

# Cayuga Lake Watershed Water Quality Monitoring in Cayuga County: *Insights & Updates from the 2025 Monitoring Season*

Cayuga County WQMA Meeting  
3/5/26, 10 AM

Grascen Shidemantle, PhD  
Executive Director  
Community Science Institute



CSI HAB Harrier, Holly Davidson,  
surveying her shoreline for HABs

# Agenda

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Intro: Community Science Institute

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Synoptic Stream and Lake Monitoring  
Partnership in Cayuga County

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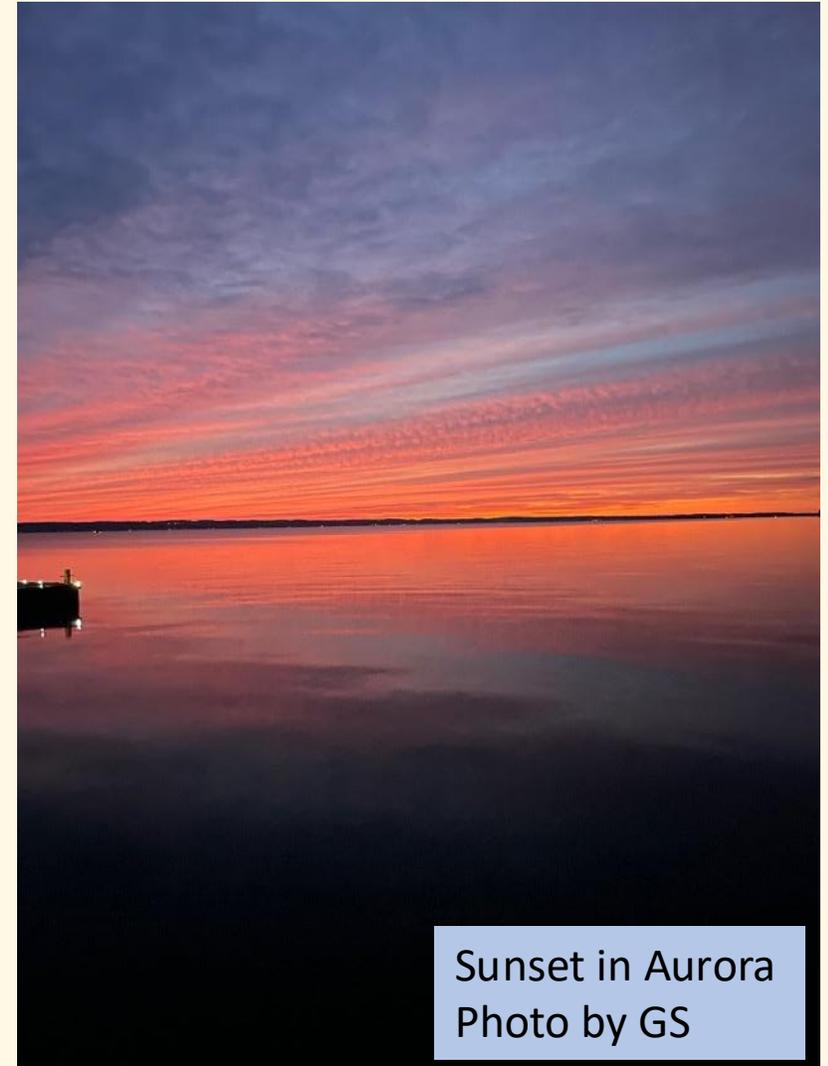
Cayuga Lake Harmful Algal Bloom  
Monitoring

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Cayuga Lake Water Quality Monitoring

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Acknowledgements and Questions



Sunset in Aurora  
Photo by GS

# Agenda

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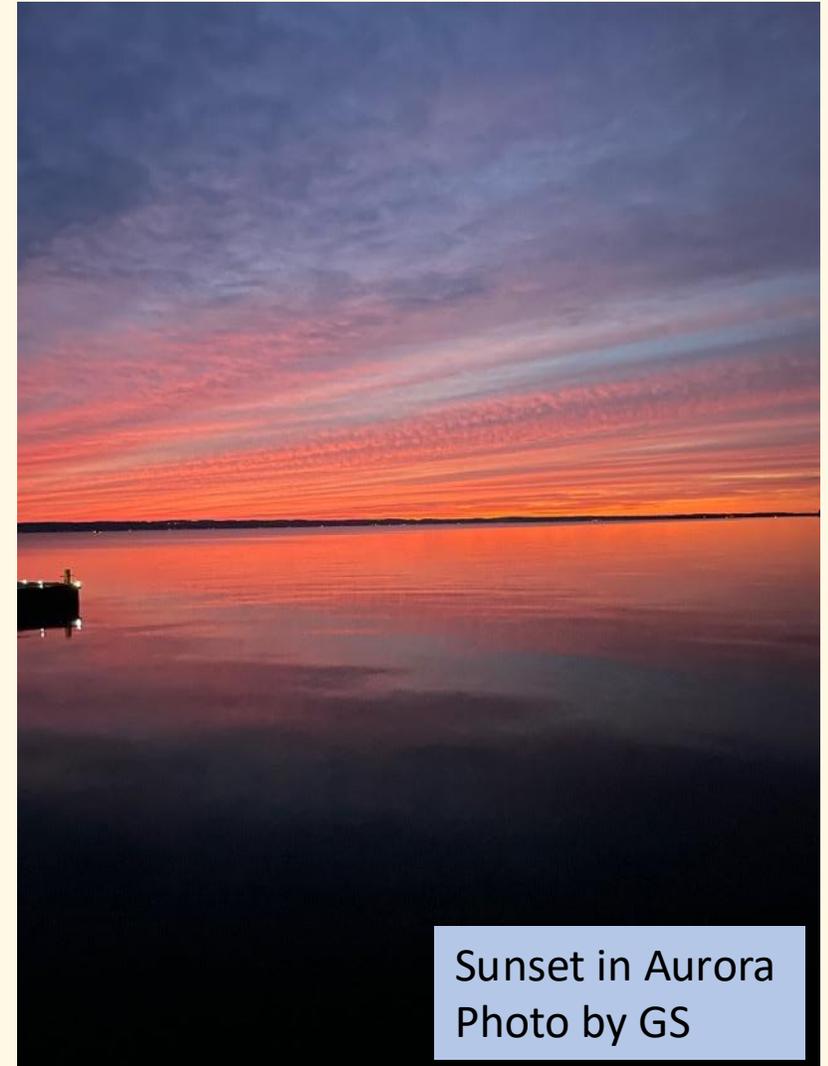
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Sunset in Aurora  
Photo by GS

# Community Science Institute

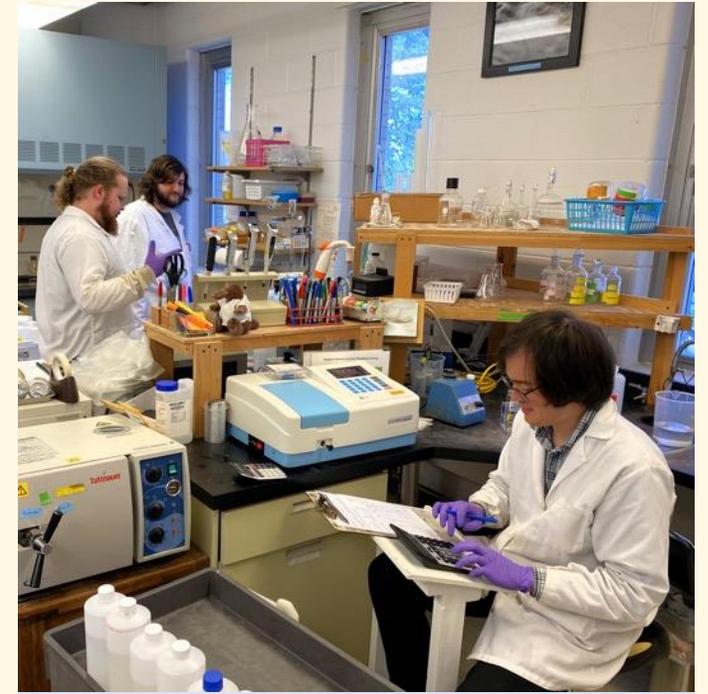
CSI is a 501(c)3 non-profit and NYSDOH-ELAP certified water testing lab in Ithaca, NY



**Volunteer Water Monitoring Partnerships**



**Outreach and Education**



**Fee-for-Service Water Testing**

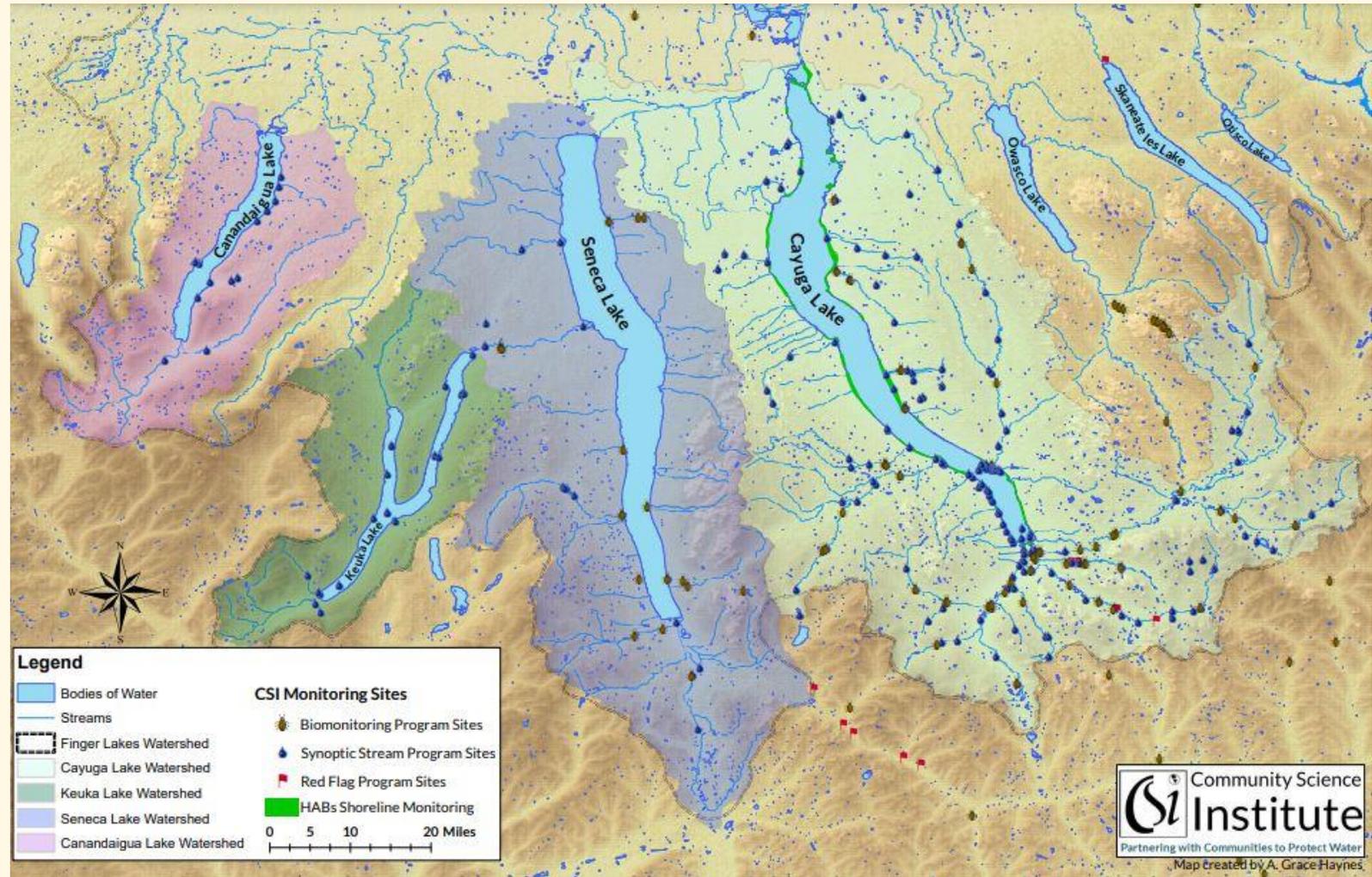
**Our Mission:** To inspire and empower communities to safeguard water resources by cultivating scientific literacy through volunteer water quality monitoring, certified laboratory analyses, and education.

# CSI's Volunteer Water Monitoring Partnerships

## Monitoring Partnerships

1. Synoptic Stream and Lake Monitoring
2. Harmful Algal Bloom (HAB) Monitoring
3. Biomonitoring
4. Other projects as need or interest arises

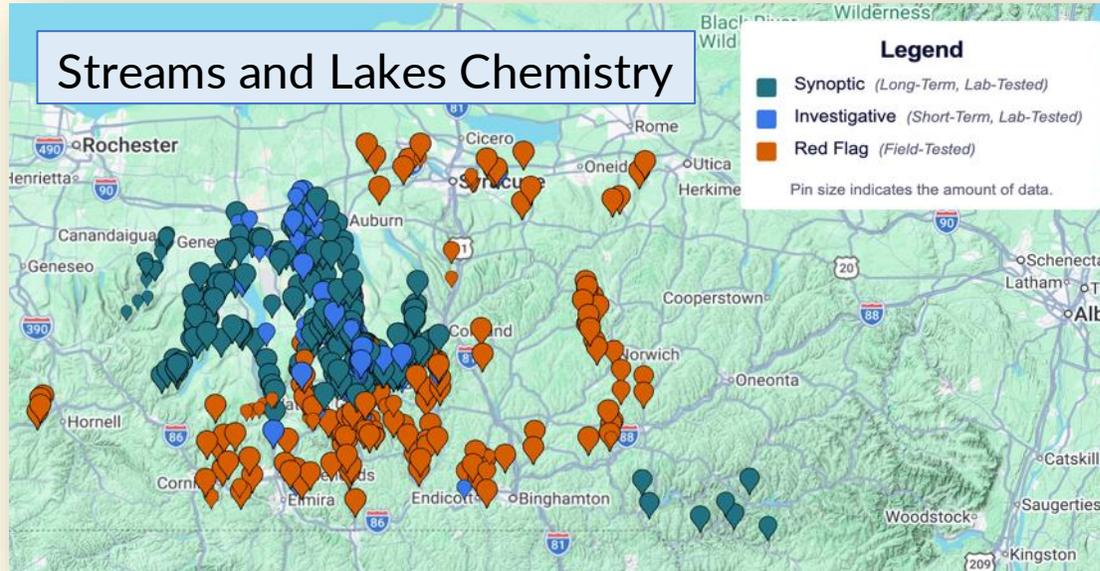
*We retired CSI's Red Flag Monitoring Program at the end of 2024*



# CSI's Water Quality Database



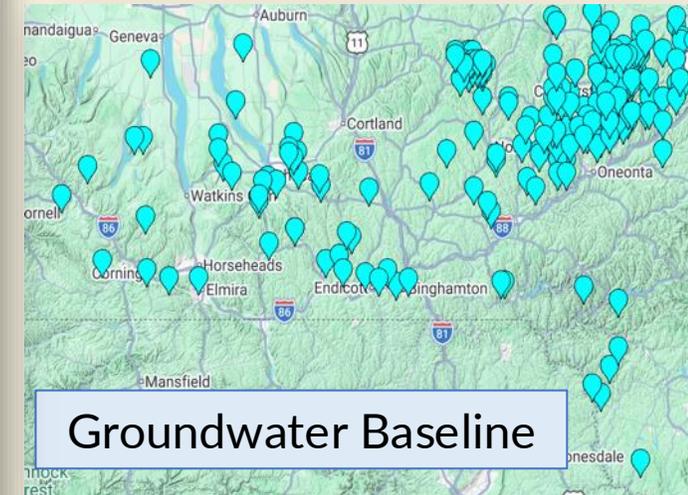
## Streams and Lakes Chemistry



## Cayuga Lake Harmful Algal Blooms



## Groundwater Baseline



[www.database.communityscience.org](http://www.database.communityscience.org)

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**Synoptic Stream and Lake Monitoring Partnership in Cayuga County**

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Cayuga Lake Harmful Algal Bloom Monitoring

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Cayuga Lake Water Quality Monitoring

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Acknowledgements and Questions



# Synoptic Stream Monitoring in Cayuga County



Salmon Creek at  
Tile Kiln Road

**Purpose:** Produce regulatory-quality stream and lake water chemistry data that can inform water resource management decisions as well as keep the public informed on the state of their local water resources.

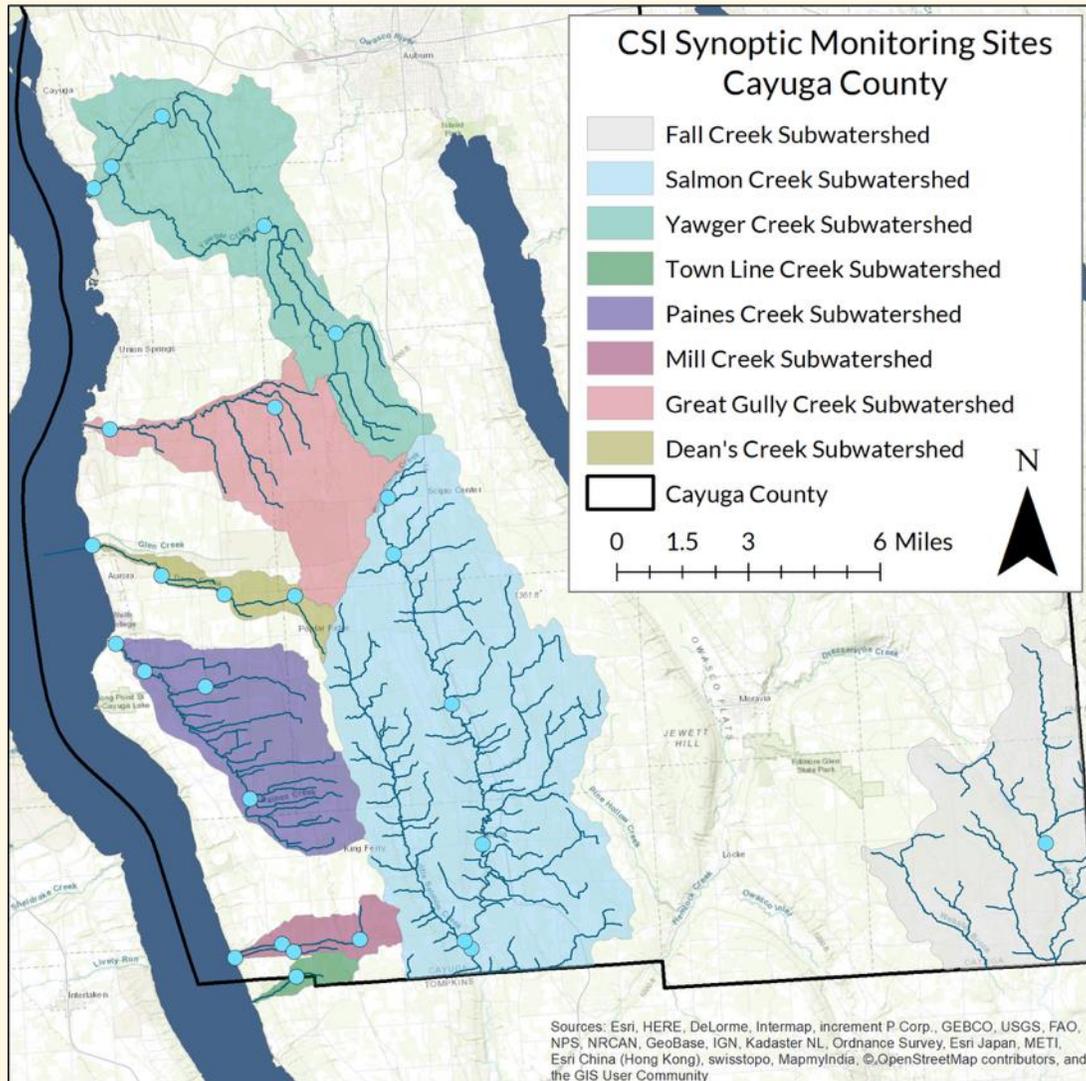
## Monitor streams and lakes for:

- Nutrients (TP, SRP, NO<sub>x</sub>)
- Sediment (TSS)
- Bacteria (*E. coli*)
- Salt (Chloride)
- pH, hardness, alkalinity, turbidity, conductivity

Volunteers collect samples from their designated stream 3 times each year

Samples are analyzed in CSI's state-certified water testing laboratory

# Synoptic Stream Monitoring in Cayuga County



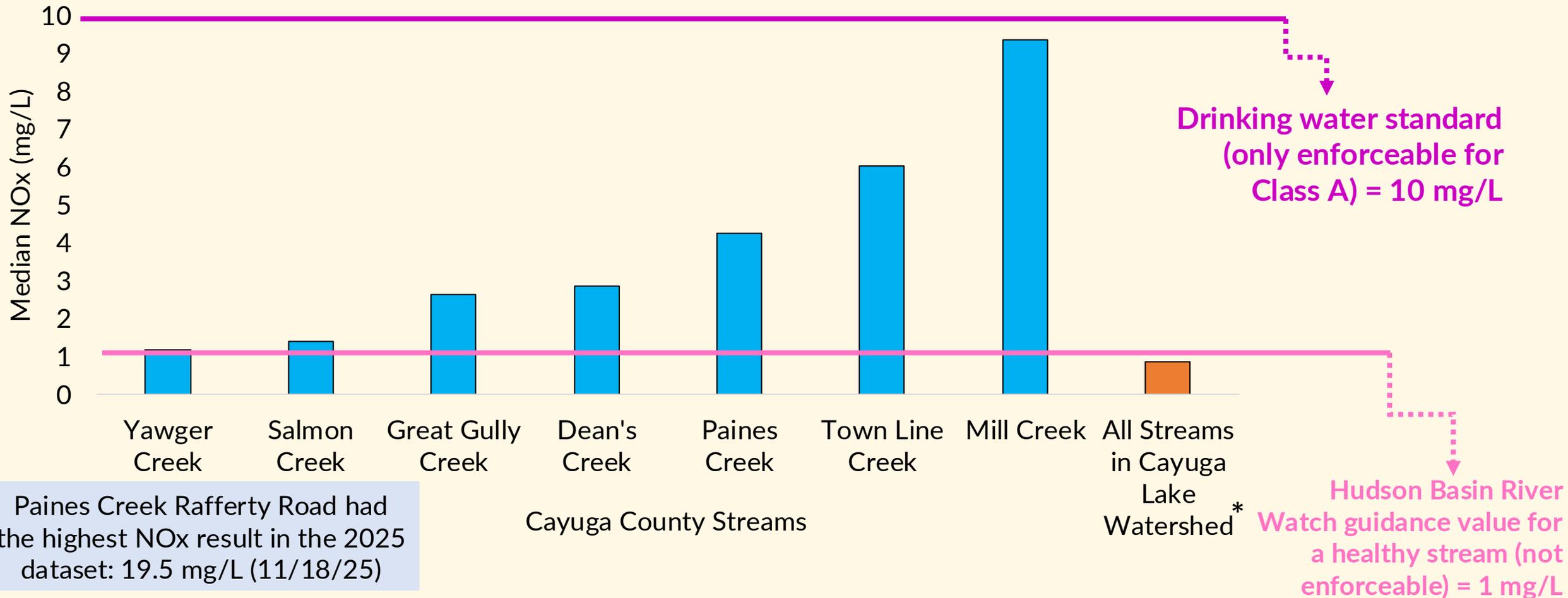
CSI's synoptic stream volunteers monitor the following Cayuga Lake tributaries in Cayuga County:

1. Yawger Creek
2. Great Gully Creek
3. Dean's Creek
4. Paines Creek
5. Mill Creek
6. Town Line Creek
7. Salmon Creek

Thank you to  
Cayuga County for  
supporting our  
stream monitoring  
efforts in Cayuga  
County since  
2018!

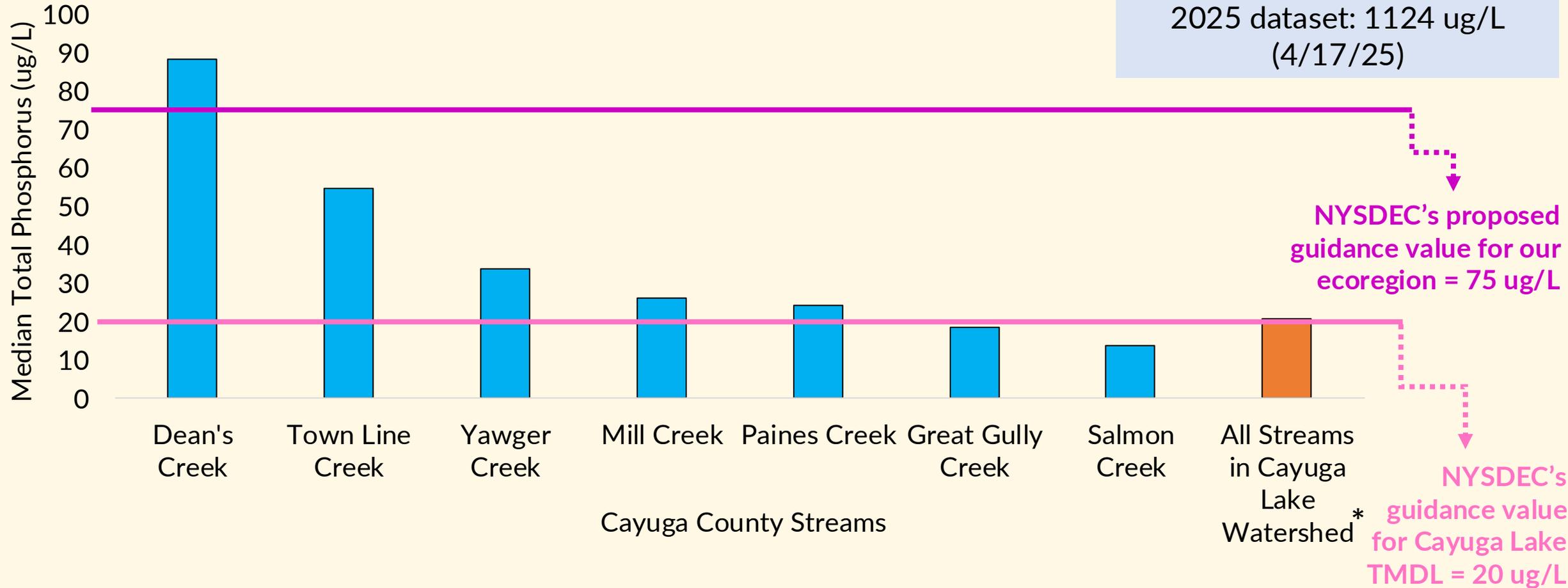
# Synoptic Stream Monitoring in Cayuga County

Median Baseflow Nitrate-+Nitrite-Nitrogen (NOx) in 2025

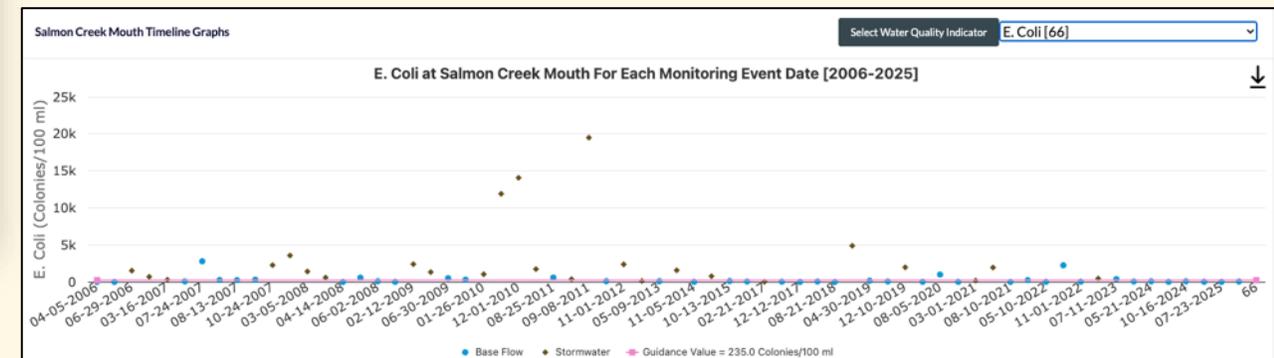
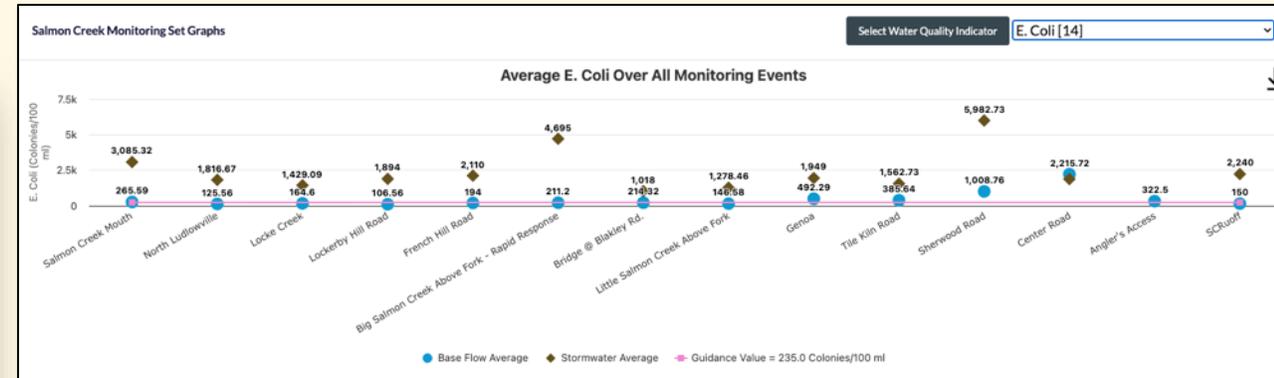
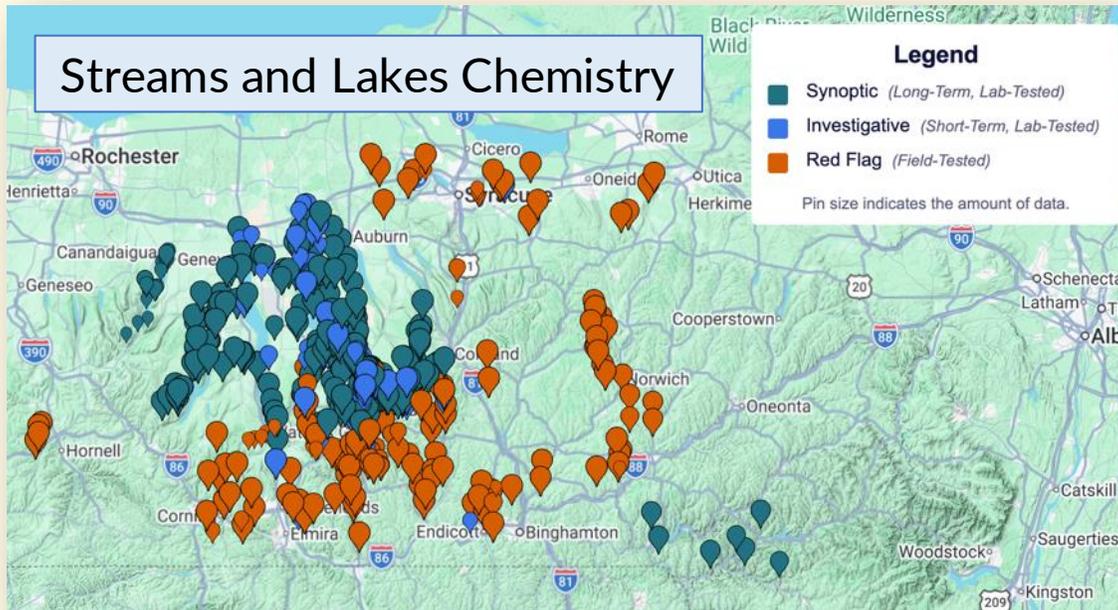


# Synoptic Stream Monitoring in Cayuga County

## Median Baseflow Total Phosphorus in 2025



# CSI's Water Quality Database – Stream and Lake Chemistry



Explore over 130,000 data points!

Over 91,000 data points in the Cayuga Lake watershed alone!

<https://www.database.communityscience.org/>

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**Cayuga Lake Harmful Algal Bloom  
Monitoring**

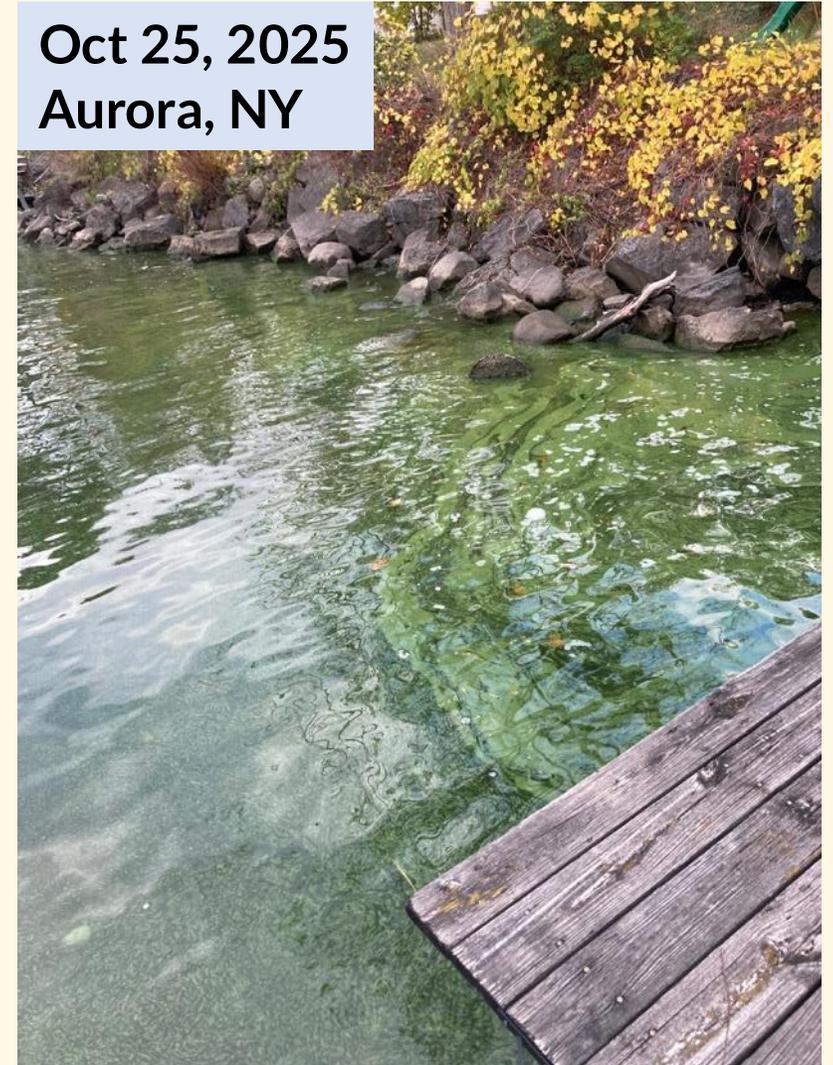
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Cayuga Lake Water Quality Monitoring

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Acknowledgements and Questions

Oct 25, 2025  
Aurora, NY



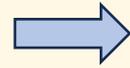
# Cayuga Lake Harmful Algal Bloom (HAB) Monitoring Partnership

**Purpose:** Collect actionable data on cyanobacteria blooms, protect public health, and relay bloom information and testing results quickly and efficiently.

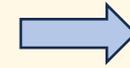
HABs Harriers perform weekly shoreline surveys for HABs



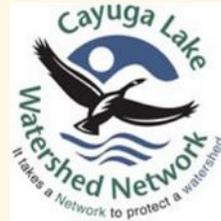
Blooms are reported to CSI via HABs Hotline



Samples are analyzed in CSI's state certified lab\*



CSI alerts public to HABs



Thank you to Cayuga County for supporting our HABs Monitoring Program!

*The Cayuga Lake HABs Monitoring Program is led by CSI in collaboration with CLWN and DCL*

# Cayuga Lake Harmful Algal Bloom (HAB) Monitoring Partnership

HAB samples are analyzed to:

- Identify cyanobacteria genera
- Measure chlorophyll a
- Measure microcystin

Bloom information is uploaded to CSI's [Cayuga Lake HABs Database](#)

CSI reports all blooms to county health department officials and NYSDEC



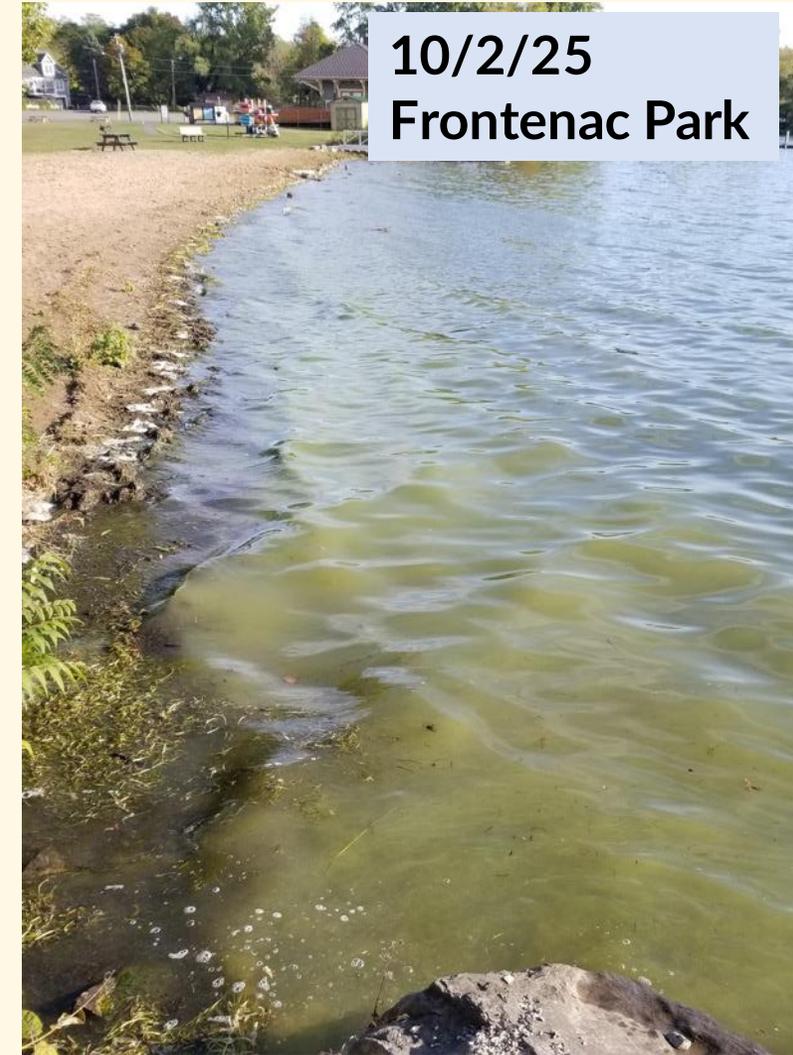
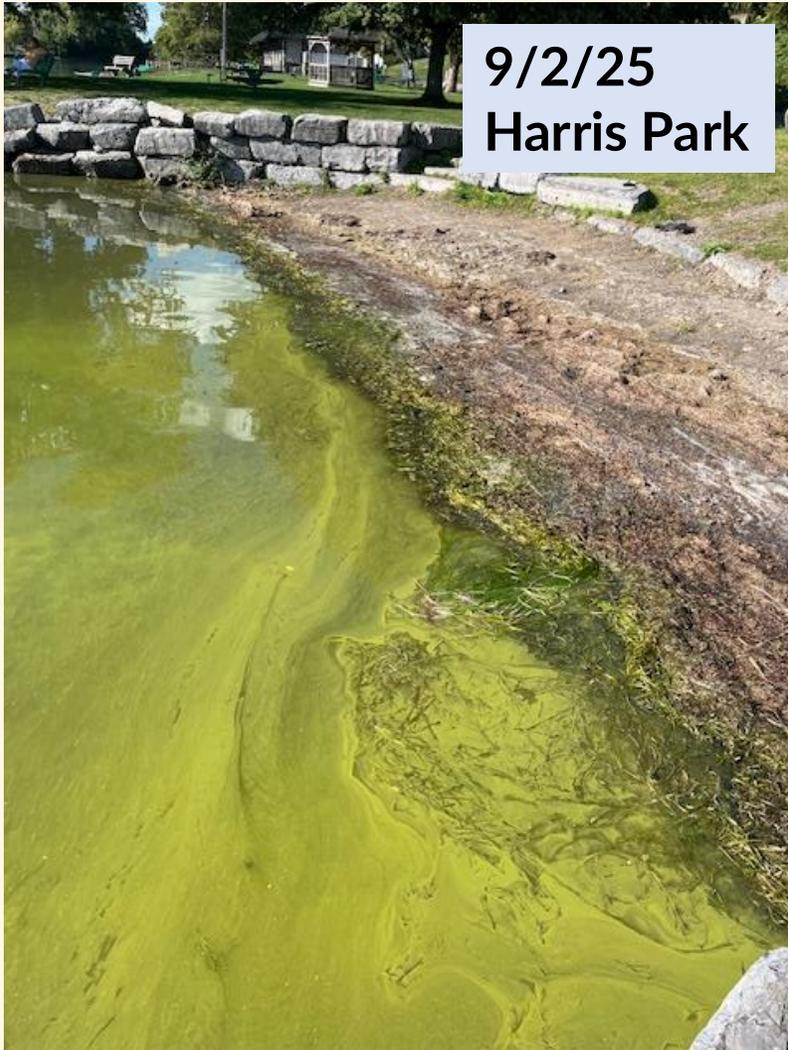
*Microcystis sp.*



*Dolichospermum sp.*

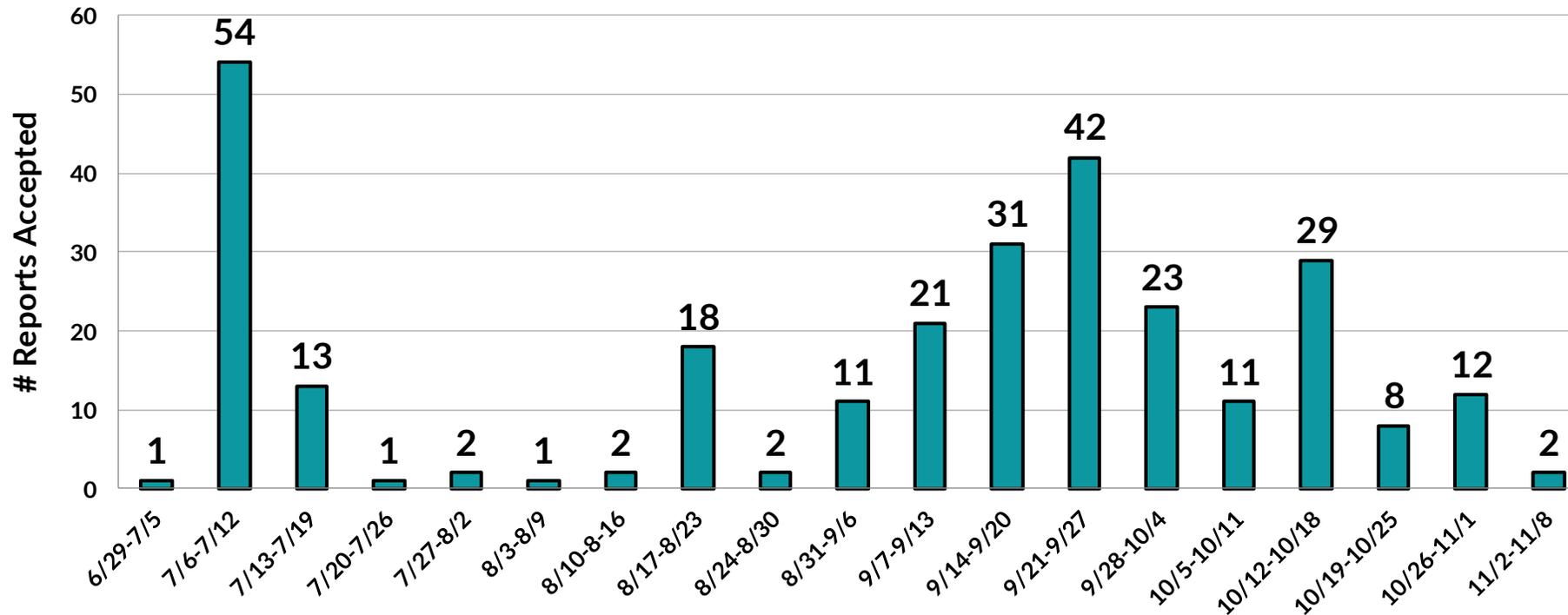


# 2025 Cayuga Lake HAB Monitoring Season



# 2025 HAB Monitoring Season

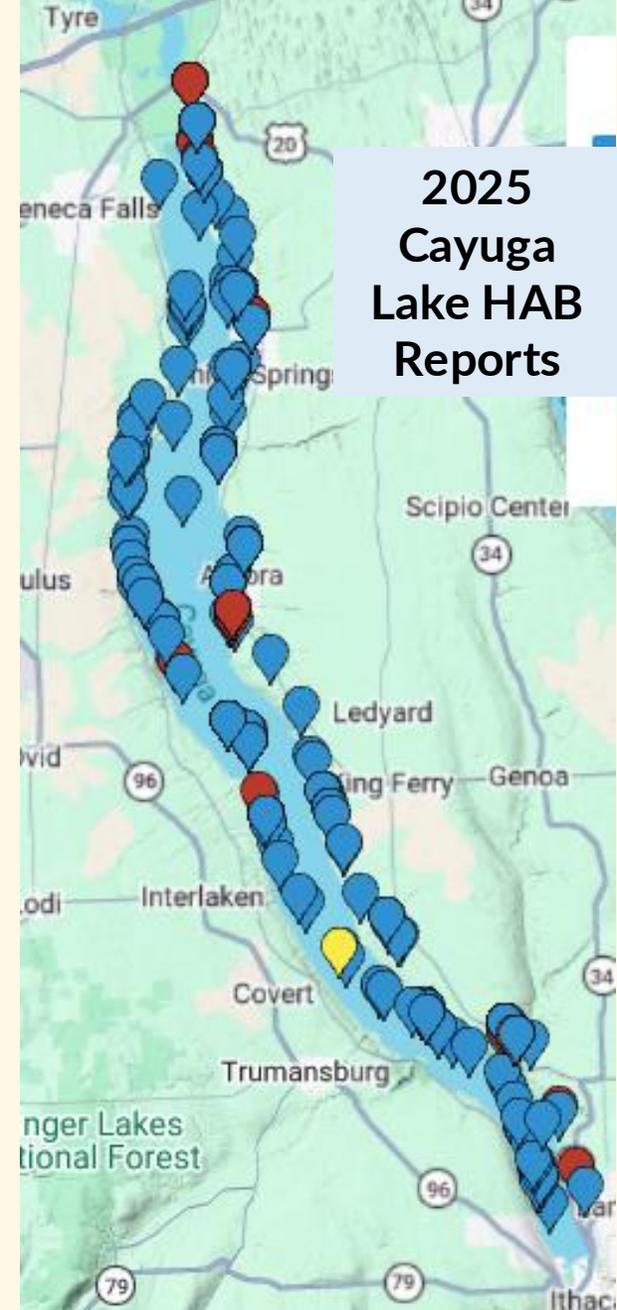
Distribution of HAB Reports by Week— Cayuga Lake 2025



**First HAB reported: 7/5/25**

**Last HAB reported: 11/7/25** ← Latest HAB report received by CSI

**284 HAB reports accepted** ← Most reports received by CSI



2025  
Cayuga  
Lake HAB  
Reports

# 2025 HAB Monitoring Season

 Visually confirmed bloom

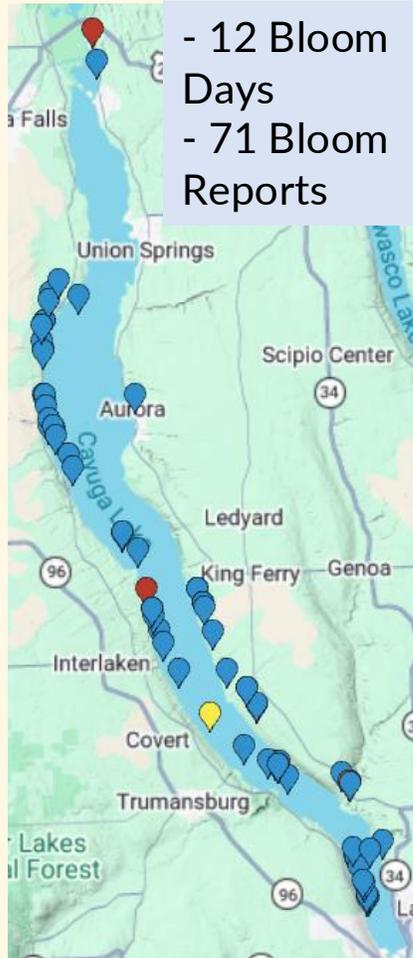
 Microscopy confirmed bloom

 MC < 0.3 µg/L

 MC 0.3 µg/L - 4.0 µg/L

 MC > 4.0 µg/L

## July



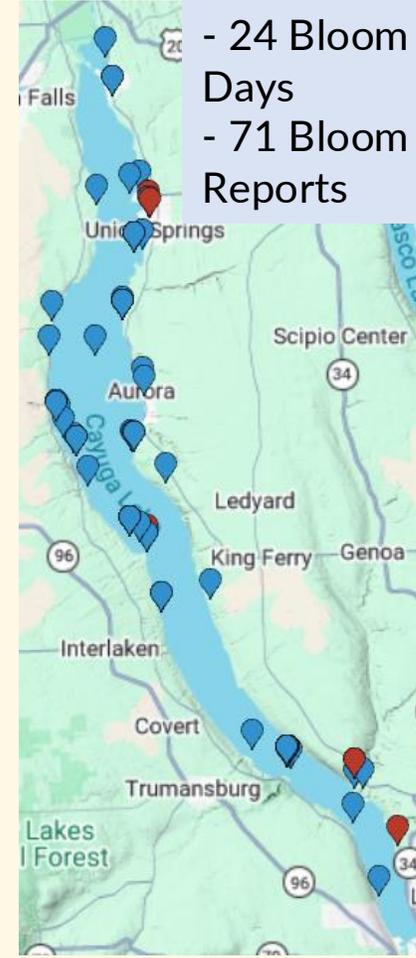
## August



## September



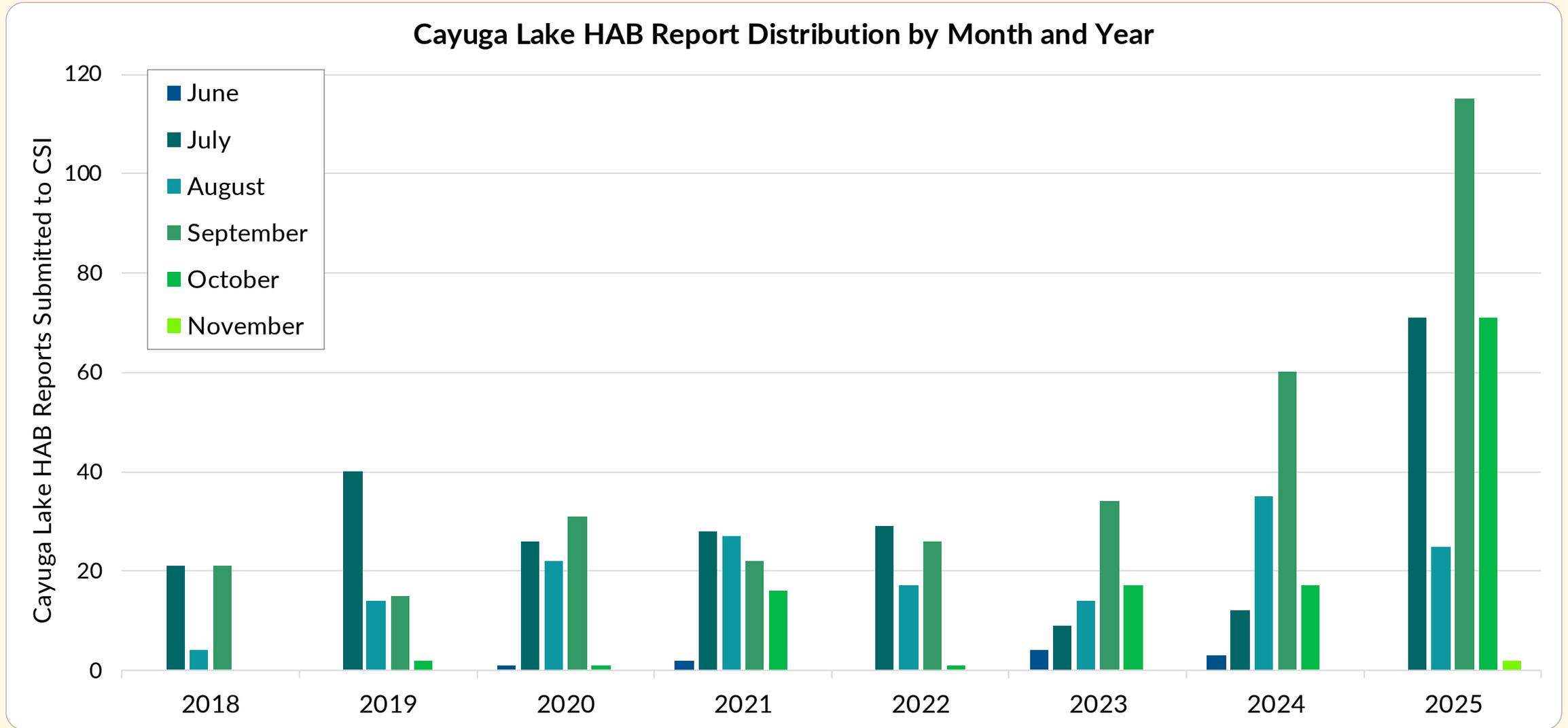
## October



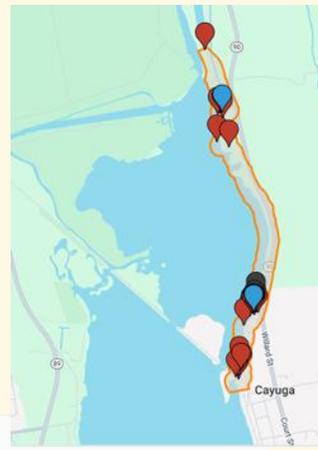
## November



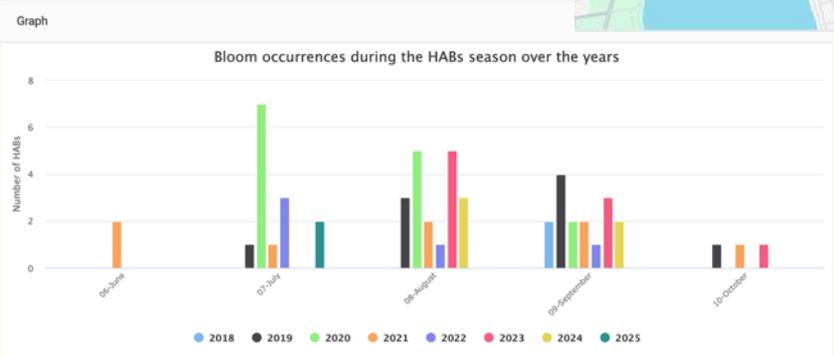
# 2018-2025 Cayuga Lake HAB Reports



# CSI's Cayuga Lake HAB Database

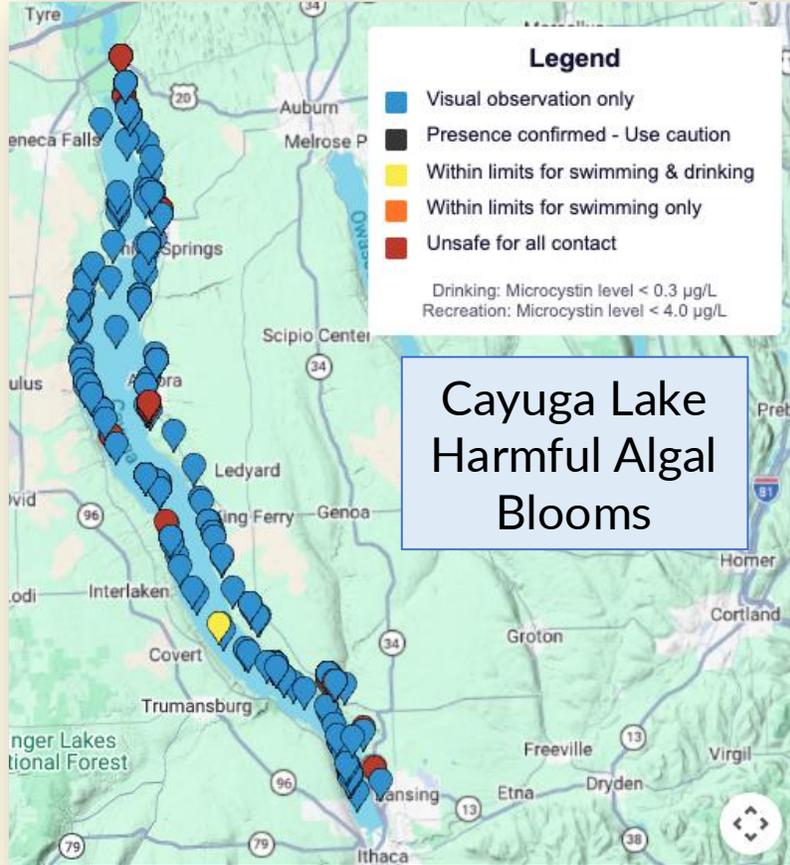


View historic HAB reports



View recent HAB reports

- **Where**
  - Latitude and Longitude
  - Segment
  - County
  - Extent
- **When**
  - Bloom Reported
  - Bloom Sampled (if applicable)
- **What**
  - Bloom Genera
    - Present
    - Dominant
  - Bloom Chemistry
    - Microcystin Concentration
    - Chlorophyll a Concentration
- **Other**
  - Bloom Description



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**Cayuga Lake Water Quality Monitoring**

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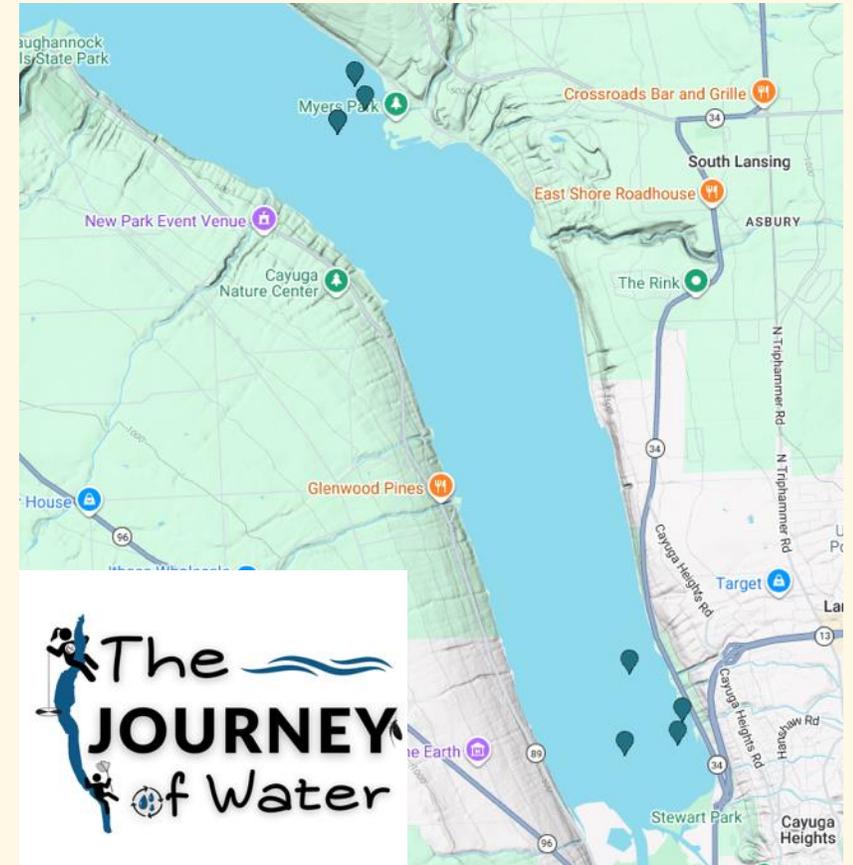


Aug 13, 2025  
Cayuga Lake

# Cayuga Lake Water Quality Monitoring



- 3 Water Quality Cruises each summer since 2007
- Monitor 7 sites:
  - At two sites, collect an epilimnion and hypolimnion sample
  - 4 sites in the southern end, 3 sites in the Main Lake Mid-South



# Cayuga Lake Water Quality Monitoring

Total Phosphorus Guidance Value = 20 µg/L

## Chlorophyll a Targets

**Table 10.** Water quality targets by regulatory segment

Waterbody Segment (WI/PWL ID)	Classification/Highest Best Use	Summer Average Total Chlorophyll-a Target (µg/L)
Northern End (0705-0030)	Class B – Primary and Secondary Contact Recreation, Fishing	8 µg/L
Main Lake, Mid-North (0705-0025)	Class A – Source Water Supply	6 µg/L
Main Lake, Mid-South (0705-0050)	Class AA – Source Water Supply with limited treatment	4 µg/L
Southern End (0705-0040)	Class A – Source Water Supply	6 µg/L

## Total Maximum Daily Load (TMDL) for Phosphorus in Cayuga Lake

Cayuga, Seneca and Tompkins Counties, New York

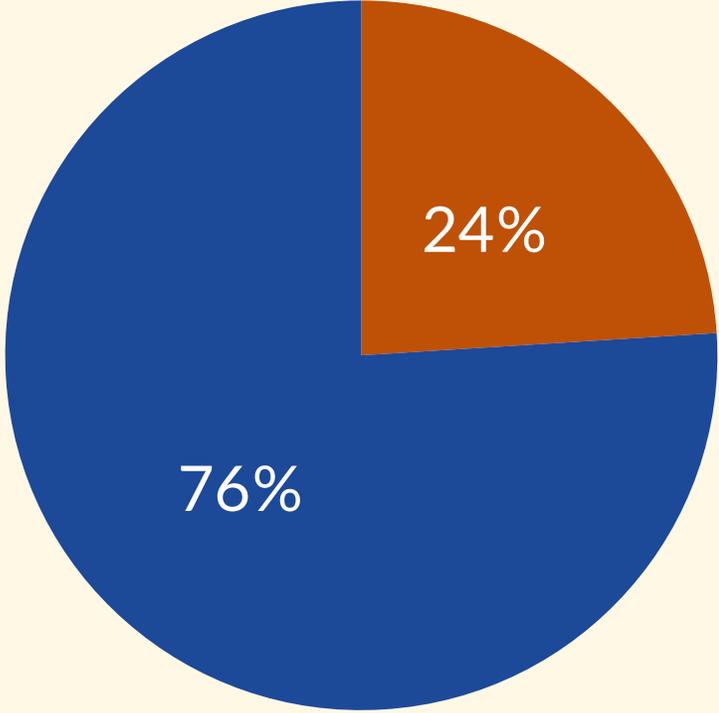
2024

New York State  
 Department of Environmental Conservation  
 625 Broadway, 4th Floor  
 Albany, NY 12233-3500



# Cayuga Lake Water Quality Monitoring

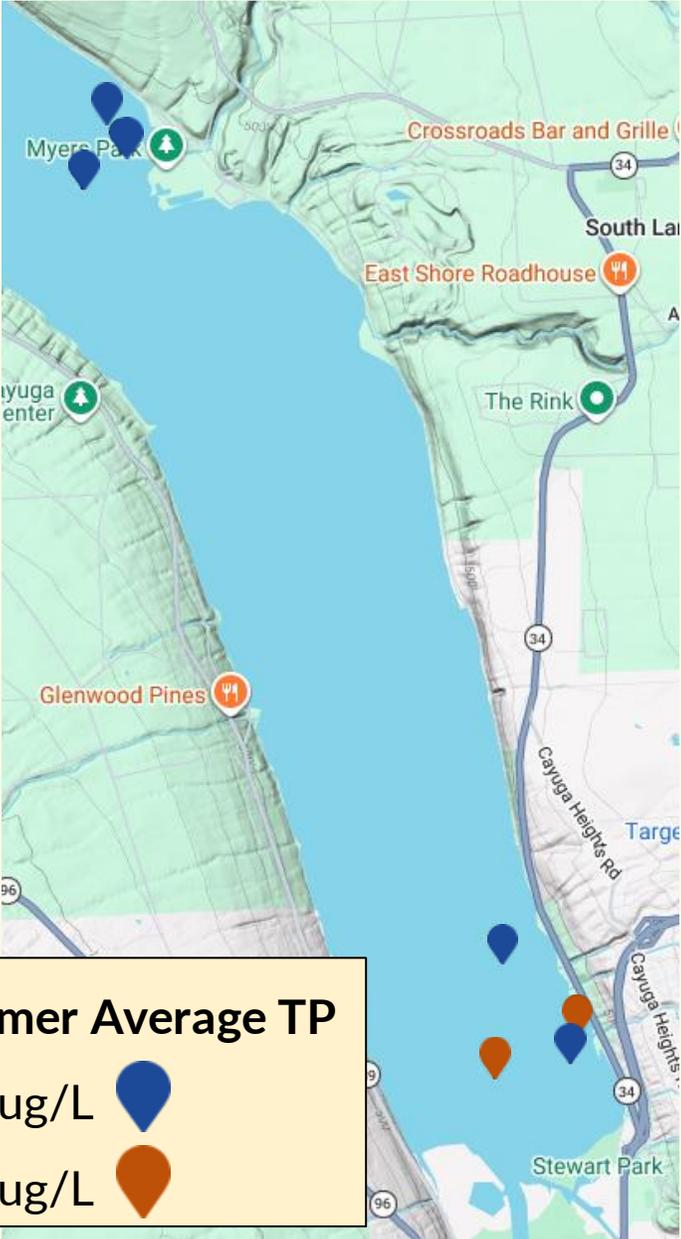
## Percent of Samples Above or Below Total Phosphorus Guidance Value



■ Above Guidance Value ■ Below Guidance Value

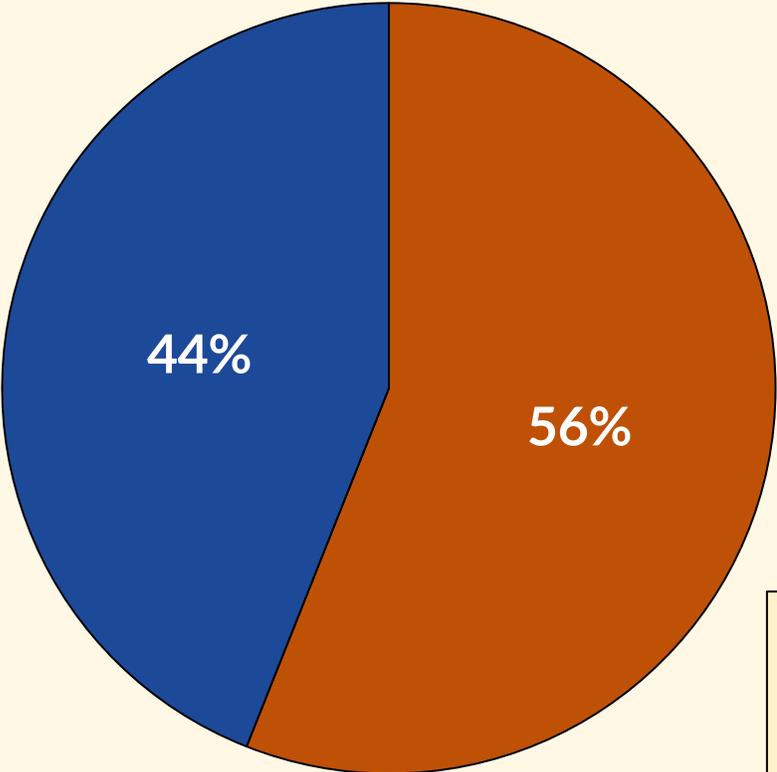
Total Maximum Daily Load (TMDL) for Phosphorus in Cayuga Lake  
Cayuga, Seneca and Tompkins Counties, New York  
2024

New York State  
Department of Environmental Conservation  
625 Broadway, 4th Floor  
Albany, NY 12233-3500



# Cayuga Lake Water Quality Monitoring

Percent of Samples Above or Below Target Chlorophyll a Levels

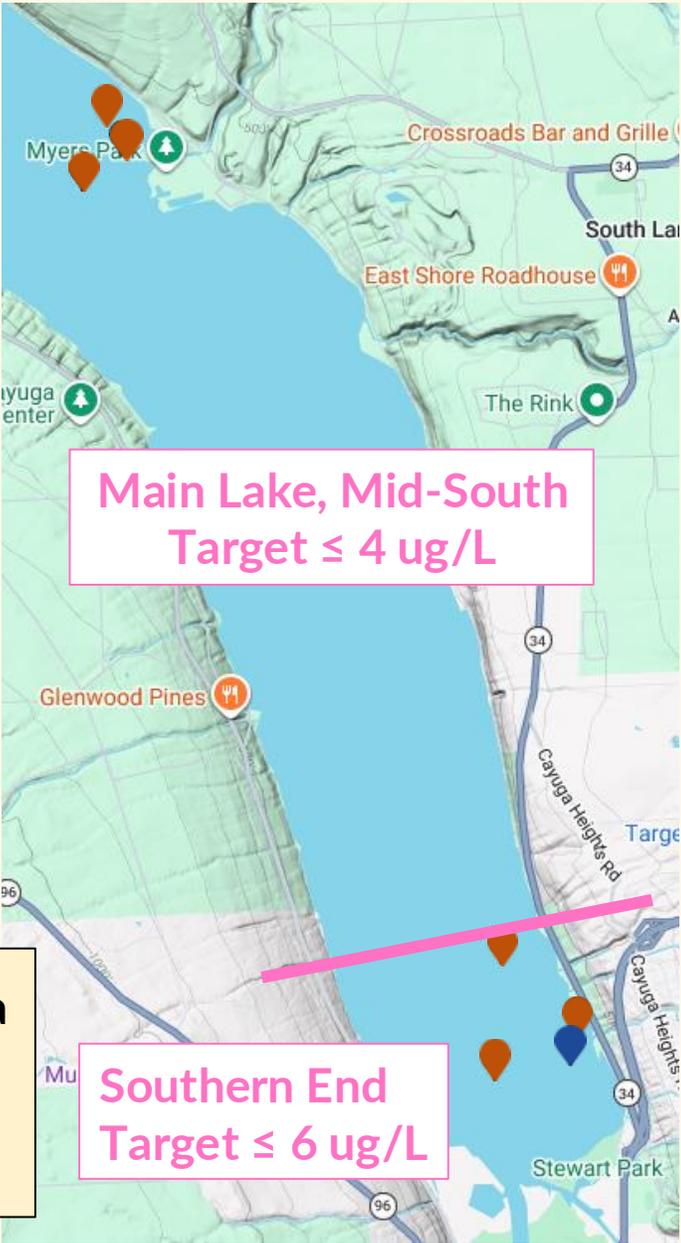


■ Above Target ■ Below Target



Summer Average Chlor a

- < Target
- > Target



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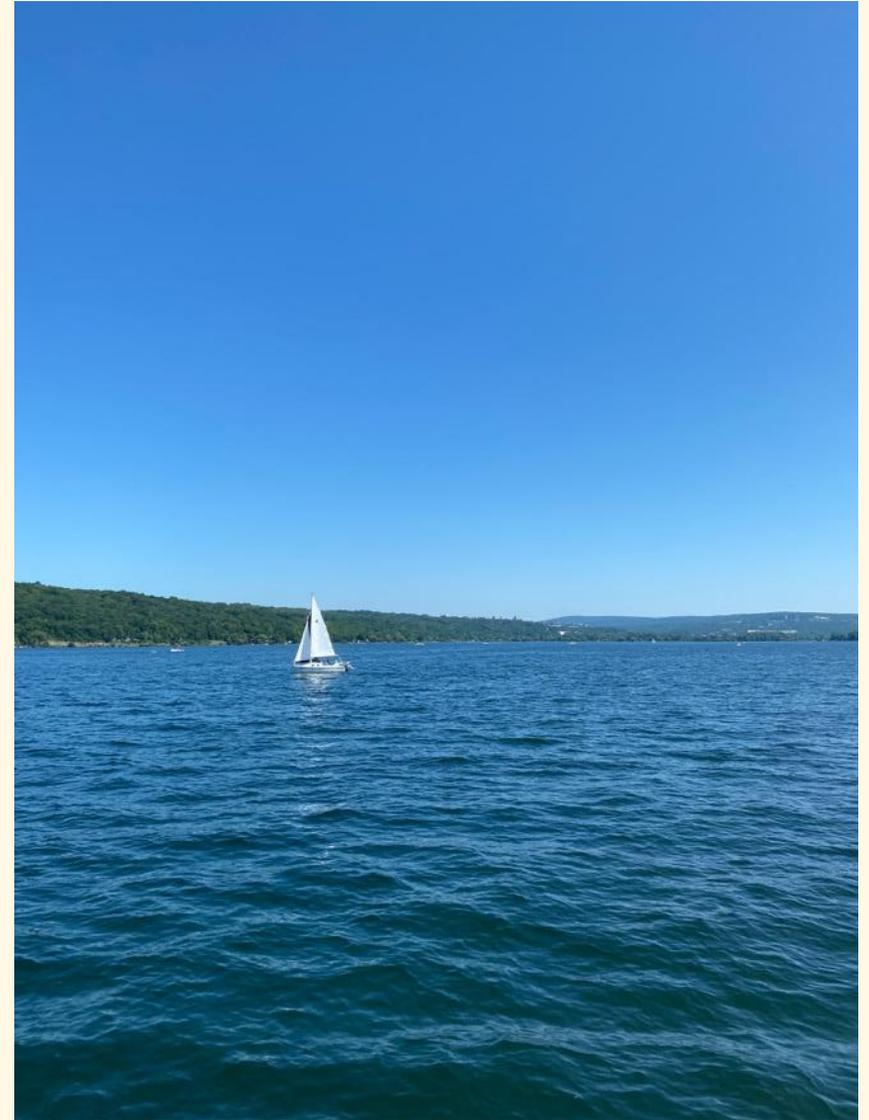
Cayuga Lake Harmful Algal Bloom Monitoring

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Cayuga Lake Water Quality Monitoring

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**Acknowledgements and Questions**



# Acknowledgements



Dedicated volunteers!

CSI Members

## CSI Staff Past and Present



## Partners



## Local Governments

- Cayuga County
- Seneca County
- Tompkins County
- City of Ithaca
- Town of Caroline
- Town of Danby
- Town of Dryden
- Town of Enfield
- Town of Ithaca
- Town of Lansing
- Town of Newfield
- Town of Ulysses
- Village of Cayuga Heights

Thank you!

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@communityscienceinstitute

Set up a meeting with me

[gshidemantle@communityscience.org](mailto:gshidemantle@communityscience.org)

(607) 257-6606

[www.communityscience.org](http://www.communityscience.org)

# Questions



**Kita on Skaneateles Lake**



**Dolly at Fillmore Glen**