43.0	54.0	82.0	133.0	203.0	300.0	392.0
427	03447000	1939–55	25 (9/28/1954)	196 (1.8)	4,950 (8/14/1940)	59.0	70.0	96.0	141.0	216.0	328.0	484.0
428	03447500	1943–58	10 (9/17/1953)	73.7 (1.17)	1,850 (4/5/1957)	19.0	24.0	34.0	55.0	85.0	126.0	174.0
429	03447687	2002–12	153 (8/12/2008)	1,490 (2.33)	23,800 (9/9/2004)	370.0	476.0	741.0	1,160.0	1,760.0	2,630.0	3,690.0
432	03448000	1935–86	171 (7/21/1986)	1,690 (2.5)	28,800 (10/5/1964)	538.0	645.0	920.0	1,360.0	1,930.0	2,930.0	4,130.0
433	03448500	1943–77	14 (9/1/1953)	96.1 (1.2)	2,150 (6/16/1949)	30.0	38.0	50.0	77.0	113.0	160.0	206.0
435	0344894205	1990–2012	1.4 (8/22/2008)	40 (2.76)	2,310 (9/8/2004)	4.5	6.5	14.0	28.0	47.0	77.0	105.0
437	03449000	1927–53	0.7 (7/20/1926)	49.4 (2.08)	3,820 (8/13/1940)	3.6	5.0	12.0	31.0	59.0	98.0	138.0
439	03450000	1927–75; 1980–81; 1986–2012	0.3 (9/30/1954)	10.6 (1.94)	528 (8/13/1940)	1.2	1.6	3.4	7.4	13.0	22.0	30.0
441	03451000	1960–2012	4.9 (9/13/2002)	157 (1.21)	10,200 (9/8/2004)	29.0	38.0	59.0	103.0	184.0	309.0	427.0
443	03451500	1896–2012	174 (8/12/2008)	2,070 (2.19)	66,000 (7/16/1916)	612.0	753.0	1,090.0	1,610.0	2,390.0	3,600.0	5,100.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
446	03452000	1943–55	4.7 (9/2/1953)	58 (.73)	2,650 (2/10/1946)	13.0	16.0	23.0	39.0	63.0	107.0	156.0
448	03453000	1935–73; 1995–2012	4.9 (8/25/2008)	149 (.94)	8,010 (3/12/1963)	27.0	34.0	53.0	95.0	171.0	292.0	418.0
449	03453500	1943–2012	195 (8/12/2008)	2,420 (1.82)	32,400 (9/8/2004)	710.0	865.0	1,260.0	1,920.0	2,860.0	4,330.0	5,840.0
450	03454000	1935–71	19 (9/2/1953)	184 (1.46)	6,240 (3/12/1963)	36.0	45.0	68.0	121.0	212.0	356.0	520.0
451	03454500	1935–49	454 (10/14/1941)	2,610 (1.67)	49,900 (8/30/1940)	828.0	961.0	1,330.0	1,930.0	3,020.0	4,710.0	6,640.0
452	03455500	1955–2012	9.6 (8/22/2008)	99.9 (3.62)	4,500 (2/13/1966)	21.0	26.0	41.0	70.0	113.0	182.0	263.0
453	0345577330	1989–2012	15 (9/27/1998)	115 (3.43)	3,630 (9/8/2004)	24.0	30.0	47.0	81.0	133.0	214.0	308.0
454	03456000	1955–80	7.9 (9/7/1954)	167 (3.02)	3,270 (2/13/1966)	40.0	46.0	70.0	123.0	198.0	313.0	418.0
455	03456100	1982–2012	9.2 (9/2/1986)	155 (2.65)	5,720 (9/17/2004)	35.0	43.0	64.0	109.0	182.0	294.0	401.0
457	03456500	1955–2012	11 (8/12/2008)	140 (2.72)	6,200 (9/8/2004)	28.0	35.0	56.0	99.0	163.0	261.0	370.0
458	03456991	1933–83; 1985–2012	27 (9/7/1954)	320 (2.46)	19,800 (9/8/2004)	70.0	84.0	132.0	228.0	376.0	600.0	827.0
460	03457500	1950–72	2 (10/6/1970)	34.9 (2.42)	596 (1/31/1957)	7.5	9.3	15.0	27.0	44.0	66.0	86.0
462	03459000	1931–72	23 (9/17/1953)	129 (1.98)	2,040 (3/26/1965)	36.0	43.0	59.0	96.0	159.0	241.0	317.0
463	03459500	1933–2012	64 (8/23/2008)	667 (1.91)	23,900 (9/8/2004)	168.0	203.0	306.0	498.0	795.0	1,220.0	1,650.0
464	03460000	1935–52; 1963–2012	12 (1/2/1940)	110 (2.24)	2,690 (3/16/1973)	28.0	34.0	49.0	82.0	130.0	202.0	277.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

[USGS, U.S. Geological Survey; ft^3/s, cubic foot per second. Water year is the annual period used in flow-duration analyses in this report and lasts from October 1 through September 30, designated by the year in which the period ends. Flows are listed for selected non-exceedance percentiles indicating percentage of time flow was equal to or less than indicated discharge]

Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
466	03460795	1998–2012	74 (11/19/2000)	973 (1.81)	22,500 (9/8/2004)	150.0	180.0	419.0	752.0	1,290.0	1,890.0	2,450.0
467	03462000	1939–57	28 (9/16/1956)	187 (1.8)	8,350 (8/13/1940)	48.0	60.0	88.0	142.0	224.0	332.0	438.0
469	03463300	1958–2012	8.3 (9/25/2010)	141 (3.26)	9,960 (11/6/1977)	25.0	35.0	59.0	97.0	157.0	255.0	360.0
470	03463500	1935–52	12 (6/21/1941)	176 (2.89)	11,800 (8/13/1940)	35.0	48.0	75.0	121.0	192.0	310.0	448.0
471	03464000	1935–71	27 (9/14/1953)	248 (1.58)	10,200 (8/13/1940)	58.0	72.0	108.0	175.0	290.0	460.0	642.0
472	03464500	1926–55	96 (9/7/1925)	1,010 (1.66)	33,200 (8/13/1940)	250.0	308.0	466.0	761.0	1,200.0	1,820.0	2,520.0
473	03479000	1941–2012	8.1 (9/13/2002)	175 (1.9)	15,900 (8/13/1940)	30.0	39.0	66.0	115.0	195.0	319.0	463.0
475	03481000	1935–55	6.1 (9/8/1954)	81.5 (1.94)	5,000 (8/13/1940)	14.0	18.0	31.0	57.0	95.0	156.0	216.0
476	03500000	1945–2012	37 (8/22/2008)	379 (2.71)	7,830 (9/17/2004)	104.0	124.0	185.0	300.0	470.0	685.0	881.0
477	03500240	1962–2012	14 (8/22/2008)	138 (2.42)	3,340 (9/17/2004)	35.0	44.0	65.0	104.0	167.0	252.0	333.0
478	03500500	1932–67	0.2 (10/13/1947)	59.9 (4.02)	1,790 (8/13/1940)	12.0	17.0	24.0	43.0	71.0	114.0	161.0
480	03501000	1927–67	28 (10/16/1954)	222 (2.57)	7,340 (10/4/1964)	54.0	67.0	99.0	164.0	268.0	416.0	564.0
482	03502000	1930–45	31 (11/26/1933)	736 (2.28)	12,300 (8/30/1940)	227.0	263.0	366.0	556.0	875.0	1,340.0	1,830.0
484	03503000	1945–81; 1984–2012	71 (11/7/1954)	1,030 (2.36)	17,200 (10/5/1964)	285.0	347.0	505.0	794.0	1,240.0	1,870.0	2,470.0
486	03504000	1941–2012	27 (8/22/2008)	202 (3.89)	3,620 (9/17/2004)	54.0	66.0	100.0	162.0	250.0	367.0	473.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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Site index number (figs. 4, 5)	USGS station number	Period of analysis (full water years only)	Minimum daily discharge, in ft^3/s (date)	Mean daily discharge, in ft^3/s (Unit flow, in $[(ft^3/s)/mi^2]$)	Maximum daily discharge in ft^3/s (date)	Duration of daily mean flow, presented as XXth percentiles, percentage of discharges equal or less than indicated value for XX percent of time, in ft^3/s						
						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
488	03505550	1943–81; 2006–11[3]	17 (11/8/1952)	486 (3.35)	5,140 (3/30/1975)	64.0	121.0	296.0	475.0	655.0	779.0	863.0
489	03506500	1913–17; 1921–43	70 (1/2/1940)	509 (2.93)	15,200 (3/4/1917)	135.0	170.0	235.0	390.0	638.0	920.0	1,220.0
490	03507000	1913–44	192 (9/21/1925)	1,590 (2.39)	30,000 (3/4/1917)	468.0	578.0	797.0	1,230.0	1,930.0	2,860.0	3,800.0
492	03508050	1935–76; 2005–11[4]	6.6 (10/7/1956)	407 (2.77)	15,300 (8/30/1940)	81.0	123.0	208.0	348.0	528.0	736.0	876.0
495	03509000	1942–75; 1994–95	22 (9/19/1954)	116 (2.27)	1,590 (3/12/1963)	37.0	43.0	58.0	94.0	142.0	206.0	264.0
496	03509500	1929–41	20 (1/20/1940)	105 (1.91)	1,190 (8/30/1940)	30.0	36.0	54.0	80.0	125.0	197.0	265.0
498	03510577	1934–81; 2005–11[5]	105 (10/16/2008)	811 (2.25)	22,500 (8/30/1940)	259.0	324.0	455.0	670.0	1,010.0	1,410.0	1,730.0
499	03511000	1922–49	56 (9/9/1925)	382 (2.92)	6,490 (1/21/1922)	96.0	118.0	174.0	286.0	466.0	712.0	975.0
500	03512000	1946; 1949–2012	65 (10/16/2007)	513 (2.79)	8,470 (3/12/1963)	138.0	166.0	243.0	394.0	608.0	926.0	1,250.0
501	03513000	1942–81; 1984–94; 1997–2012	217 (10/16/2008)	1,570 (2.4)	23,500 (9/17/2004)	511.0	612.0	836.0	1,270.0	1,930.0	2,780.0	3,500.0
502	03513500	1936–71	4.5 (10/23/1939)	44.9 (3.25)	923 (1/31/1957)	9.4	12.0	19.0	32.0	53.0	86.0	120.0
509	03546000	1923; 1943–45; 1947–55	12 (9/19/1954)	88.3 (2.35)	2,080 (6/16/1949)	19.0	23.0	36.0	67.0	112.0	170.0	226.0
513	03548500	1942–2004	62 (10/19/1952)	896 (2.21)	11,600 (2/16/1990)	168.0	232.0	430.0	784.0	1,180.0	1,620.0	2,020.0
514	03550000	1905–09; 1915–16; 1920–2012	12 (8/27/1925)	252 (2.42)	8,190 (2/16/1995)	46.0	58.0	93.0	175.0	306.0	489.0	689.0

Table 5. Minimum, mean, maximum, and flow-duration statistics of daily mean discharges for indicated periods of record at selected U.S. Geological Survey continuous-record streamgaging stations in North Carolina.—Continued

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						5th percentile	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	95th percentile
515	03554000	1902–05; 1915–16; 1920–29; 1933–41	41 (9/6/1925)	513 (1.89)	14,100 (2/28/1902)	145.0	174.0	237.0	377.0	595.0	920.0	1,260.0

[1] The period of analysis was based on combined daily mean discharges at station 02085220 (site 78, 1962–87 water years) and station 0208521324 (site 77, active streamgage since October 1987).

[2] The period of analysis was based on combined daily mean discharges at station 02096960 (site 178, active streamgage since October 1973) and station 02097000 (site 179, 1928–73 water years).

[3] The period of analysis was based on combined daily mean discharges at station 03505500 (site 487, 1942–81 water years) and station 03505550 (site 488, active streamgage since December 2004).

[4] The period of analysis was based on combined daily mean discharges at station 03508000 (site 491, 1934–76 water years) and station 03508050 (site 492, active streamgage since September 2004).

[5] The period of analysis was based on combined daily mean discharges at station 03510500 (site 497, 1933–81 water years) and station 03510577 (site 498, active streamgage since July 2004).

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