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

NORTH CAROLINA
Environmental Quality
Division of Water Resources

Streamflow conditions across North Carolina

Assessment of hydrologic conditions observed since July 2023…

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 11, 2024

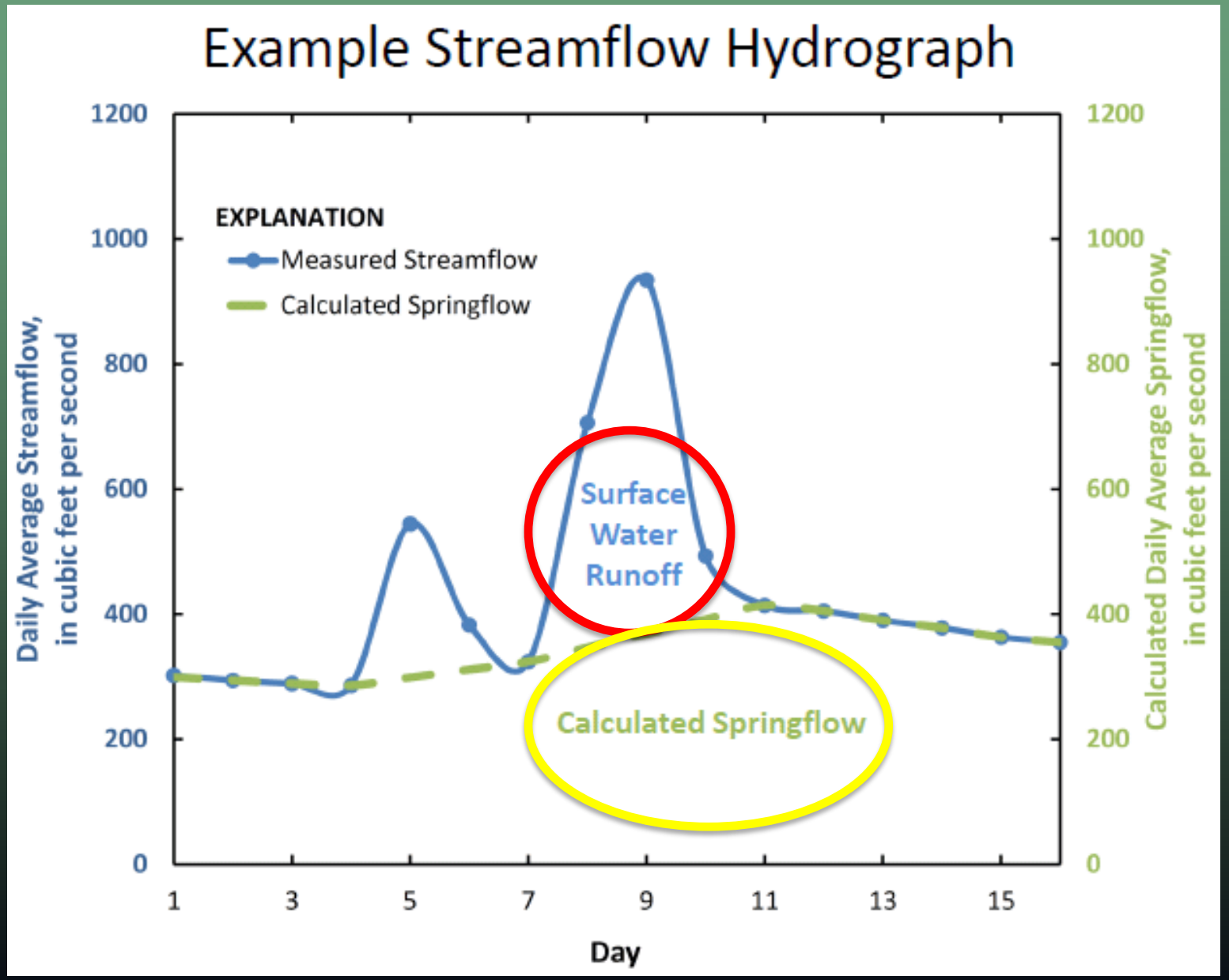
Visualizing the components of streamflow

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

USGS

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

Visualizing the components of streamflow

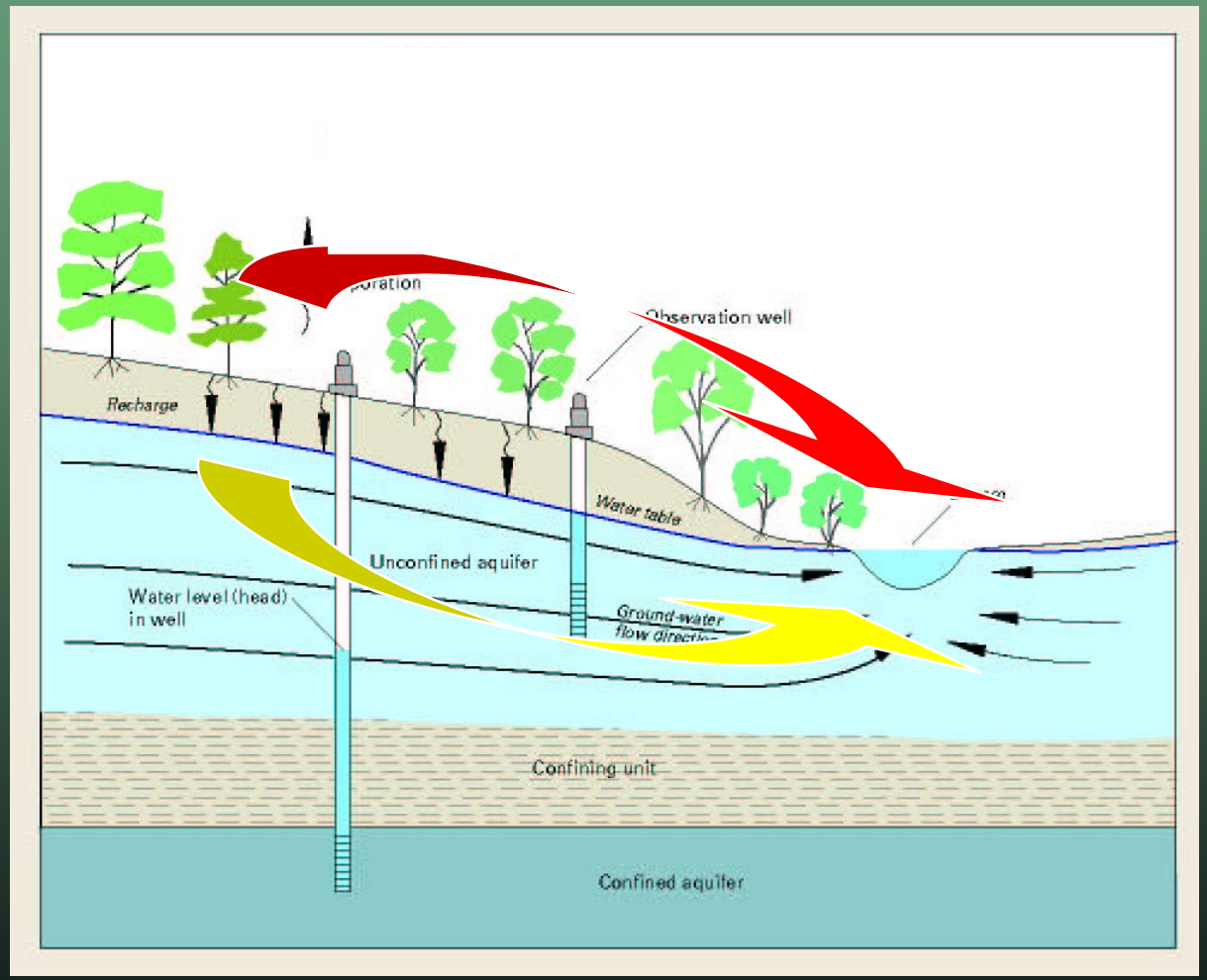


USGS

Visualizing the components of streamflow

Overland runoff

Base flow (ground-water discharge to streams)



Source: Ground-water-level Monitoring and the Importance of Long-Term Water-Level Data USGS Circular 1217 by Taylor and Alley, 2002 (Figure A-2, page 4)

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"

USGS

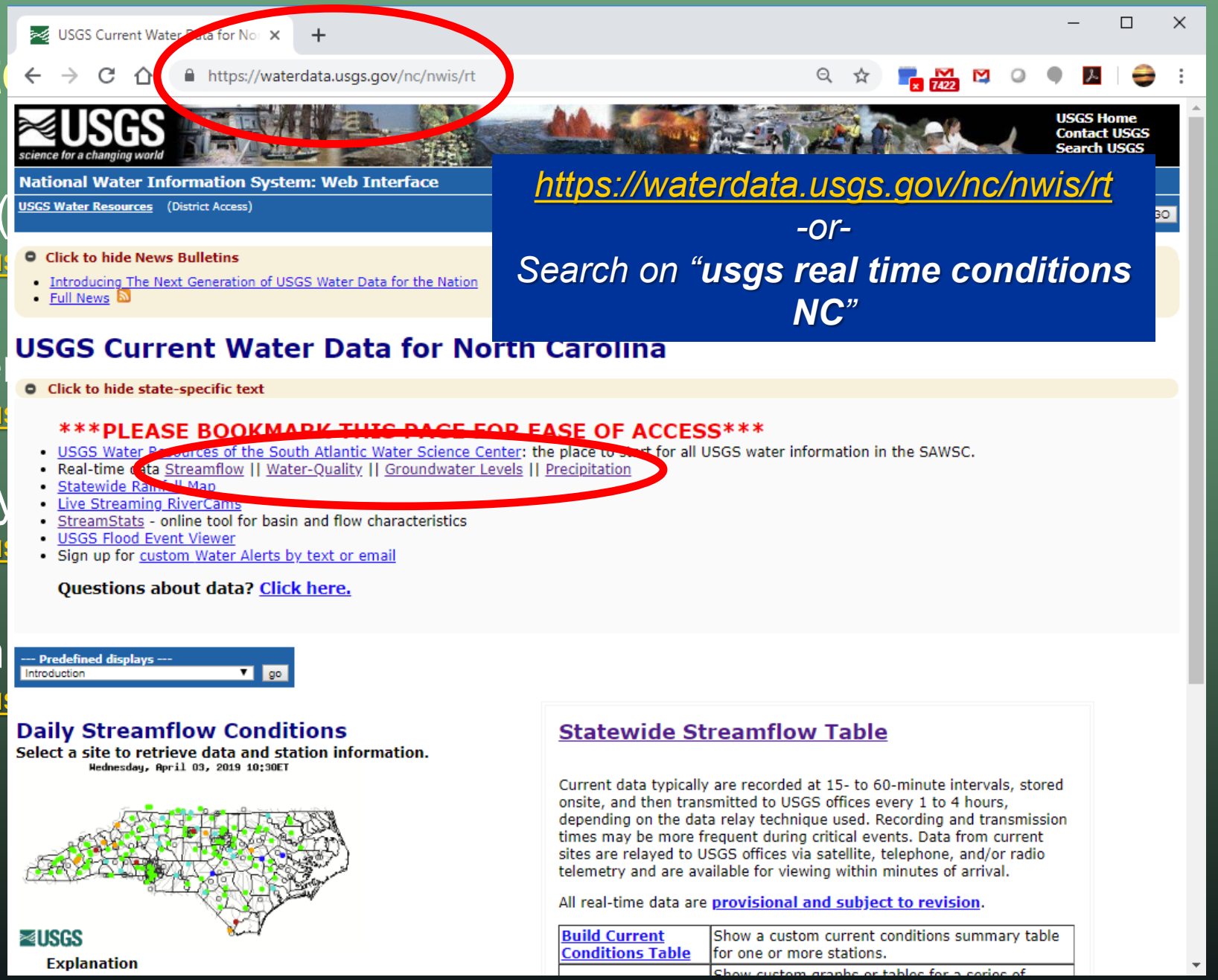
Access t

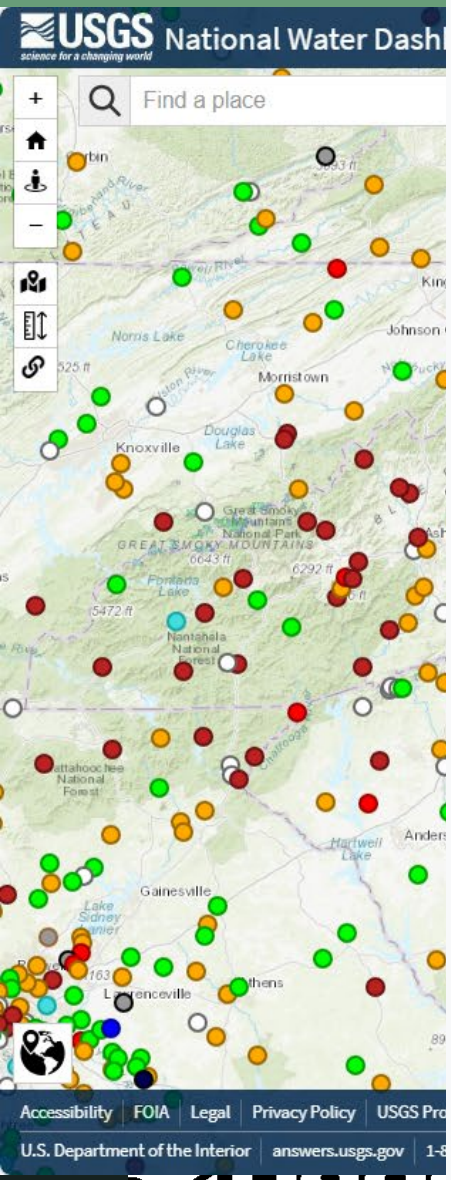
Streamflow (
https://waterdata.u

Groundwate
https://waterdata.u

Water quality
https://waterdata.u

Precipitation
https://waterdata.u





USGS
science for a changing world

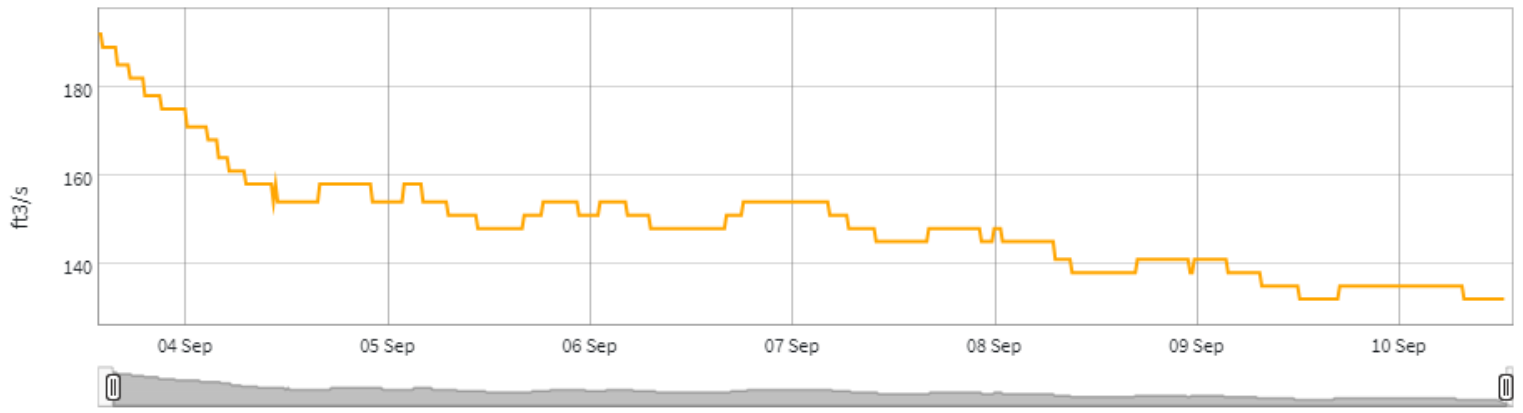
South Fork New River Near Jefferson, NC

USGS 03161000 (Surface Water, Stream)

Show map | Show plots | Site page | Data | WaterAlert | NWS forecast

Discharge, cubic feet per second

132 @ 12:30 PM EDT
67 minutes ago



Past 1 day | 2 days | 3 days | 1 week

Logscale

Gage height, feet

1.76 @ 12:30 PM EDT
67 minutes ago

Stream water level elevation above NAVD 1988, in feet

2,658.56 @ 12:30 PM EDT
67 minutes ago

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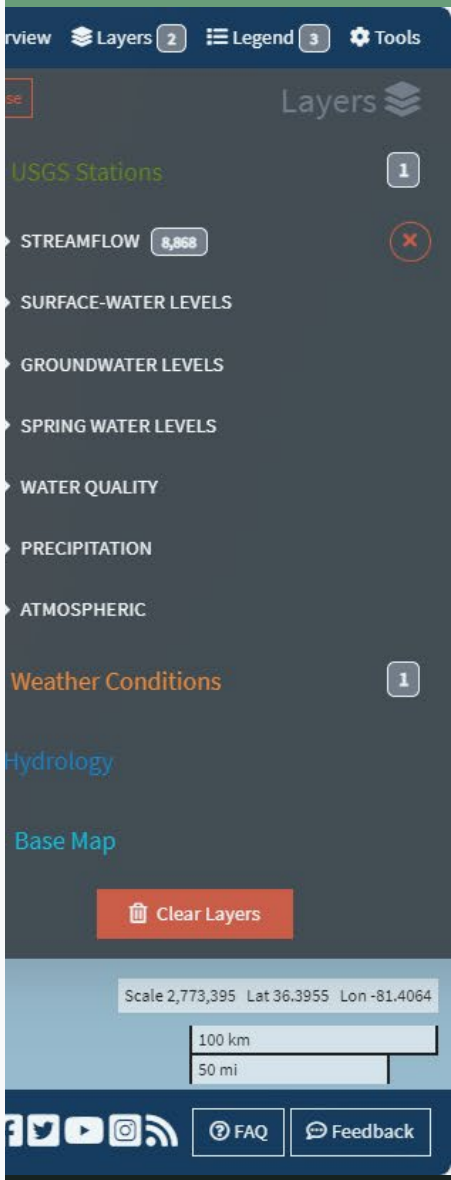


Quick Reminder: How a USGS streamgage works

Figure 1. Examples of gage structures located at U.S. Geol
Survey streamgaging stations.

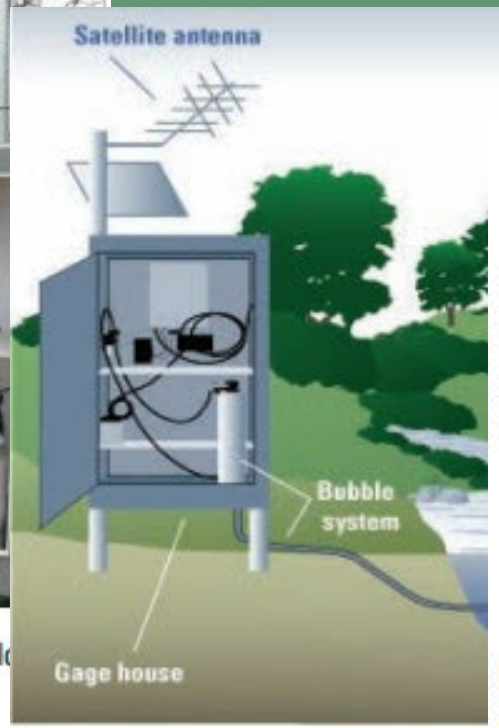


Figure 2. Diagram of a typical streamgage installation with equipment used to measure stream stage (by L.S. Coplin, U.S. Geological Survey).

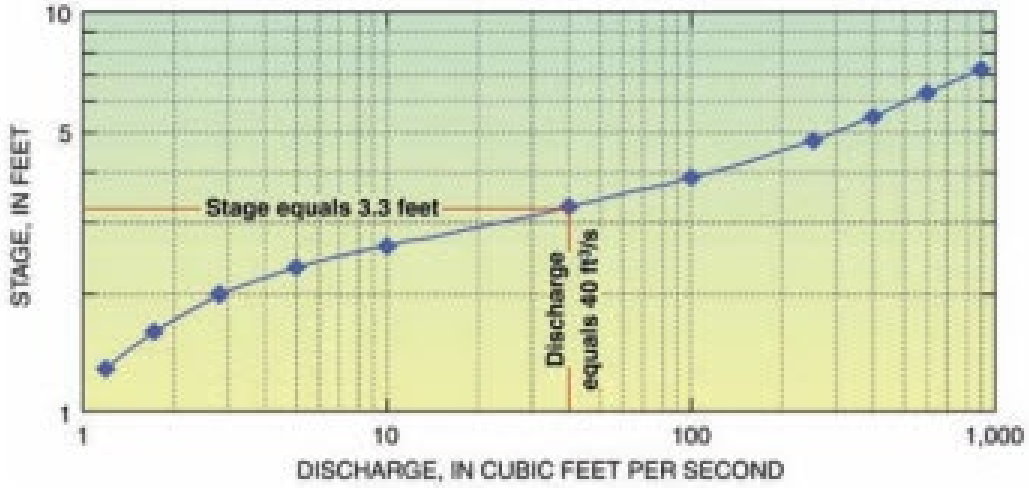


Figure 3. Example of a typical stage-discharge relation or rating curve (Nielsen and Norris, 2007, fig. 2).

USGS

Reference: https://www.usgs.gov/centers/utah-water-science-center/science/what-streamgage#overview



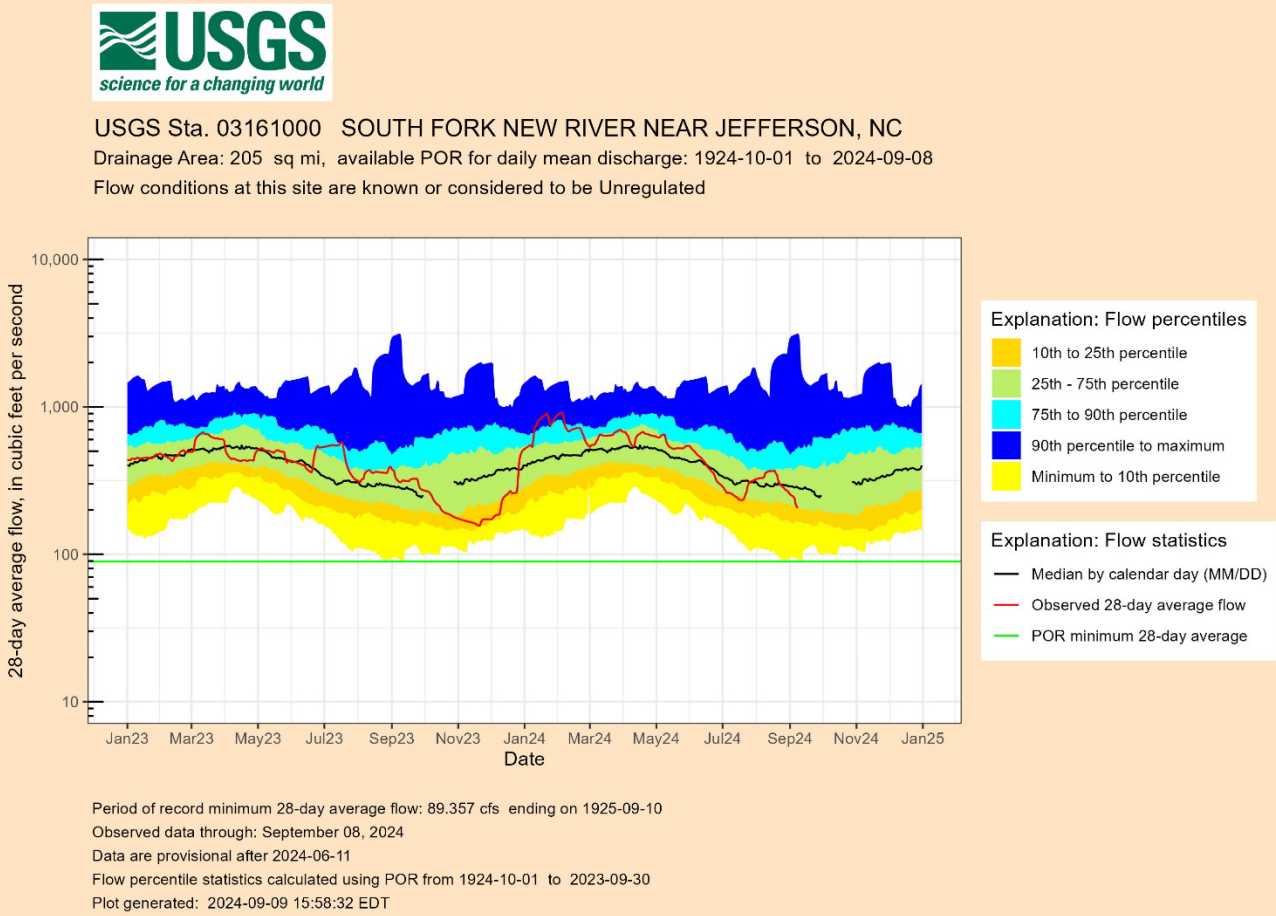

USGS
DANGER

Assessing str…es

USGS Sta. 03161000

South Fork New River
near Jefferson
in Ashe County

POR since October 1924
DA = 205 sqmi

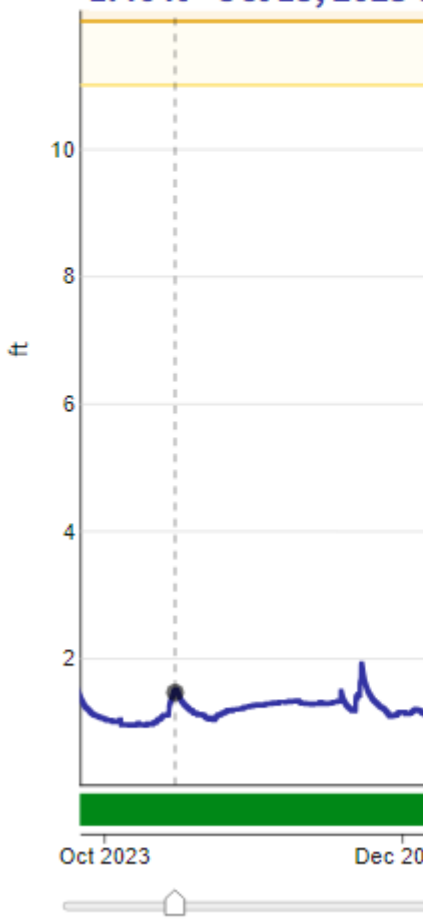


USGS

7 days 30 days 1 y

Flat Ri

1.46 ft - Oct 15, 2023 (



Gage height (ft)

IMPORTANT Legacy real-time page

7 days 30 days 1 year

Scale Linear Log

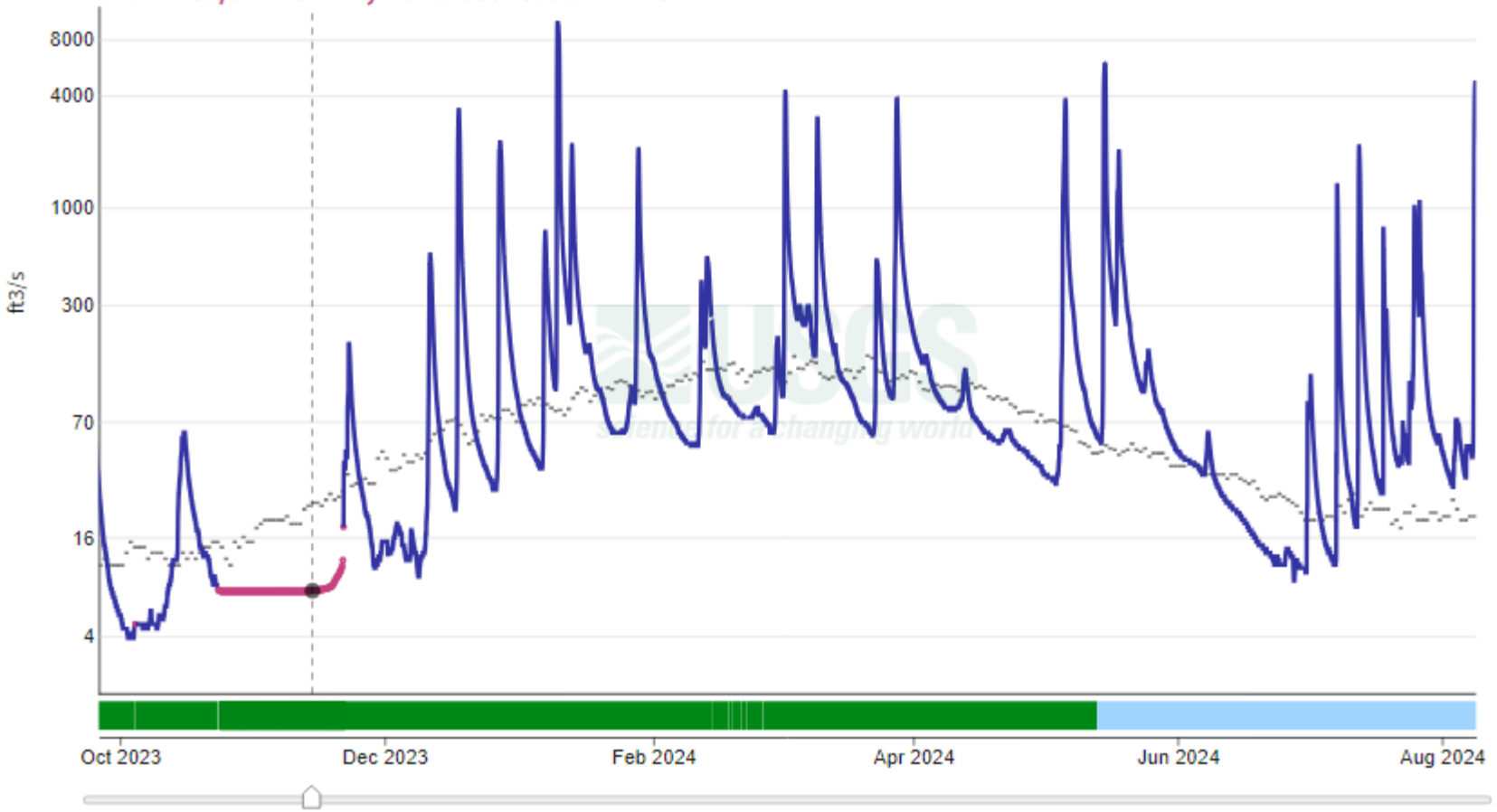
- using graph zoom -

Flat River at Bahama, NC - 02085500

September 11, 2023 - September 10, 2024

Discharge, cubic feet per second

7.77 ft3/s - Nov 14, 2023 09:15:00 AM EST



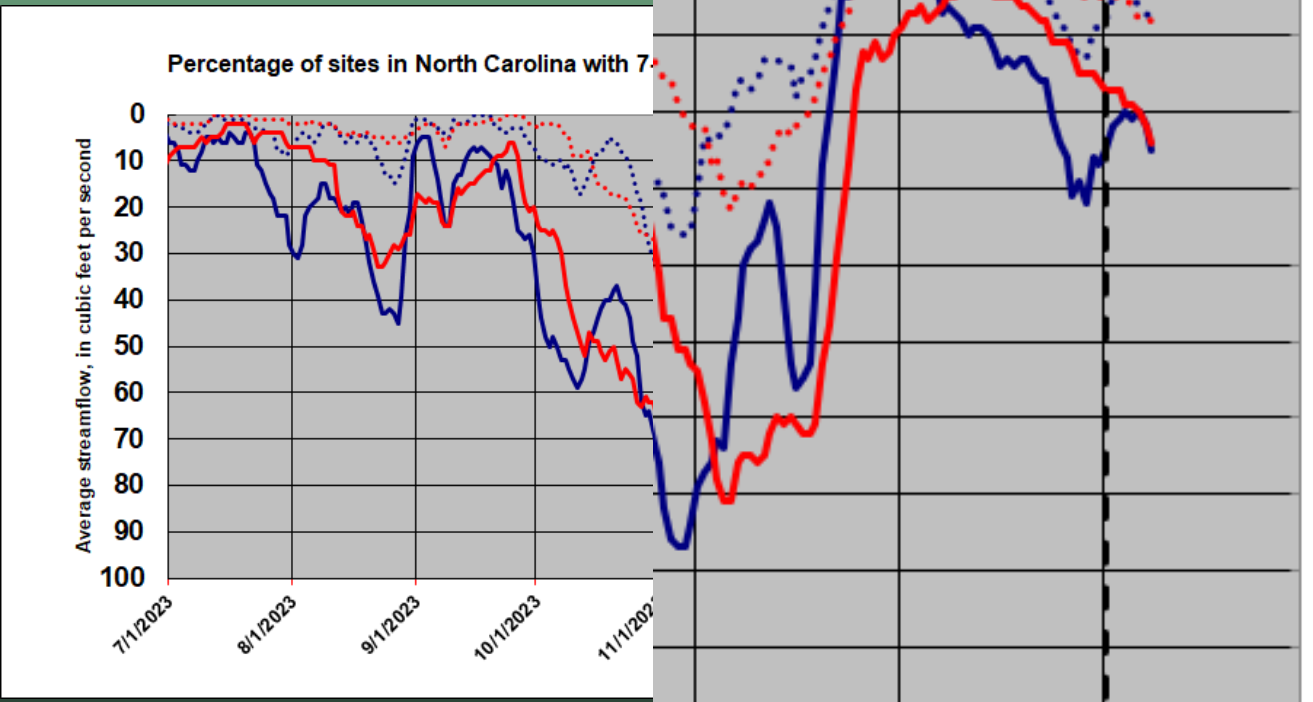
IMPORTANT Data may be provisional

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"

USGS

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

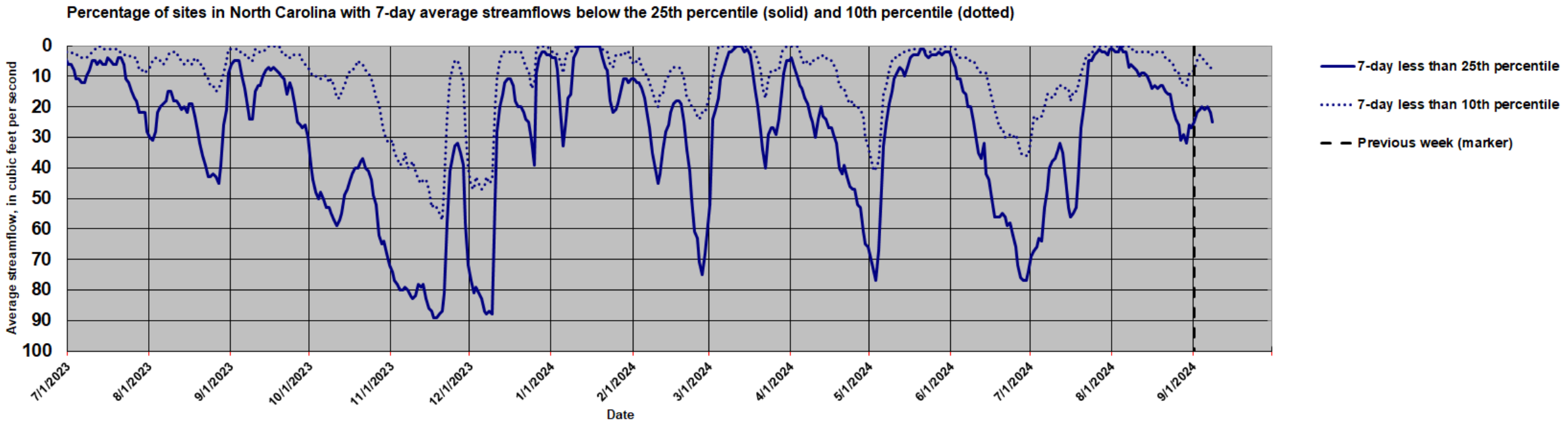
7-day less than 25th percentile
7-day less than 10th percentile
28-day less than 25th percentile
28-day less than 10th percentile
Previous week (marker)

	Previous	Current
7-day average streamflow	9/1/2024	9/8/2024
< 25th percentile	25	25
< 10th percentile	8	8
28-day average streamflow		
< 25th percentile	17	24
< 10th percentile	5	8

USGS

…since July 1, 2023

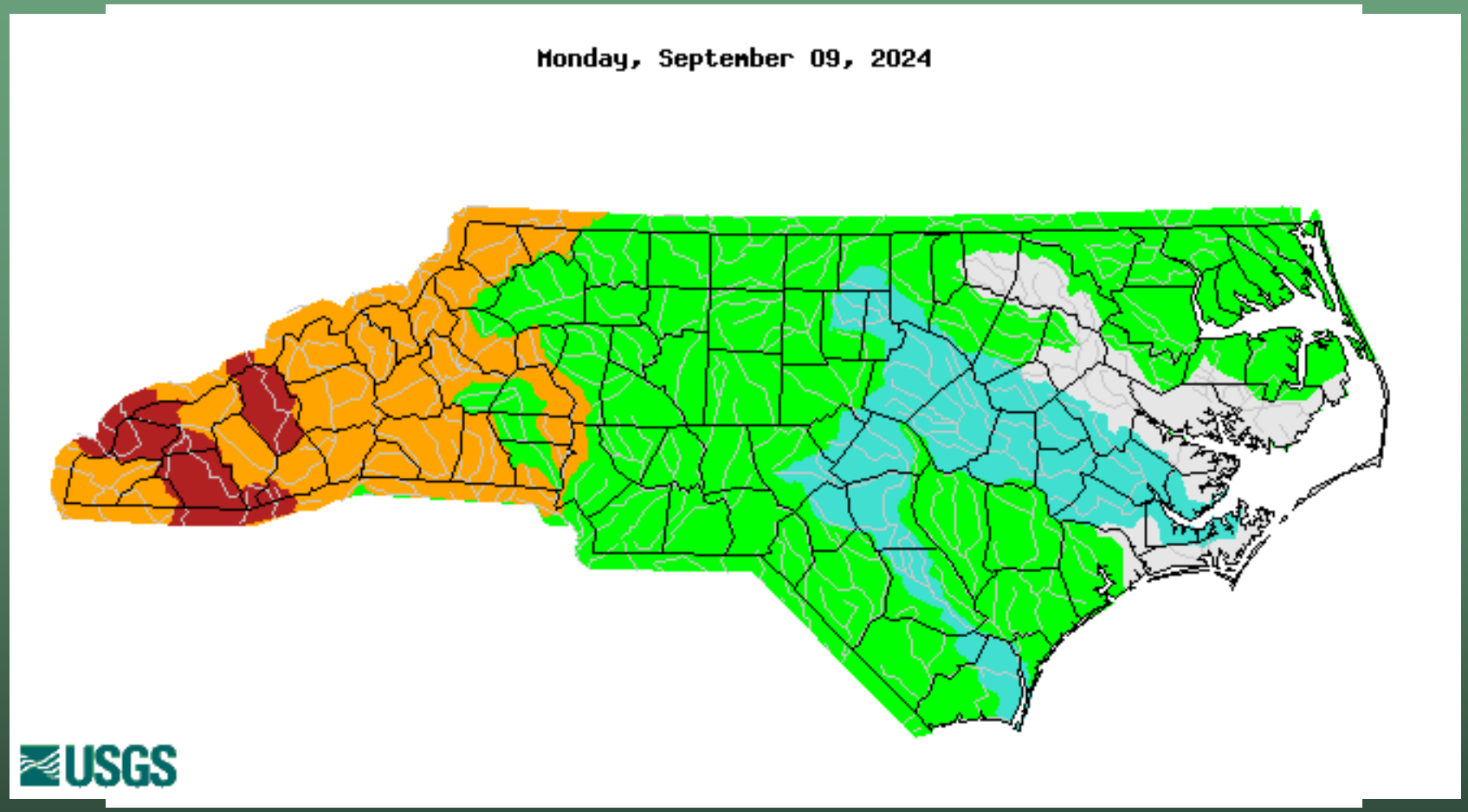
Percentage of sites with 7-day average streamflows below the 25th percentile (solid) and 10th percentile (dotted)



USGS

…since July 1, 2023

HUC map 7-day average flows



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

…as of Sept 09

USGS

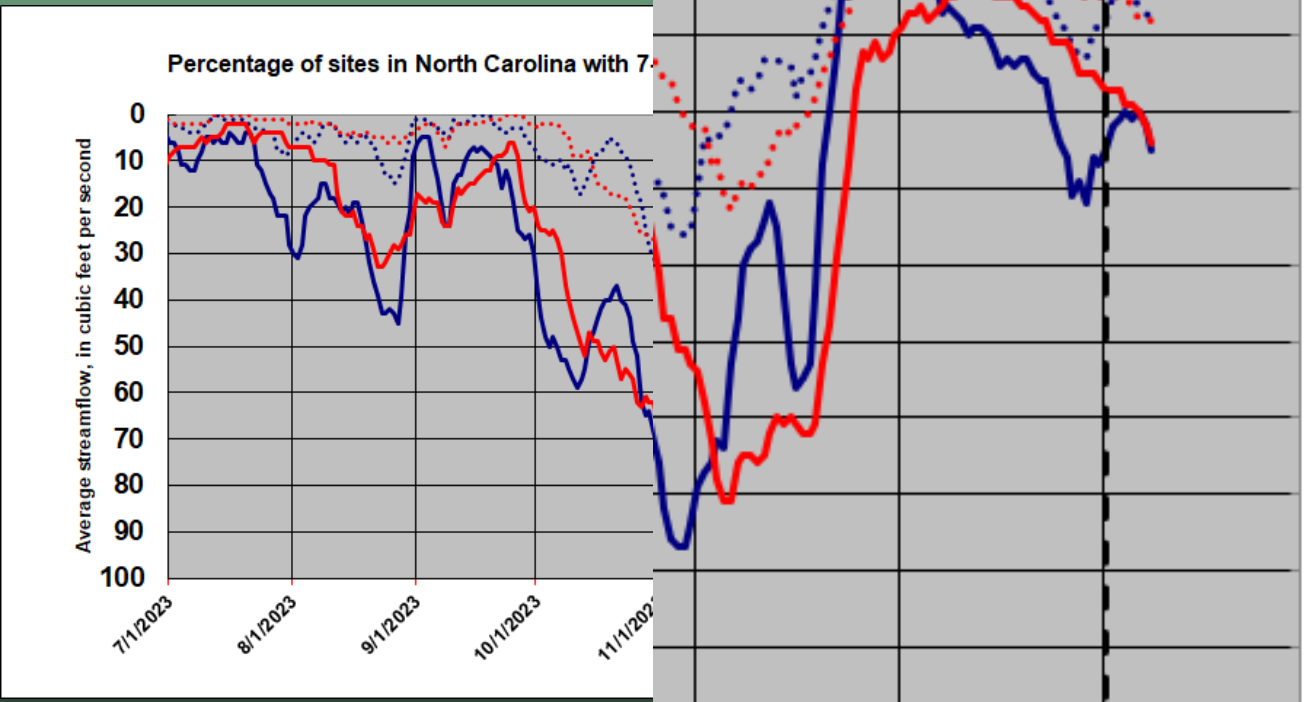
Available at URL http://waterwatch.usgs.gov/index.php

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"

USGS

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

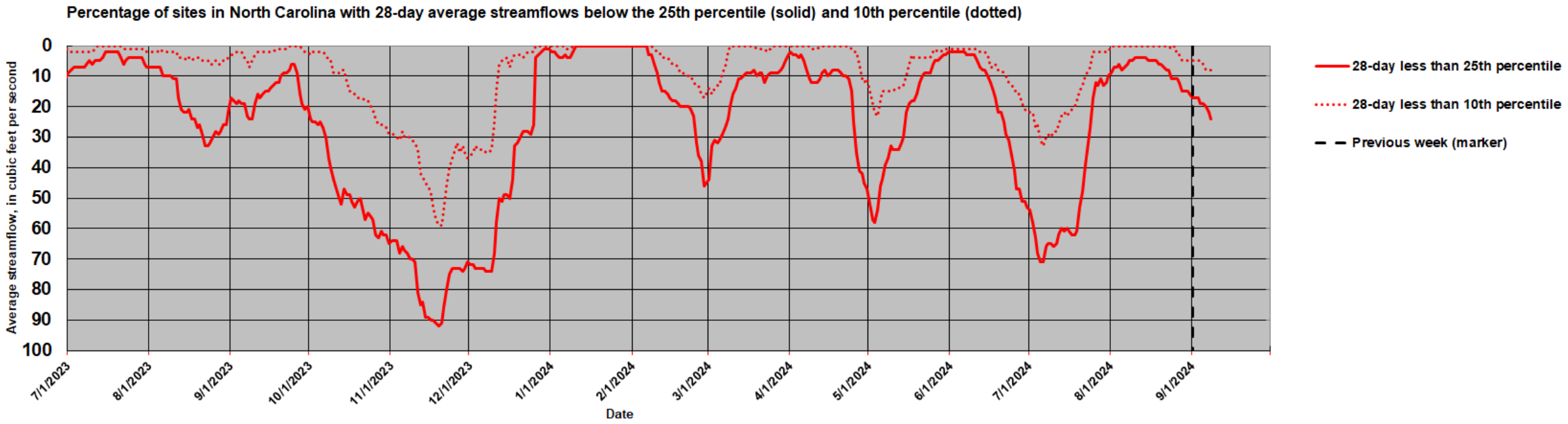
7-day less than 25th percentile
7-day less than 10th percentile
28-day less than 25th percentile
28-day less than 10th percentile
Previous week (marker)

	Previous	Current
7-day average streamflow	9/1/2024	9/8/2024
< 25th percentile	25	25
< 10th percentile	8	8
28-day average streamflow		
< 25th percentile	17	24
< 10th percentile	5	8

USGS

…since July 1, 2023

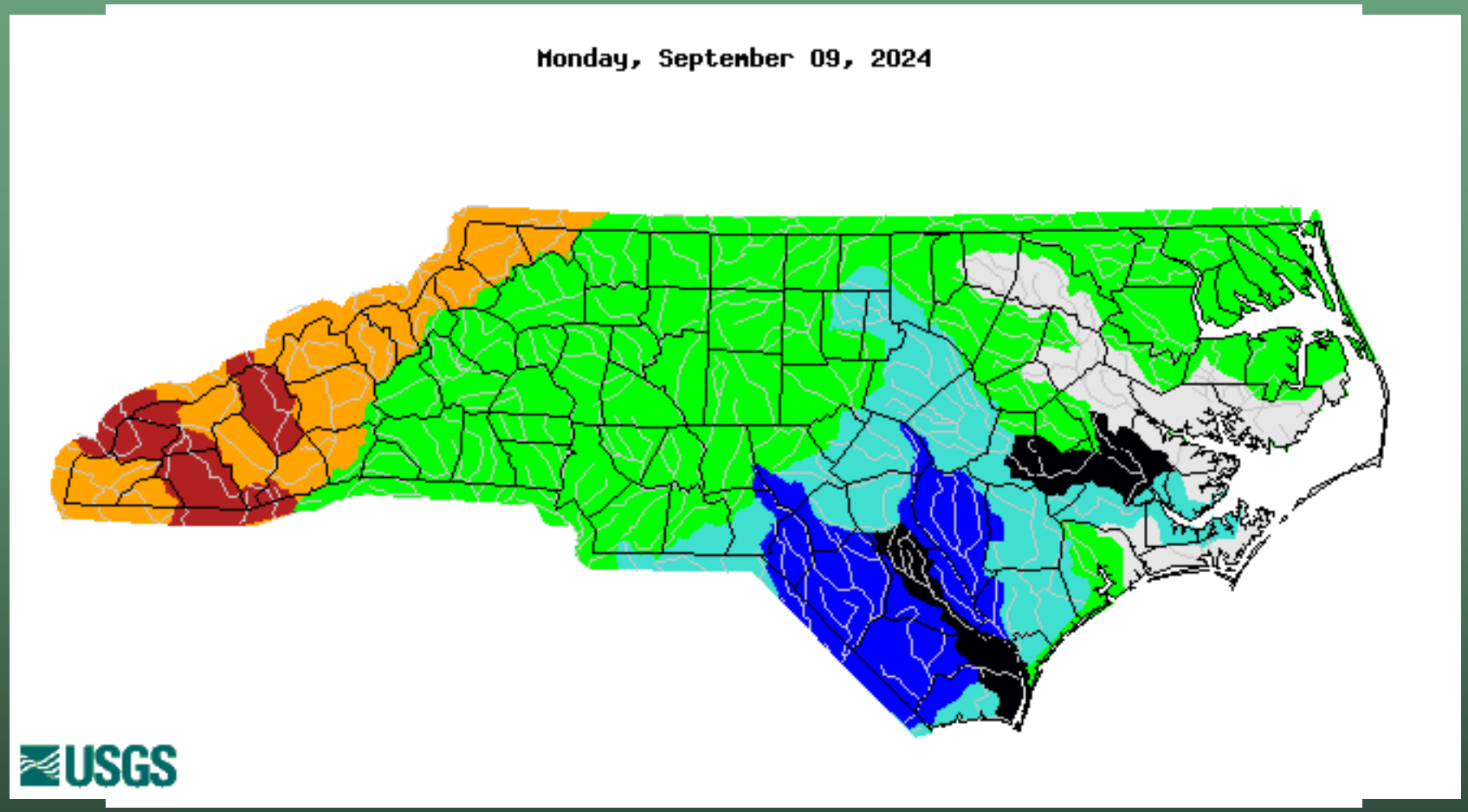
Percentage of sites with 28-day average streamflows below the 25th percentile (solid) and 10th percentile (dotted)



USGS

…since July 1, 2023

HUC map 28-day average flows



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

…*as of Sept 09*

USGS

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

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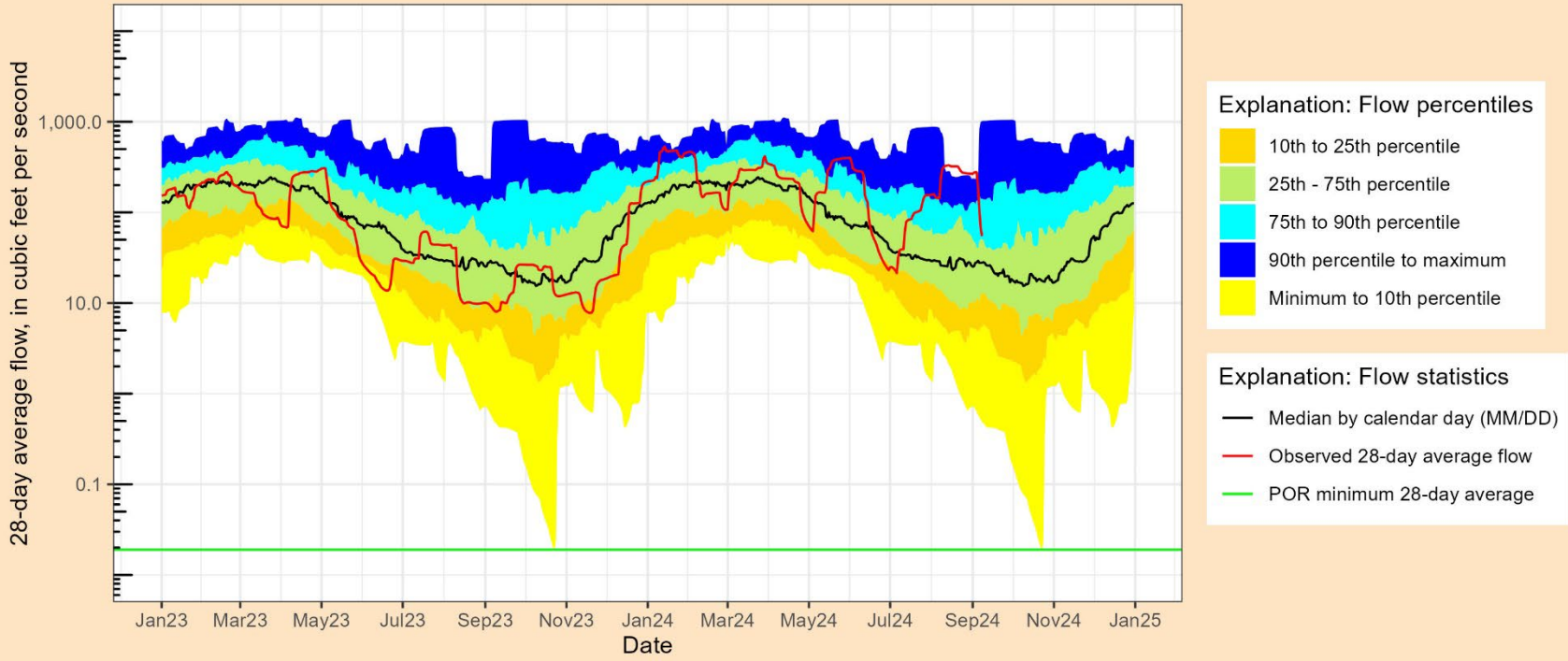
USGS Sta. 02085500 FLAT RIVER AT BAHAMA, NC

Drainage Area: 149 sq mi, available POR for daily mean discharge: 1925-08-01 to 2024-09-08

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 08, 2024

Data are provisional after 2024-05-12

Flow percentile statistics calculated using POR from 1962-10-01 to 2023-09-30

Plot generated: 2024-09-09 15:55:34 EDT

USGS

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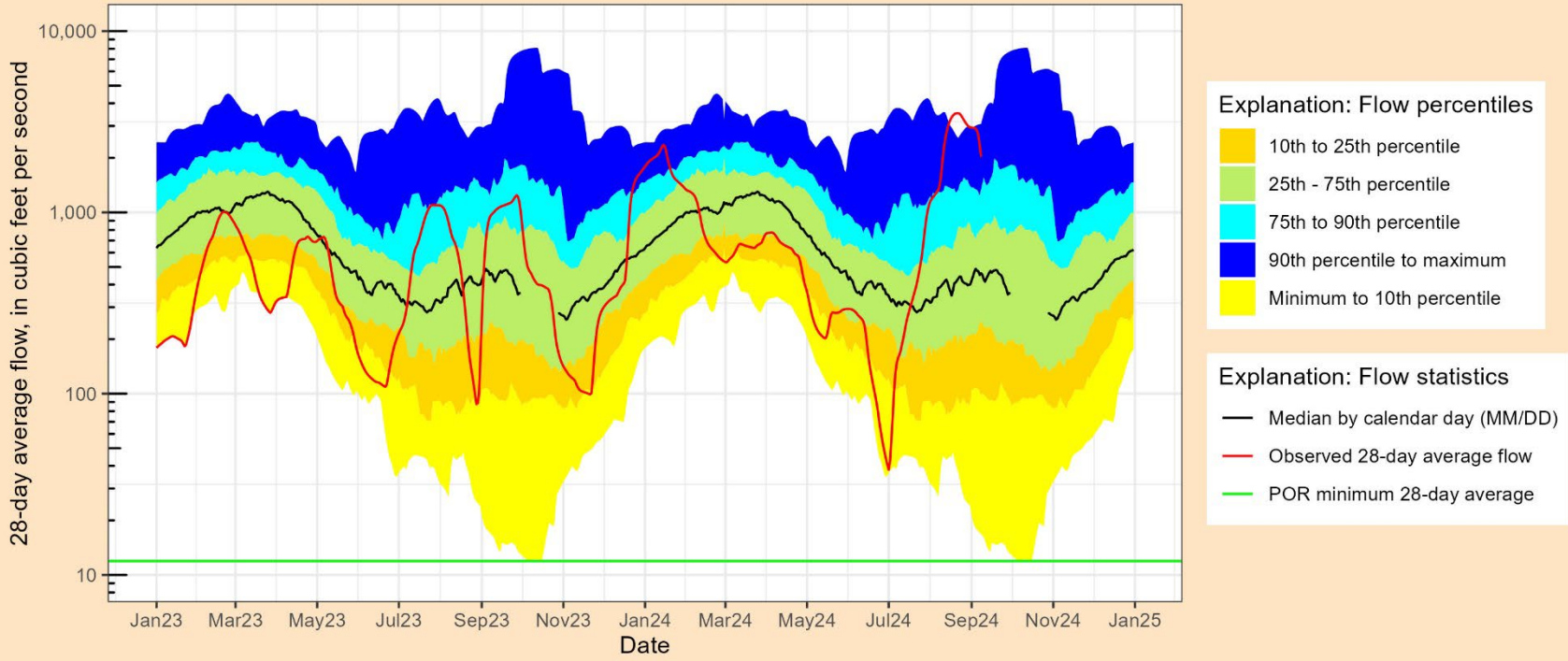
science for a changing world

USGS Sta. 02106500 BLACK RIVER NEAR TOMAHAWK, NC

Drainage Area: 676 sq mi, available POR for daily mean discharge: 1951-10-01 to 2024-09-08

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



Period of record minimum 28-day average flow: 11.925 cfs ending on 1954-10-15

Observed data through: September 08, 2024

Data are provisional after 2024-07-17

Flow percentile statistics calculated using POR from 1951-10-01 to 2023-09-30

Plot generated: 2024-09-09 15:56:52 EDT

USGS

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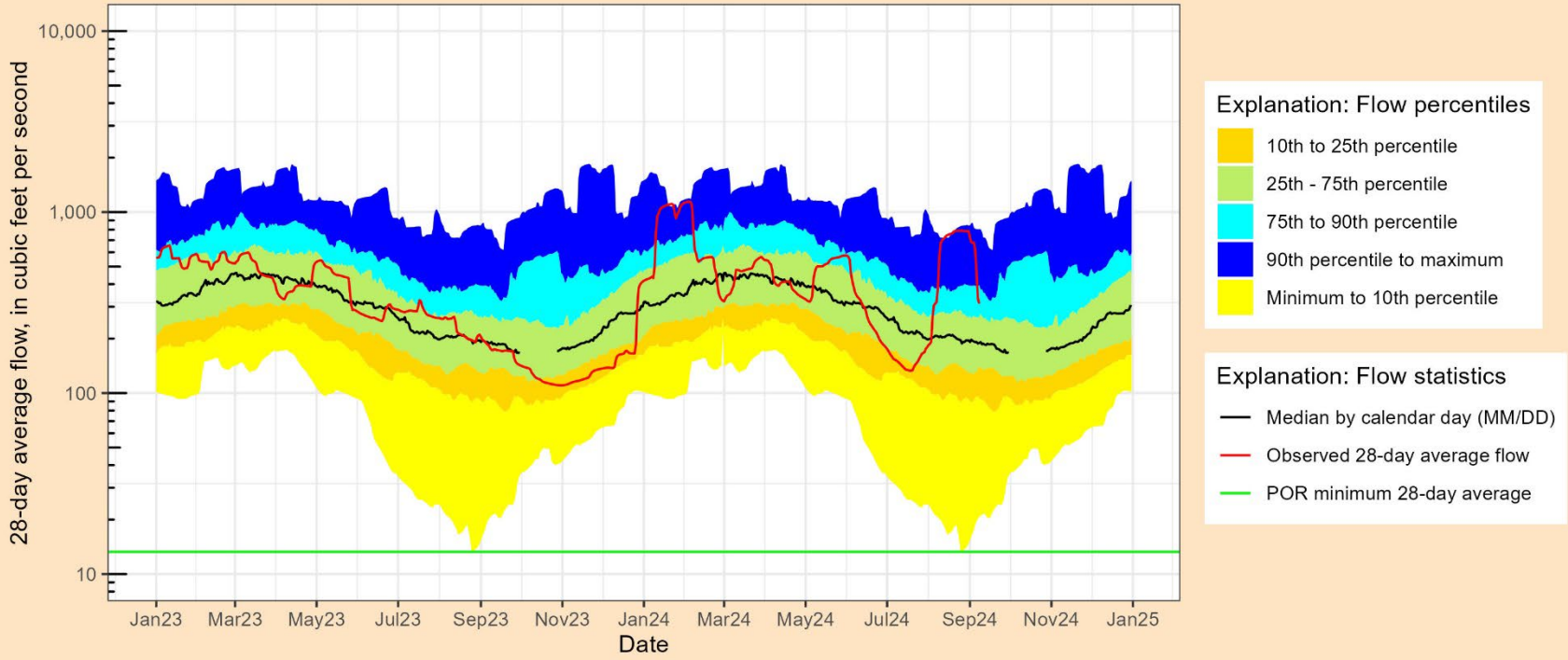
science for a changing world

USGS Sta. 02118000 SOUTH YADKIN RIVER NEAR MOCKSVILLE, NC

Drainage Area: 306 sq mi, available POR for daily mean discharge: 1938-10-01 to 2024-09-08

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



Period of record minimum 28-day average flow: 13.271 cfs ending on 2002-08-26

Observed data through: September 08, 2024

Data are provisional after 2023-11-27

Flow percentile statistics calculated using POR from 1938-10-01 to 2023-09-30

Plot generated: 2024-09-09 15:57:22 EDT

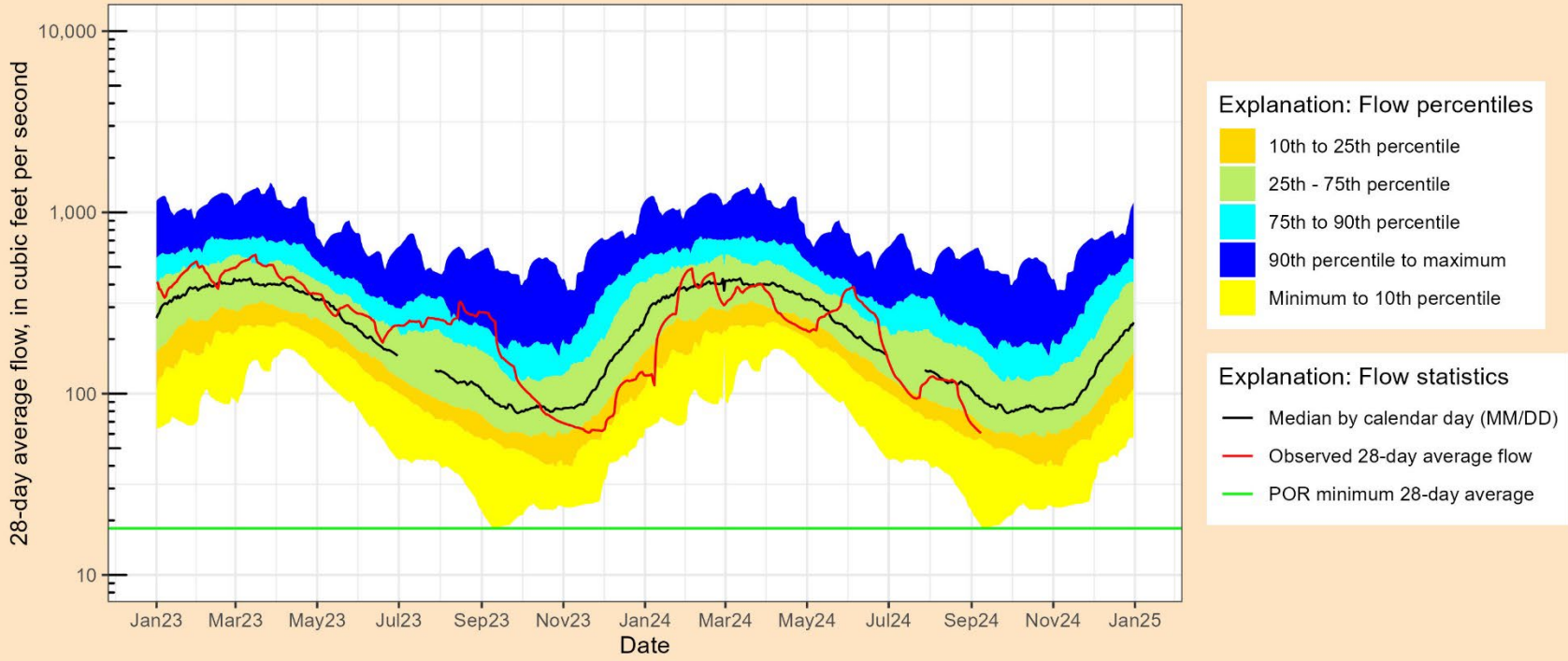
USGS

USGS
science for a changing world

USGS Sta. 03550000 VALLEY RIVER AT TOMOTLA, NC

Drainage Area: 104 sq mi, available POR for daily mean discharge: 1904-07-01 to 2024-09-08

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



Period of record minimum 28-day average flow: 18.071 cfs ending on 1925-09-12

Observed data through: September 08, 2024

Data are provisional after 2024-05-15

Flow percentile statistics calculated using POR from 1903-10-01 to 2023-09-30

Plot generated: 2024-09-09 15:59:33 EDT

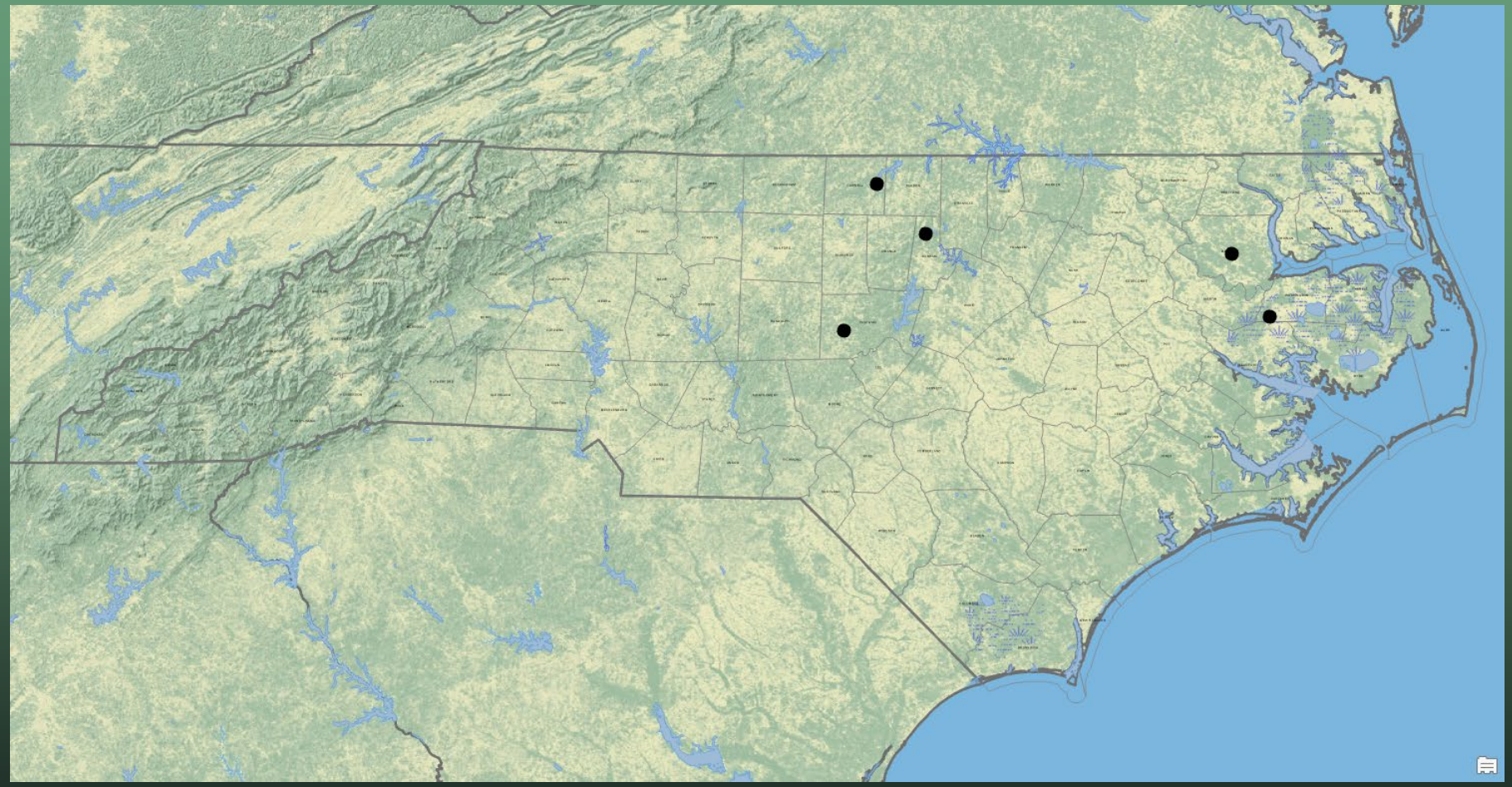
USGS

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"

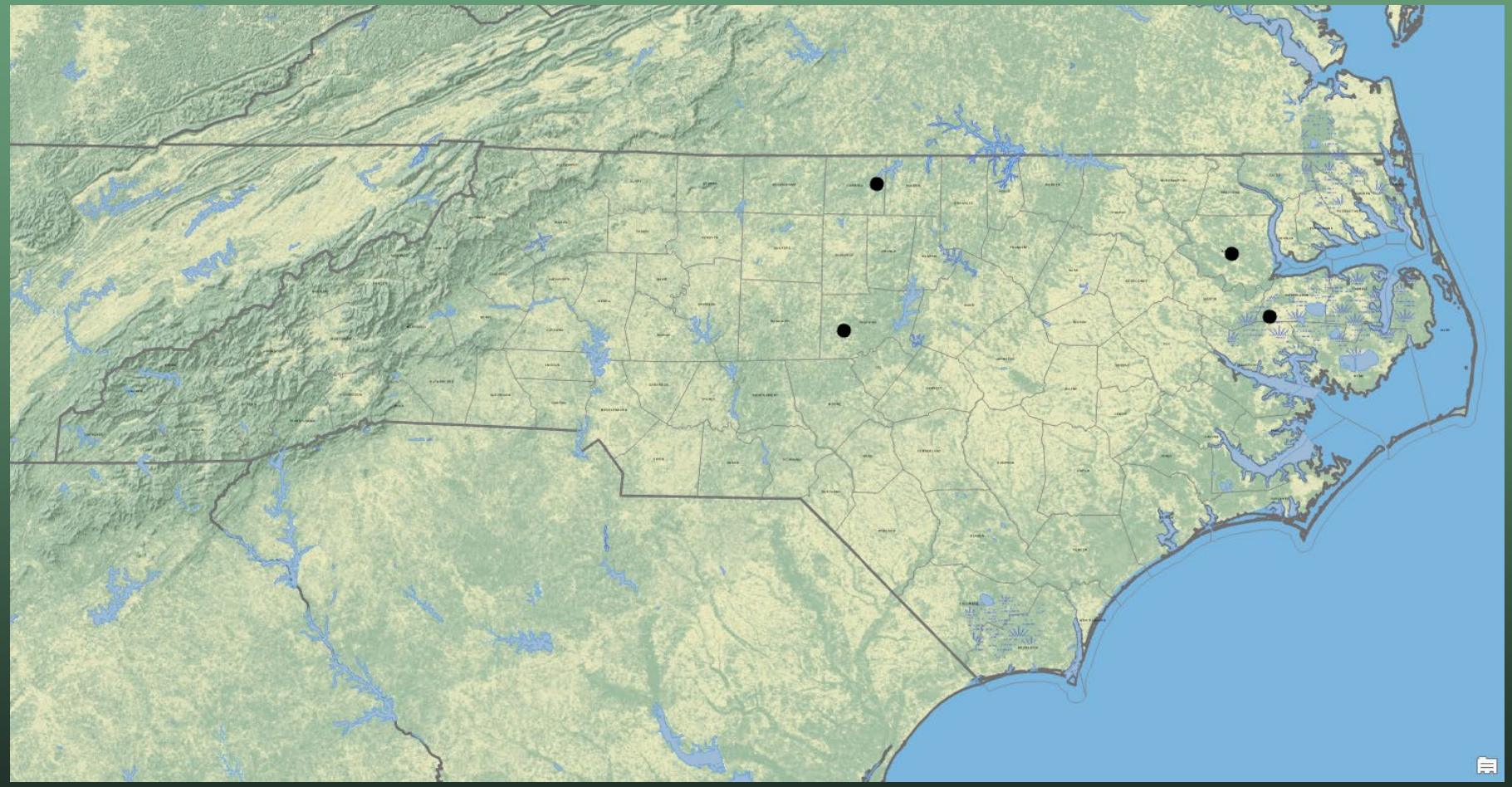
USGS

No new record POR minimum daily discharge, but…



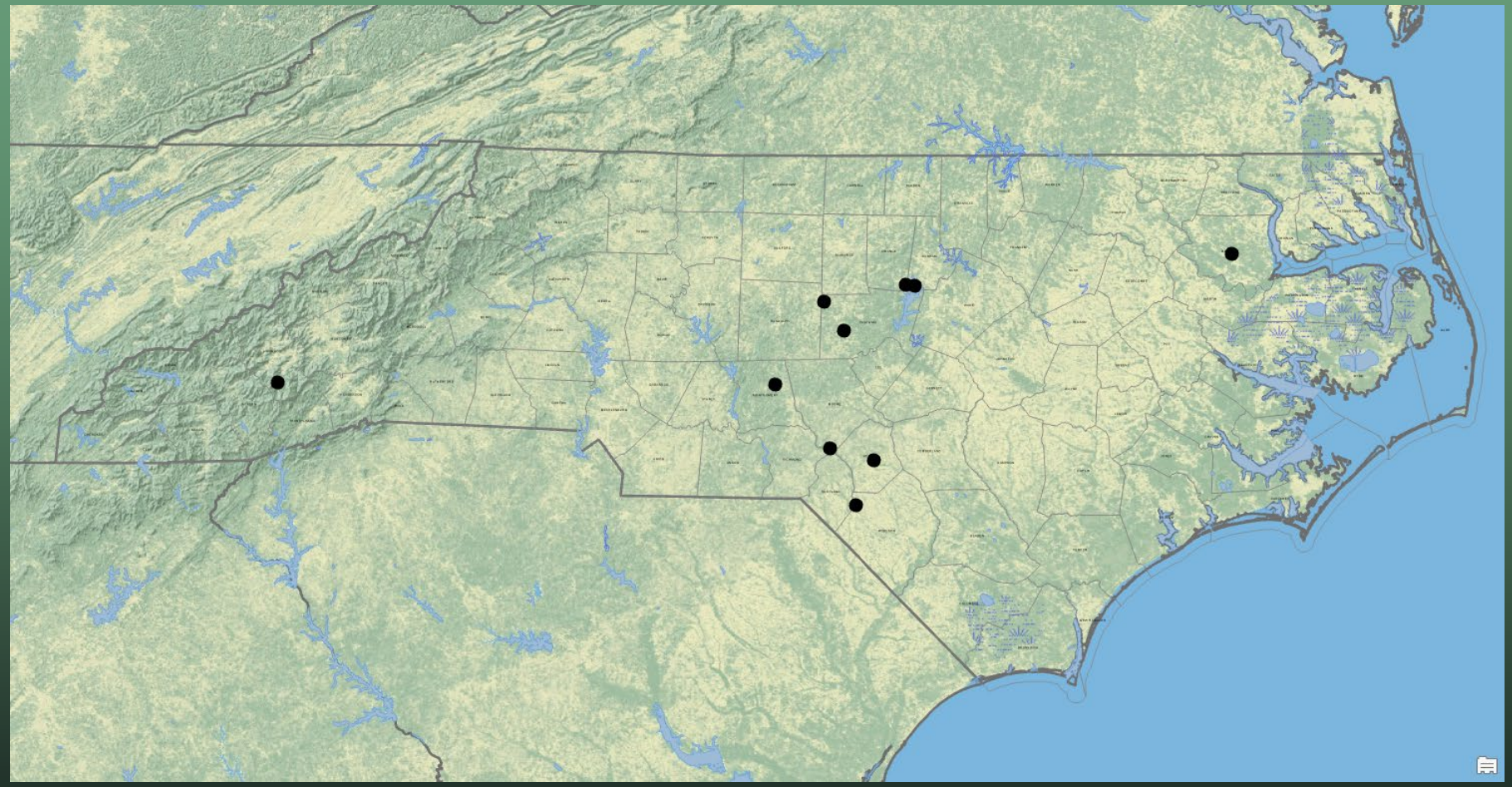
5 “zero-flow”sites during July 2023 through mid-September 2024

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



4 “zero-flow” sites during July 2023 through mid-September 2024 (all meeting previous records of zero flow)

Monthly minimum monthly average streamflow at 10 sites, but…



1 “zero-flow” site during July 2023 through mid-September 2024 (meeting previous record of zero flow)

In closing…questions…comments…complaints

Contact info:
J. Curtis Weaver, Hydrologist, PE
Assistant Director for Data - North Carolina
Mobile: (984) 220-5849
Email: jcweaver@usgs.gov

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

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