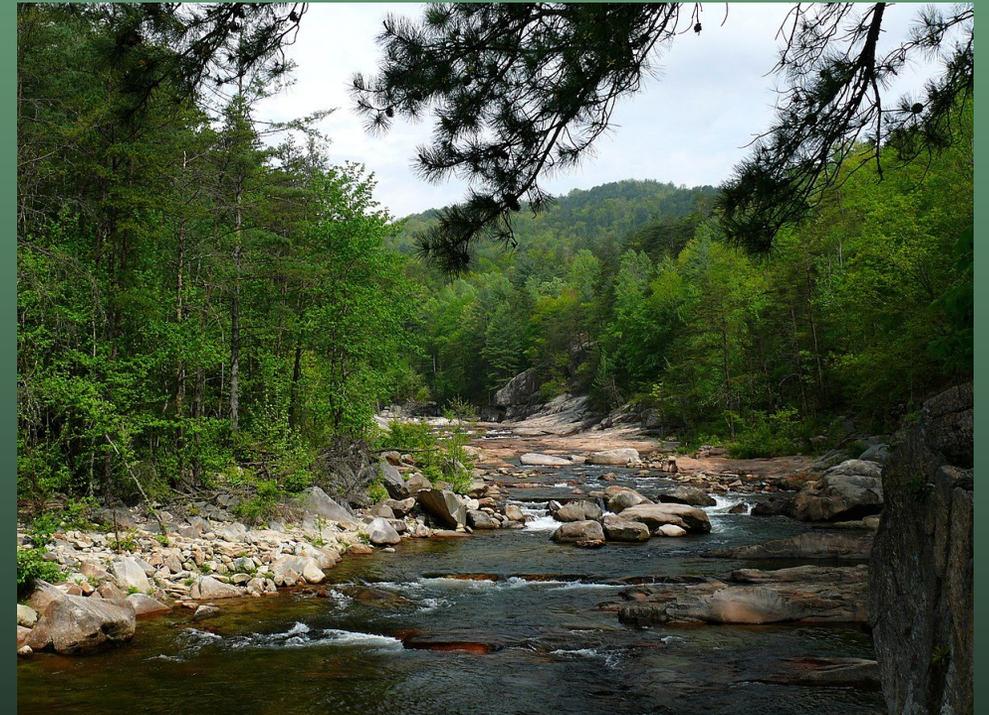


Streamflow conditions across North Carolina

*Assessment of hydrologic conditions
observed since July 2022...*

J. Curtis Weaver
USGS South Atlantic Water Science Center (Raleigh)
<http://nc.water.usgs.gov>



Wilson Creek, western North Carolina
[\(Source URL\)](#)

Presented to:
North Carolina Drought Management Advisory Council (annual meeting)
Steve Troxler Agricultural Sciences Center, Raleigh, NC
September 21, 2023

Very grateful for a dull year in streamflow, but...



Visualizing the components of streamflow

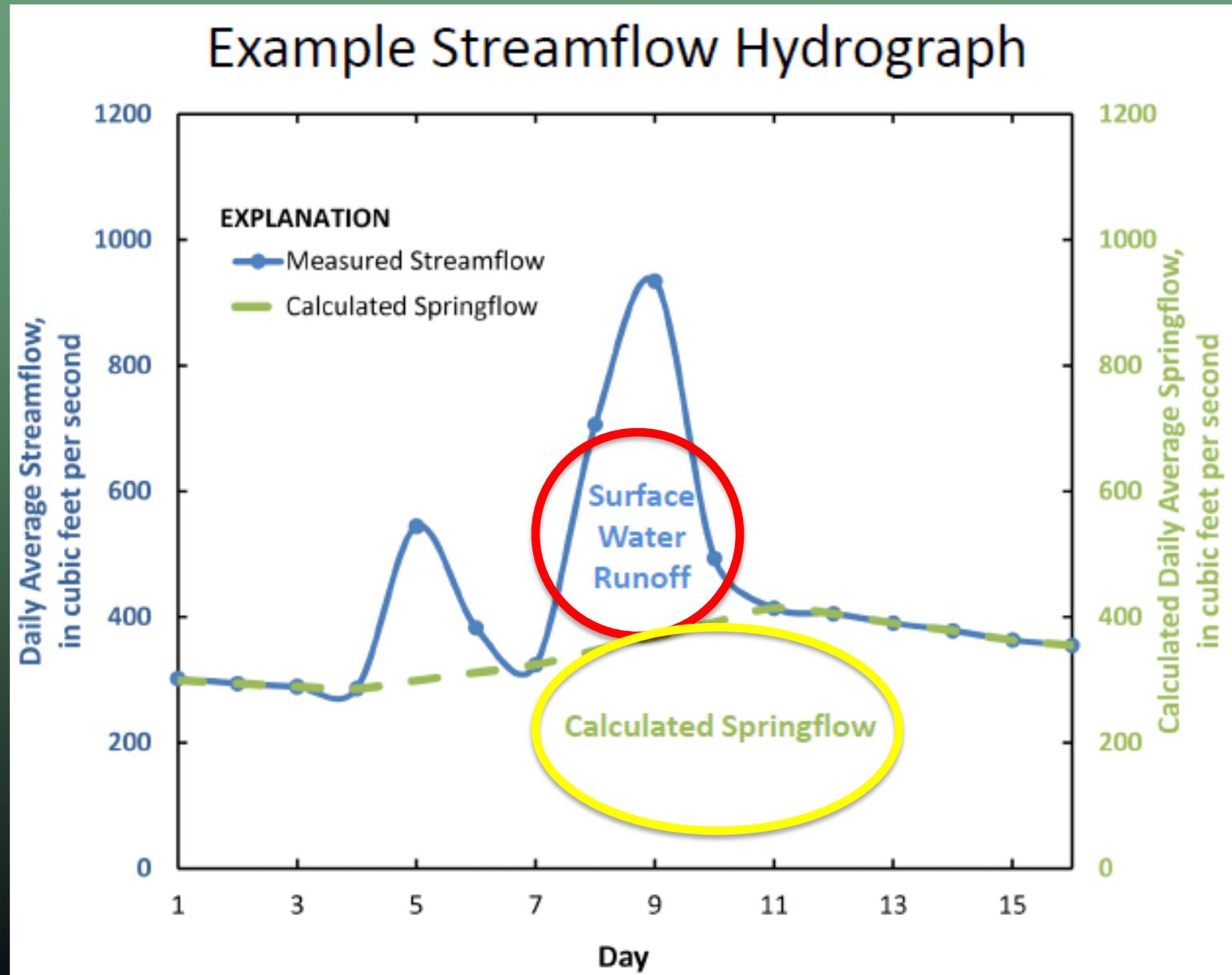


Initial source: Selected stock images associated with Google search using term "North Carolina streams rivers"



*Brooks Creek, above Eddie Perry Road, Chatham County
Source: Flickrriver: Photoset 'Rivers And Streams, North Carolina' by Alan Cressler*

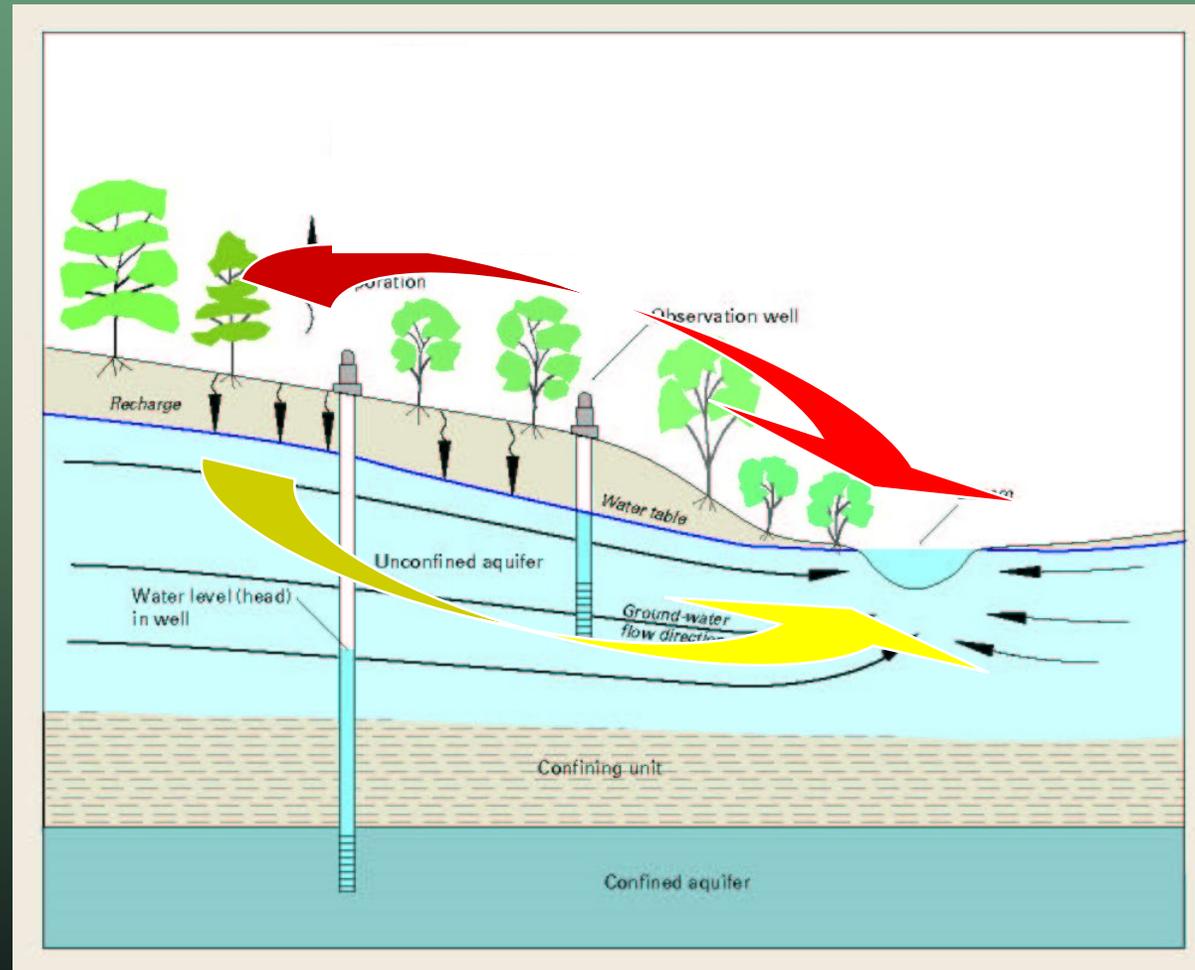
Visualizing the components of streamflow



Visualizing the components of streamflow

Overland
runoff

Base flow
(ground-
water
discharge
to
streams)



Access to USGS real-time records for NC



Ararat River, Mount Airy, Surry County
Source: Selected stock images associated with Google search using term "North Carolina streams rivers"

Access to

Streamflow (

<https://waterdata.usgs.gov/nc/nwis/rt>

Groundwater

<https://waterdata.usgs.gov/nc/nwis/rt>

Water quality

<https://waterdata.usgs.gov/nc/nwis/rt>

Precipitation

<https://waterdata.usgs.gov/nc/nwis/rt>



USGS Current Water Data for North Carolina

<https://waterdata.usgs.gov/nc/nwis/rt>

USGS
science for a changing world

National Water Information System: Web Interface
USGS Water Resources (District Access)

Click to hide News Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS Current Water Data for North Carolina

Click to hide state-specific text

*****PLEASE BOOKMARK THIS PAGE FOR EASE OF ACCESS*****

- USGS Water Resources of the South Atlantic Water Science Center: the place to start for all USGS water information in the SAWSC.
- Real-time data Streamflow || Water-Quality || Groundwater Levels || Precipitation
- Statewide Rainfall Map
- Live Streaming RiverCams
- StreamStats - online tool for basin and flow characteristics
- USGS Flood Event Viewer
- Sign up for custom Water Alerts by text or email

Questions about data? [Click here.](#)

Predefined displays
Introduction go

Daily Streamflow Conditions
Select a site to retrieve data and station information.
Wednesday, April 03, 2019 10:30ET

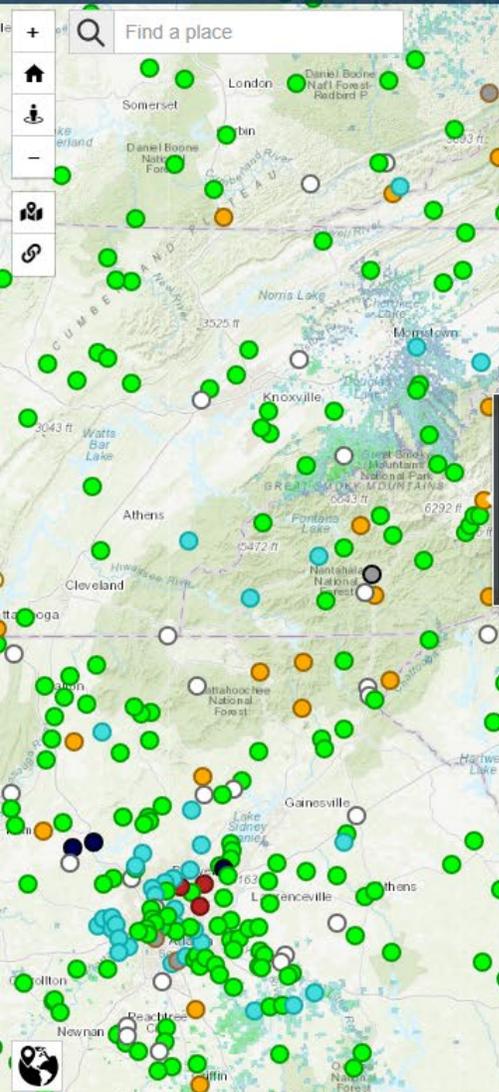
USGS
Explanation

Statewide Streamflow Table

Current data typically are recorded at 15- to 60-minute intervals, stored onsite, and then transmitted to USGS offices every 1 to 4 hours, depending on the data relay technique used. Recording and transmission times may be more frequent during critical events. Data from current sites are relayed to USGS offices via satellite, telephone, and/or radio telemetry and are available for viewing within minutes of arrival.

All real-time data are **provisional and subject to revision.**

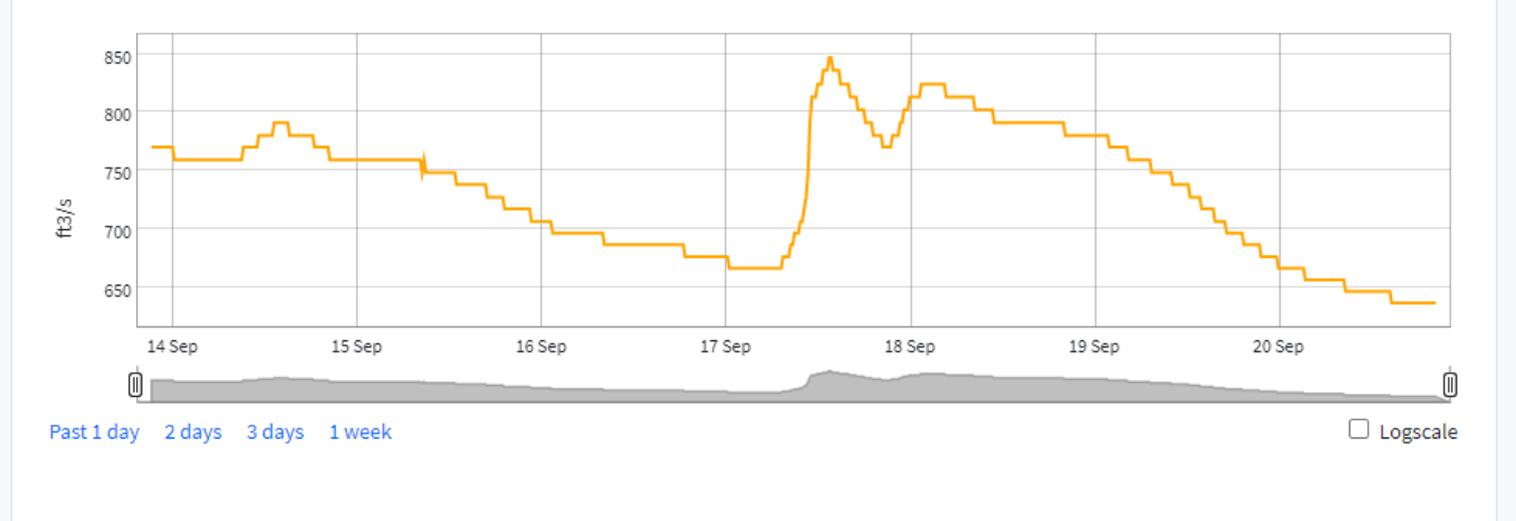
Build Current Conditions Table	Show a custom current conditions summary table for one or more stations.
Build Custom Graphs or Tables	Show custom graphs or tables for a series of



USGS science for a changing world
French Broad River At Asheville, NC
 USGS 03451500 (Surface Water, Stream)

Show map Show plots Site page Data WaterAlert NWS forecast

- Temperature, water, degrees Celsius **20.6 @ 8:30 PM EDT** 35 minutes ago
- Precipitation, total, inches **0.52 @ 8:30 PM EDT** 35 minutes ago
- Discharge, cubic feet per second **636 @ 8:30 PM EDT** 35 minutes ago



- Gage height, feet **1.23 @ 8:30 PM EDT** 35 minutes ago
- Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius **49 @ 8:30 PM EDT** 35 minutes ago
- Dissolved oxygen, water, unfiltered, milligrams per liter **9.3 @ 8:30 PM EDT** 35 minutes ago

Layers

USGS Stations 1

STREAMFLOW 8,782

Status

ON

Station Summary

- SURFACE-WATER LEVELS
- GROUNDWATER LEVELS
- SPRING WATER LEVELS
- WATER QUALITY
- PRECIPITATION
- ATMOSPHERIC

Weather Conditions 1

Hydrology

Base Map

Clear Layers

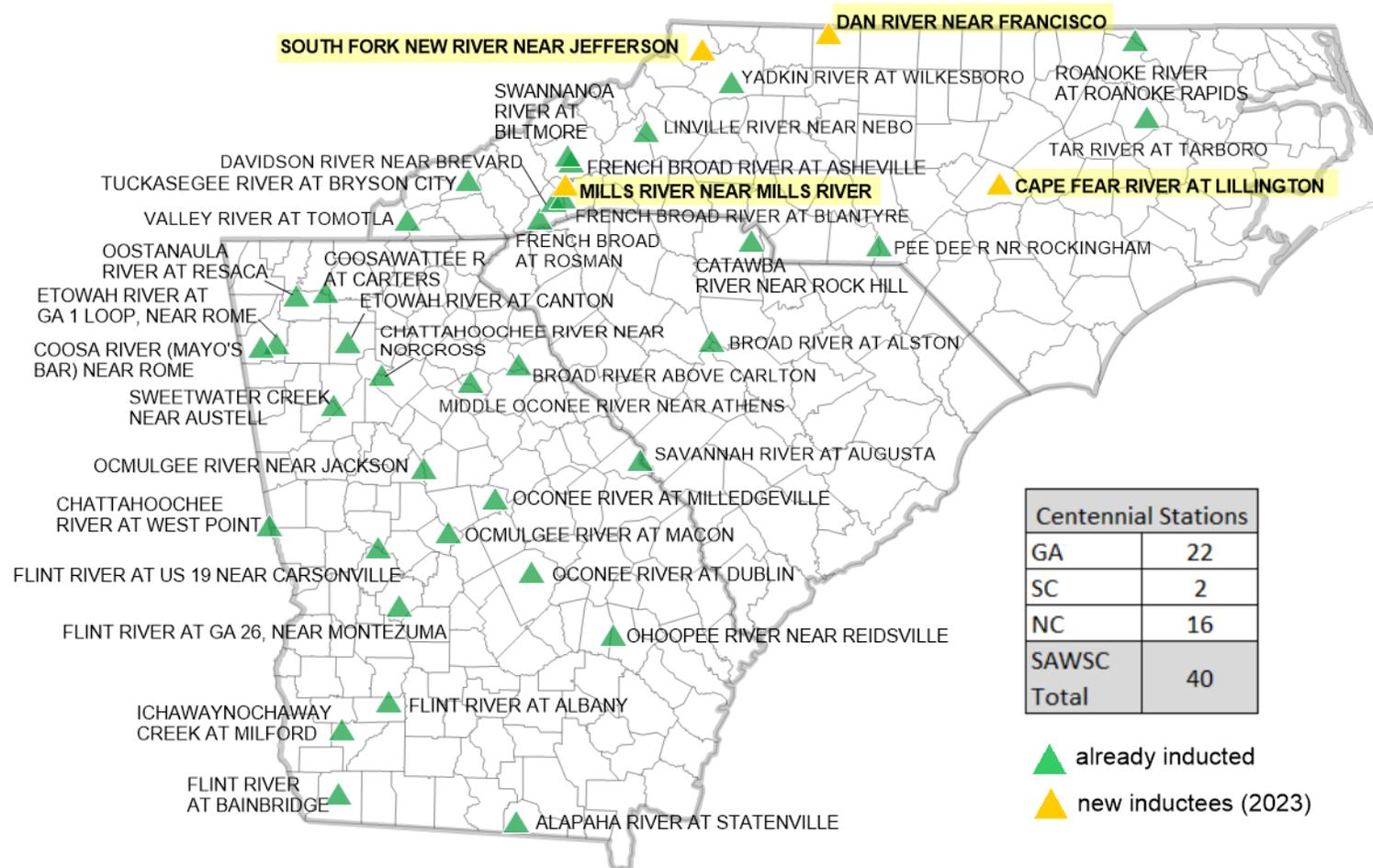
Scale 3,004,511 Lat 35.5300 Lon -82.8513

100 km

50 mi

Centennial Stations in USGS SAWSC

Centennial Stations in SAWSC



Centennial Stations	
GA	22
SC	2
NC	16
SAWSC	
Total	40

- ▲ already inducted
- ▲ new inductees (2023)

Assessing streamflow conditions using percentiles

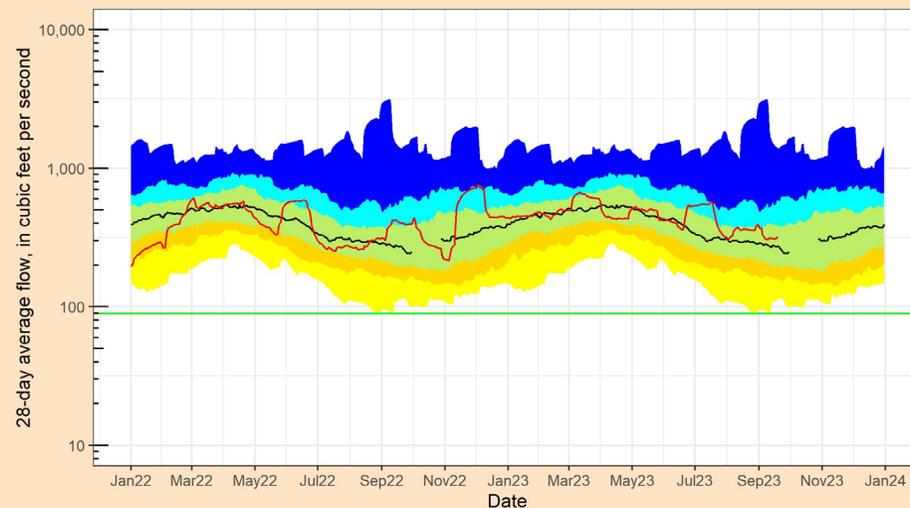
USGS Sta. 03161000

South Fork New River
near Jefferson
in Ashe County

POR since October 1924
DA = 205 sqmi



USGS Sta. 03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC
Drainage Area: 205 sq mi, available POR for daily mean discharge: 1924-10-01 to 2023-09-19
Flow conditions at this site are known or considered to be Unregulated



Explanation: Flow percentiles

- 10th to 25th percentile
- 25th - 75th percentile
- 75th to 90th percentile
- 90th percentile to maximum
- Minimum to 10th percentile

Explanation: Flow statistics

- Median by calendar day (MM/DD)
- Observed 28-day average flow
- POR minimum 28-day average

Period of record minimum 28-day average flow: 89.357 cfs ending on 1925-09-10
Observed data through: September 19, 2023
Data are provisional after 2023-06-15
Flow percentile statistics calculated using POR from 1924-10-01 to 2020-09-30
Plot generated: 2023-09-20 21:15:01 EDT



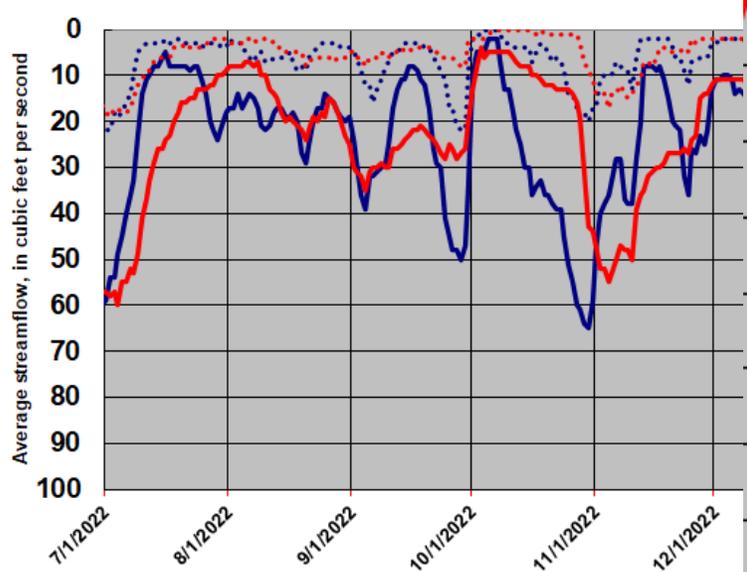
USGS 7-day average streamflows



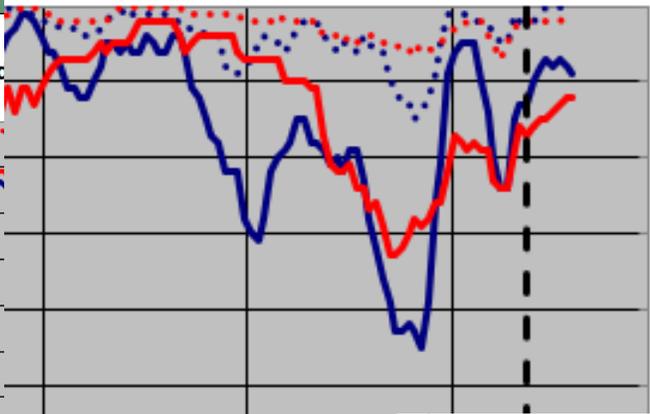
Trent River, vicinity of Pollocksville, Jones County
Initial source: Selected stock images associated with Google search using term "North Carolina Trent River"

Percentage of sites with 7-day and 28-day average streamflows below the 25th percentile (solid) and 10th percentile (dotted)

Percentage of sites in North Carolina with 7-day (blue) and 28-day (red) average streamflows below the 25th percentile (solid) and 10th percentile (dotted)



10th percentile (dotted)



- 7-day less than 25th percentile
- 7-day less than 10th percentile
- 28-day less than 25th percentile
- 28-day less than 10th percentile
- - Previous week (marker)

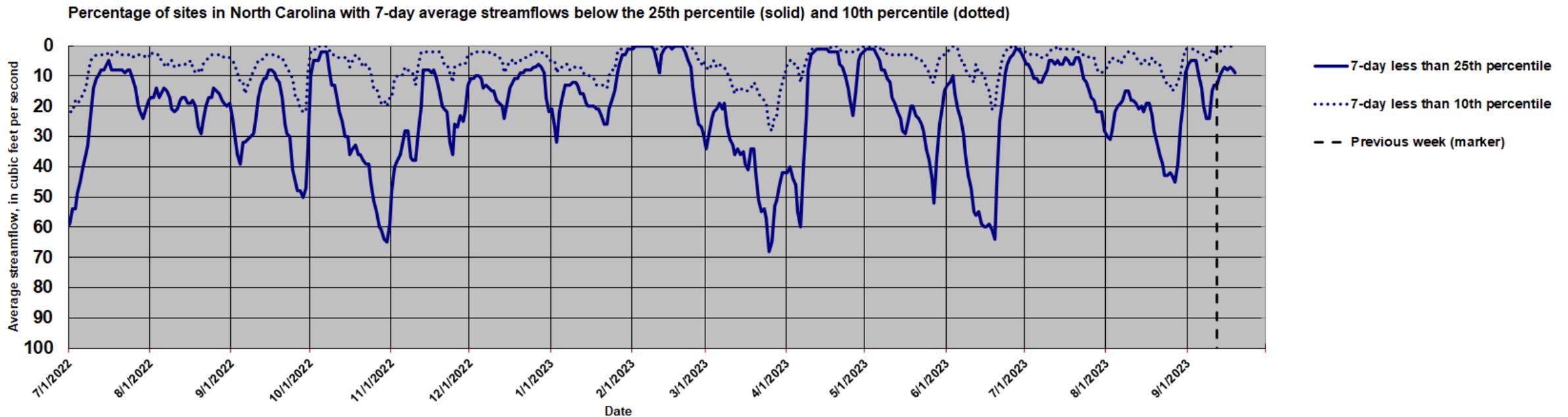
- | 25th percentile
- | 10th percentile
- | in 25th percentile
- | in 10th percentile
- (marker)

	Previous	Current
7-day average streamflow	9/12/2023	9/19/2023
< 25th percentile	13	9
< 10th percentile	2	0
28-day average streamflow		
< 25th percentile	17	12
< 10th percentile	2	1

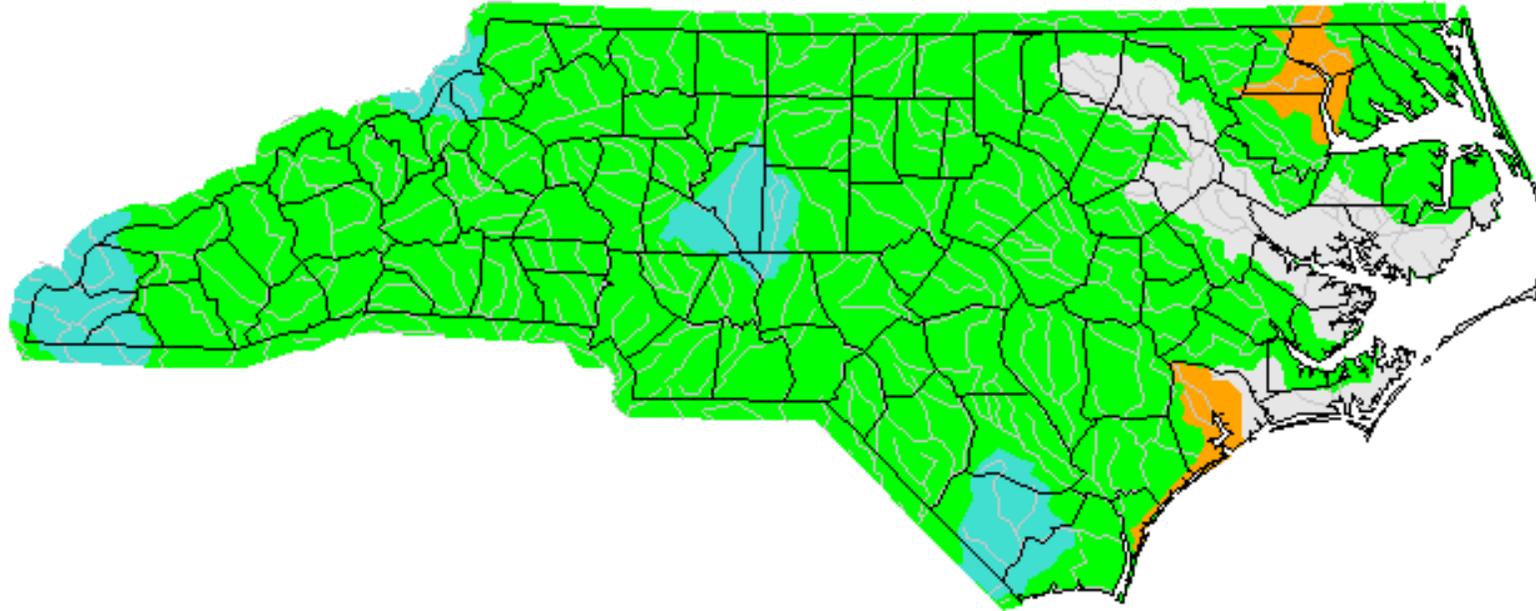


...since July 1, 2022

Percentage of sites with 7-day average streamflows below the 25th percentile (solid) and 10th percentile (dotted)



Tuesday, September 19, 2023



*...as of
Sept 19*

Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	



Available at URL <http://waterwatch.usgs.gov/index.php>

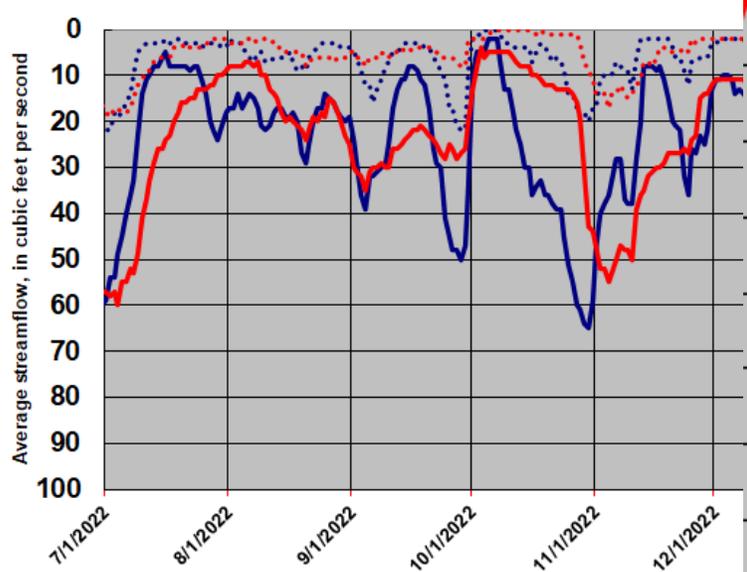
USGS 28-day average streamflows



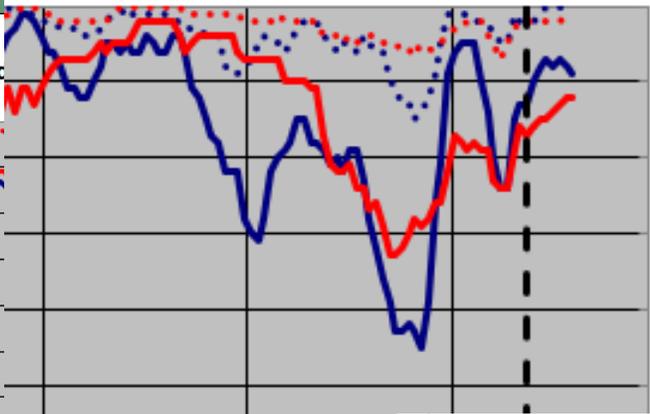
*South Fork of the New River, northwestern North Carolina
Initial source: Selected stock images associated with Google search using term "North Carolina streams rivers"*

Percentage of sites with 7-day and 28-day average streamflows below the 25th percentile (solid) and 10th percentile (dotted)

Percentage of sites in North Carolina with 7-day (blue) and 28-day (red) average streamflows below the 25th percentile (solid) and 10th percentile (dotted)



10th percentile (dotted)



- 7-day less than 25th percentile
- 7-day less than 10th percentile
- 28-day less than 25th percentile
- 28-day less than 10th percentile
- - Previous week (marker)

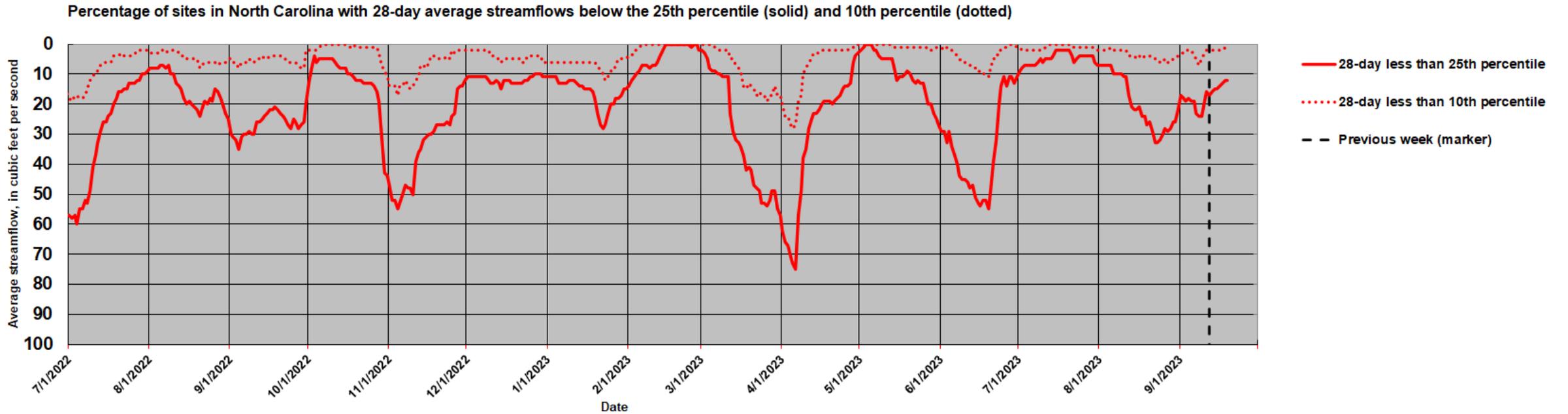
- | 25th percentile
- | 10th percentile
- | in 25th percentile
- | in 10th percentile
- (marker)

	Previous	Current
7-day average streamflow	9/12/2023	9/19/2023
< 25th percentile	13	9
< 10th percentile	2	0
28-day average streamflow		
< 25th percentile	17	12
< 10th percentile	2	1

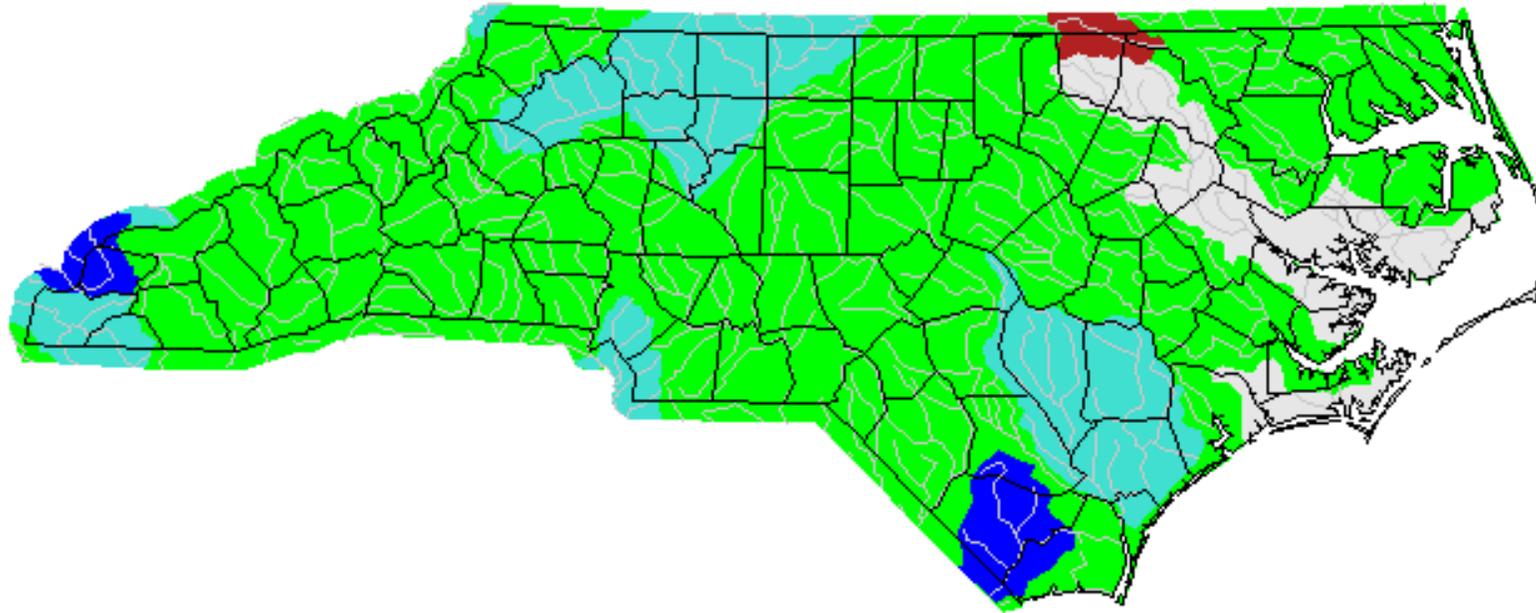


...since July 1, 2022

Percentage of sites with 28-day average streamflows below the 25th percentile (solid) and 10th percentile (dotted)



Tuesday, September 19, 2023



*...as of
Sept 19*

Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	



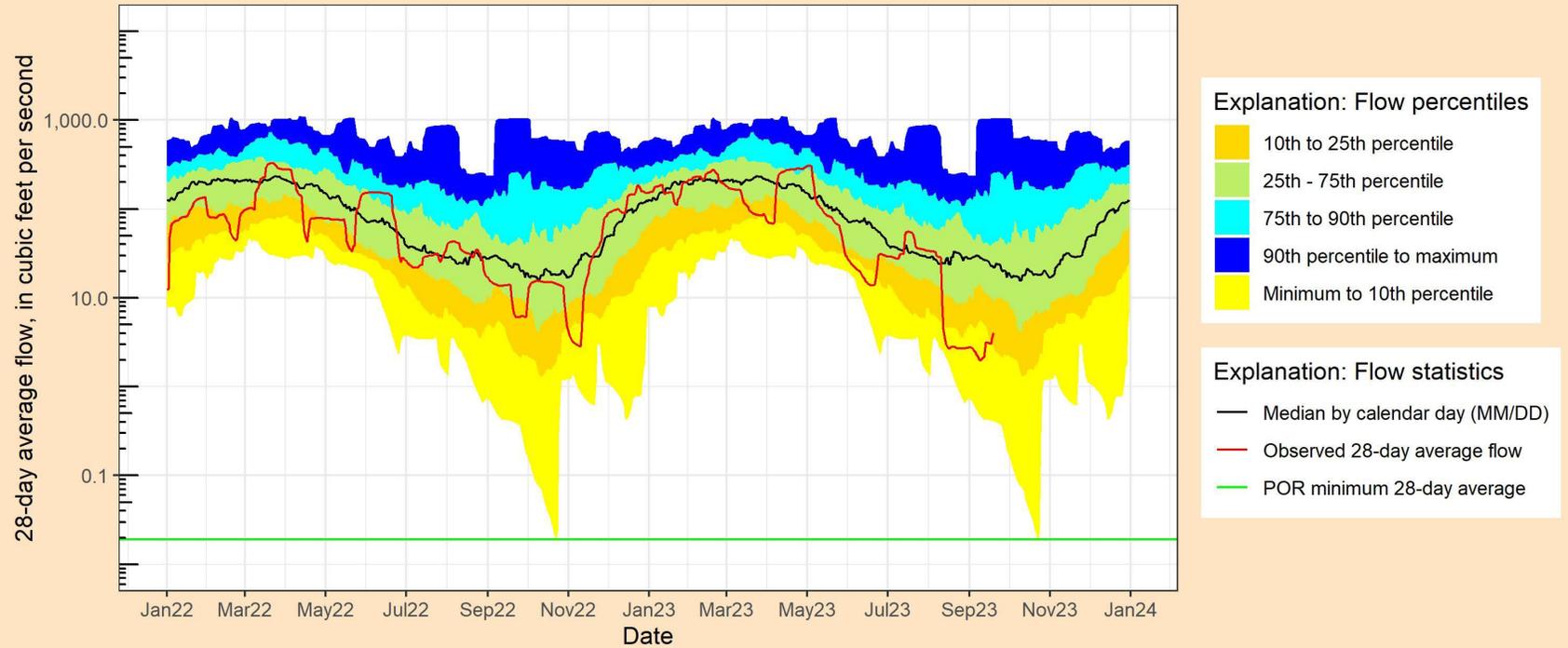
Available at URL <http://waterwatch.usgs.gov/index.php>



USGS Sta. 02085500 FLAT RIVER AT BAHAMA, NC

Drainage Area: 149 sq mi, available POR for daily mean discharge: 1925-08-01 to 2023-09-19

Flow conditions at this site are known or considered to be Unregulated



Period of record minimum 28-day average flow: 0.019 cfs ending on 2007-10-23

Observed data through: September 19, 2023

Data are provisional after 2023-06-12

Flow percentile statistics calculated using POR from 1962-10-01 to 2020-09-30

Plot generated: 2023-09-20 21:11:46 EDT

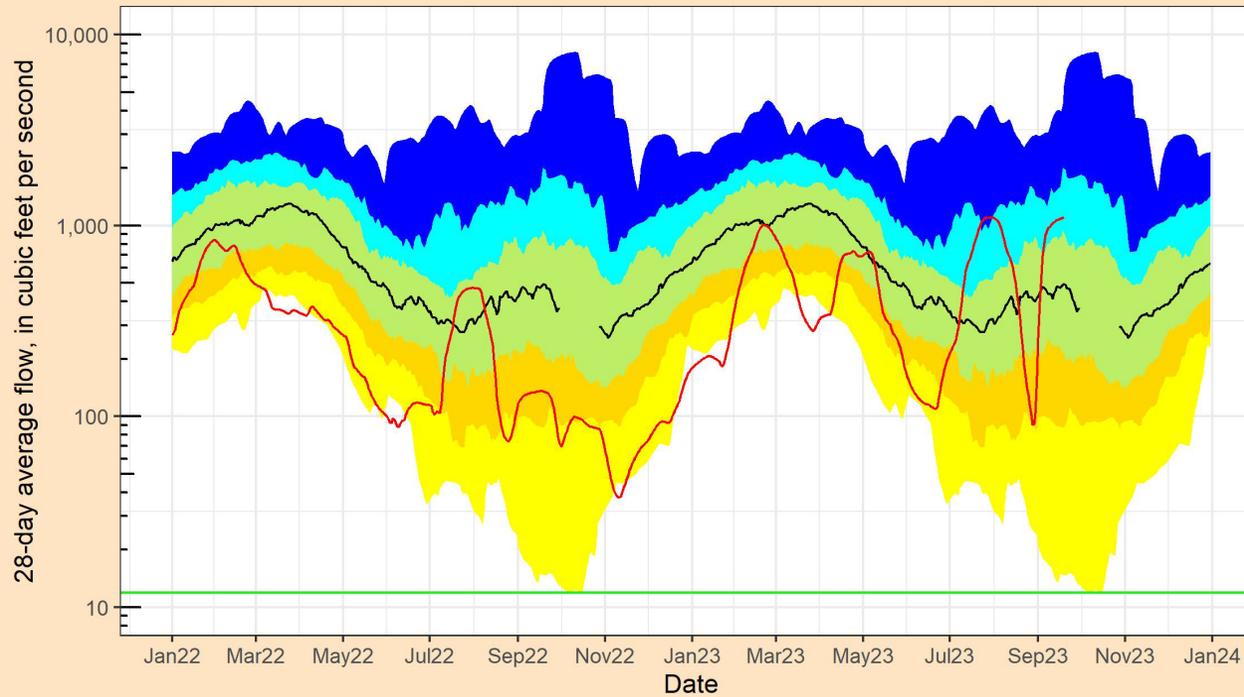




USGS Sta. 02106500 BLACK RIVER NEAR TOMAHAWK, NC

Drainage Area: 676 sq mi, available POR for daily mean discharge: 1951-10-01 to 2023-09-19

Flow conditions at this site are known or considered to be Unregulated



Explanation: Flow percentiles

- 10th to 25th percentile
- 25th - 75th percentile
- 75th to 90th percentile
- 90th percentile to maximum
- Minimum to 10th percentile

Explanation: Flow statistics

- Median by calendar day (MM/DD)
- Observed 28-day average flow
- POR minimum 28-day average

Period of record minimum 28-day average flow: 11.925 cfs ending on 1954-10-15
Observed data through: September 19, 2023
Data are provisional after 2023-06-21
Flow percentile statistics calculated using POR from 1951-10-01 to 2020-09-30
Plot generated: 2023-09-20 21:13:12 EDT

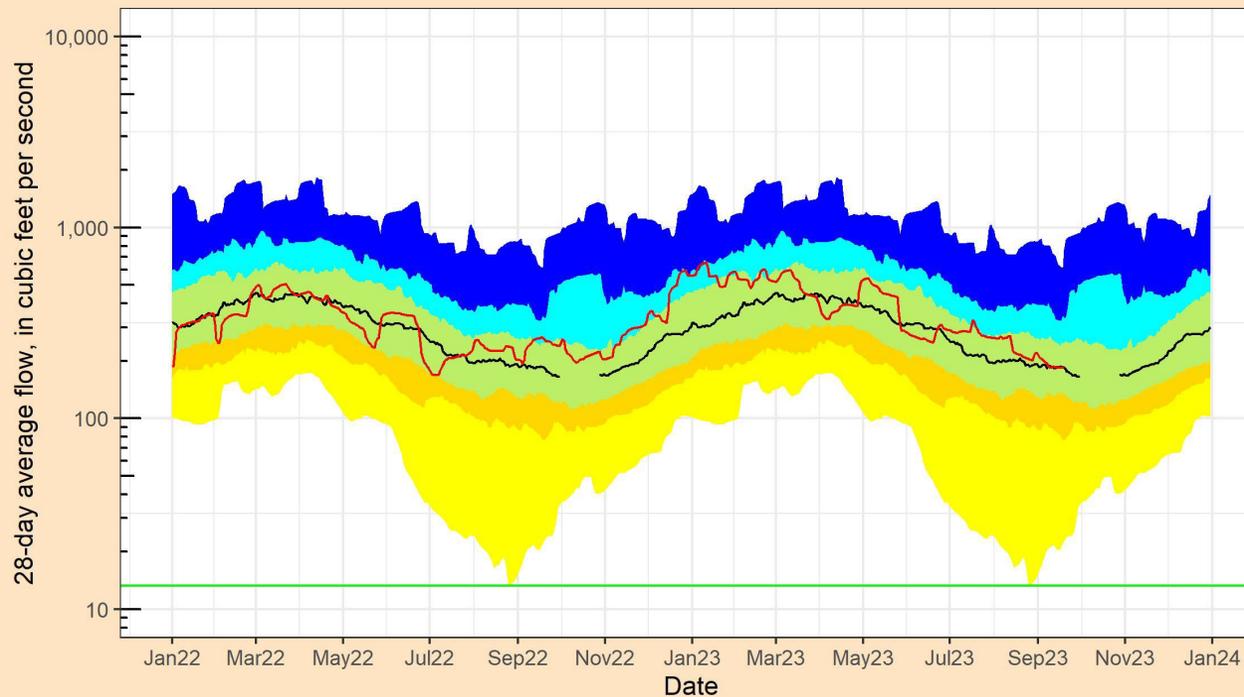




USGS Sta. 02118000 SOUTH YADKIN RIVER NEAR MOCKSVILLE, NC

Drainage Area: 306 sq mi, available POR for daily mean discharge: 1938-10-01 to 2023-09-19

Flow conditions at this site are known or considered to be affected by Diversion(s)



Explanation: Flow percentiles

- 10th to 25th percentile
- 25th - 75th percentile
- 75th to 90th percentile
- 90th percentile to maximum
- Minimum to 10th percentile

Explanation: Flow statistics

- Median by calendar day (MM/DD)
- Observed 28-day average flow
- POR minimum 28-day average

Period of record minimum 28-day average flow: 13.271 cfs ending on 2002-08-26
Observed data through: September 19, 2023
Data are provisional after 2023-06-28
Flow percentile statistics calculated using POR from 1938-10-01 to 2020-09-30
Plot generated: 2023-09-20 21:13:43 EDT

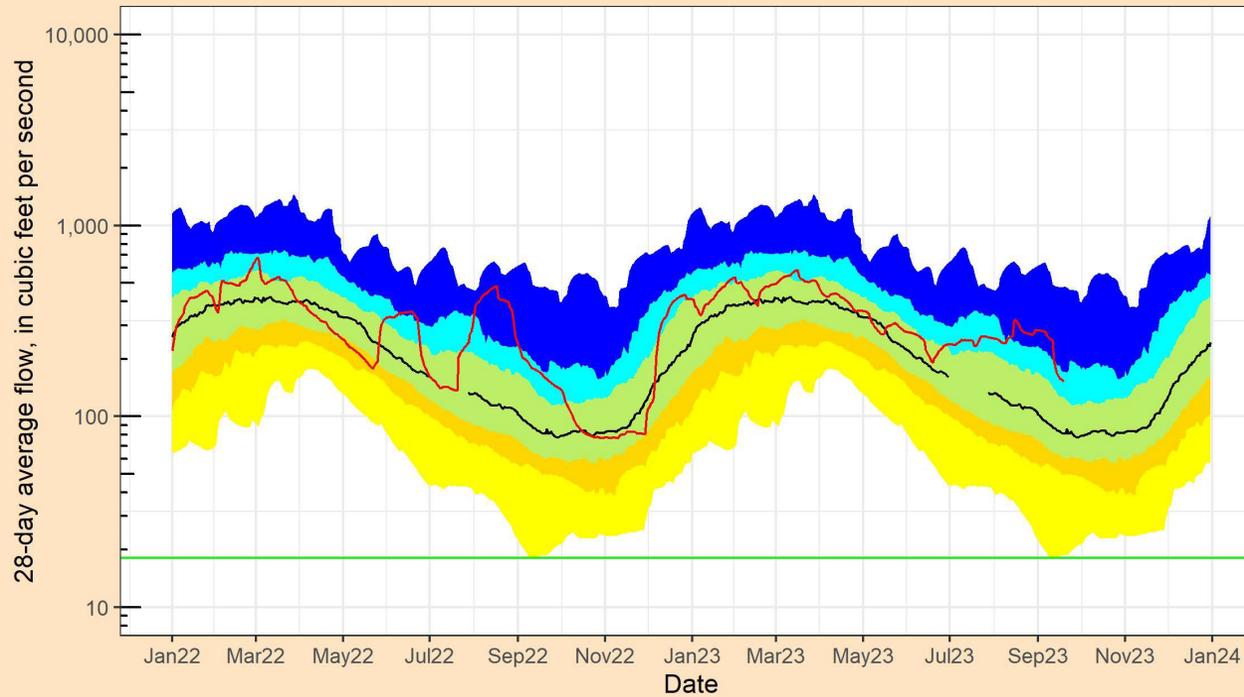




USGS Sta. 03550000 VALLEY RIVER AT TOMOTLA, NC

Drainage Area: 104 sq mi, available POR for daily mean discharge: 1904-07-01 to 2023-09-19

Flow conditions at this site are known or considered to be Unregulated



Explanation: Flow percentiles

- 10th to 25th percentile
- 25th - 75th percentile
- 75th to 90th percentile
- 90th percentile to maximum
- Minimum to 10th percentile

Explanation: Flow statistics

- Median by calendar day (MM/DD)
- Observed 28-day average flow
- POR minimum 28-day average

Period of record minimum 28-day average flow: 18.071 cfs ending on 1925-09-12
Observed data through: September 19, 2023
Data are provisional after 2023-05-15
Flow percentile statistics calculated using POR from 1903-10-01 to 2020-09-30
Plot generated: 2023-09-20 21:16:20 EDT



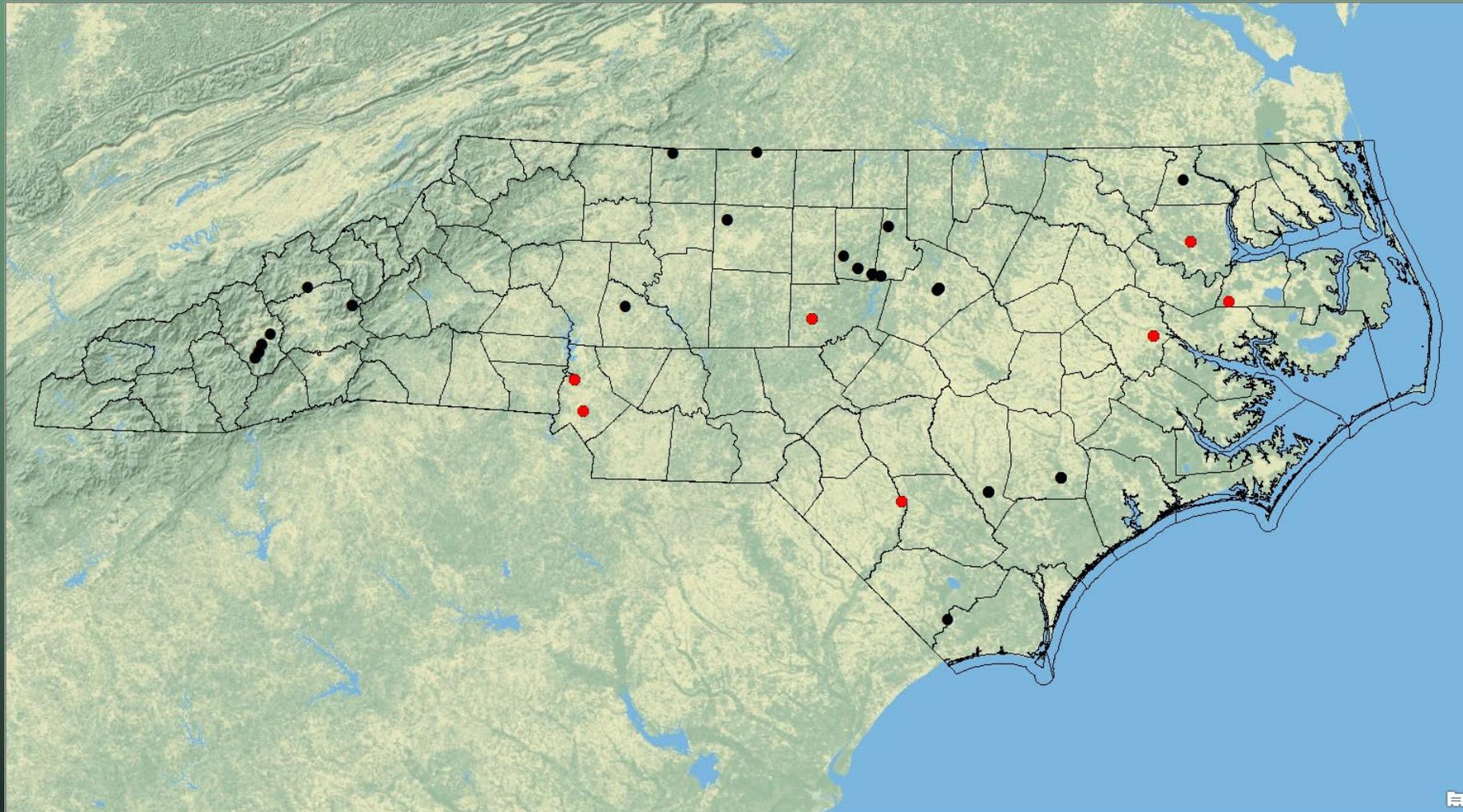
New streamflow records this past year



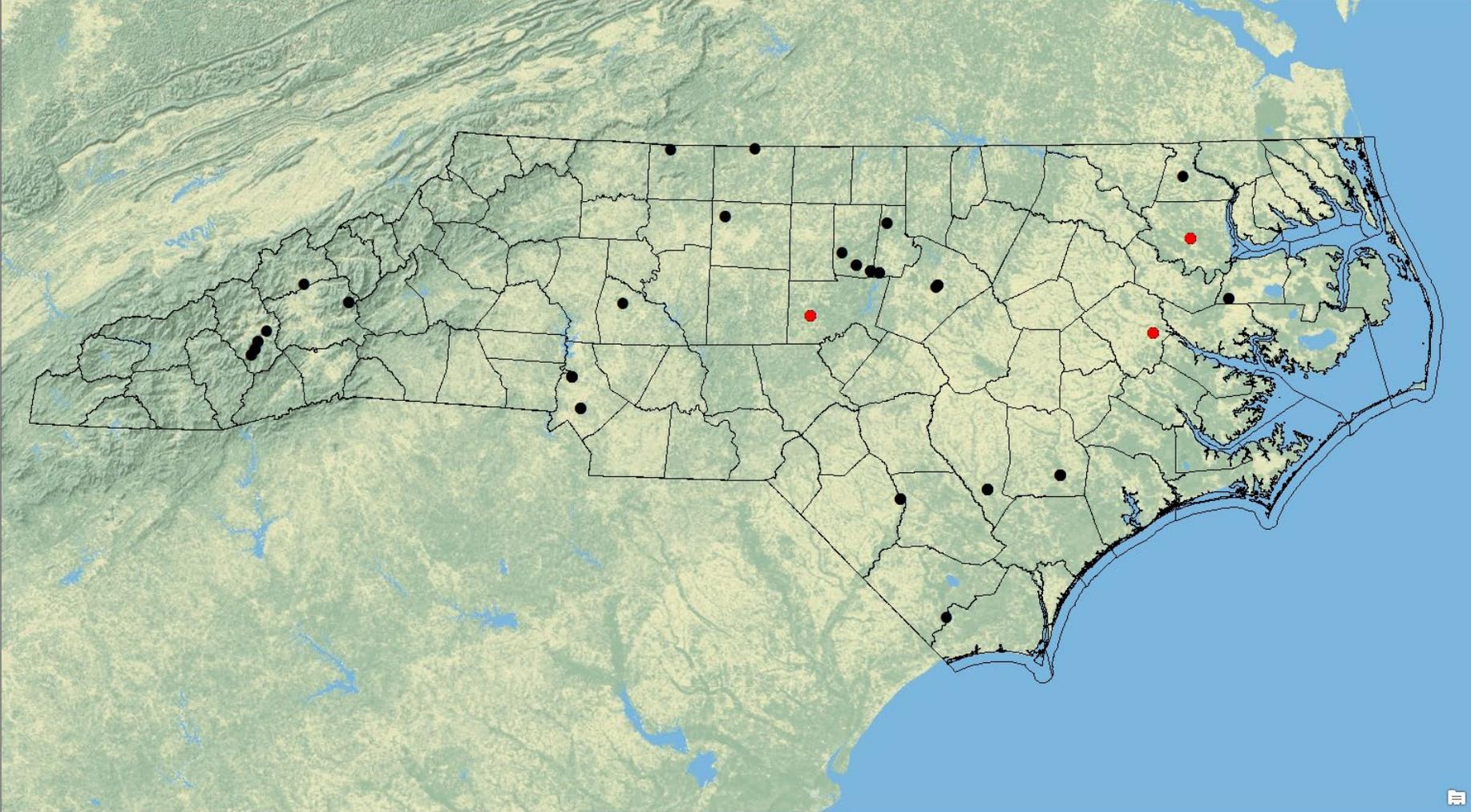
Low water bridge, Uwharrie River, near Eldorado, Montgomery County

Initial source: Selected stock images associated with Google search using term "North Carolina streams rivers"

No new record POR minimum daily discharge, but...



No new record POR minimum 7-day average streamflow, but...



*3 sites during July 2022 through latter September 2023
(all meeting previous records of zero flow)*

In closing...questions...comments...complaints

Contact info:

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Email: jcweaver@usgs.gov



USGS South Atlantic Water Science Center

<https://www.usgs.gov/centers/sa-water>

