

Community Science for Clean Water: *Engaging, Educating, Empowering*

Owasco Watershed Lake Association
4/2/2025

Alyssa Johnson
Outreach & Programs Coordinator,
Cayuga Lake Harmful Algal Bloom Monitoring Program Coordinator



Great Gully Creek, Photo by Alyssa Johnson

Agenda

Intro: Community Science Institute

Volunteer Monitoring & Water
Quality Databases

Fee-for-Service Water Testing

Outreach and Education



CSI Staff

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**Volunteer Monitoring & Water
Quality Databases**

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Community Science Institute



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

CSI offers three types of programming:

Three blue water droplets of varying sizes are arranged horizontally. Each droplet contains text describing a type of programming offered by CSI. The droplets are set against a light yellow background with a blue wavy line at the bottom representing water.

Volunteer
Water
Monitoring
Partnerships

Outreach and
Education

Fee-for-
Service Water
Testing

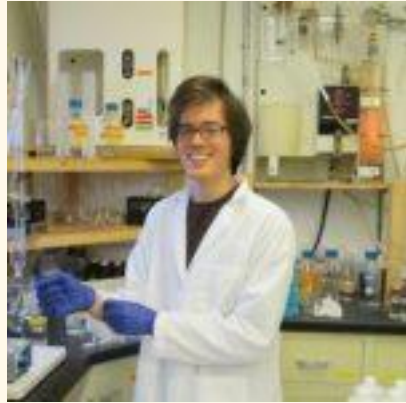
CSI's Mission

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

Community Science Institute



Grascen Shidemantle
Executive Director



Noah Mark
Laboratory Director



Adrianna Hirtler
Biomonitoring Coordinator



Katia Appel
Office Administrator



Alyssa Johnson
Outreach and
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Seth Bingham
Water Quality Scientist



Dan Pascucci
Water Quality Scientist



Rama Hoetzlein
Database Developer



Bill George
Data Entry Specialist

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**Volunteer Monitoring & Water
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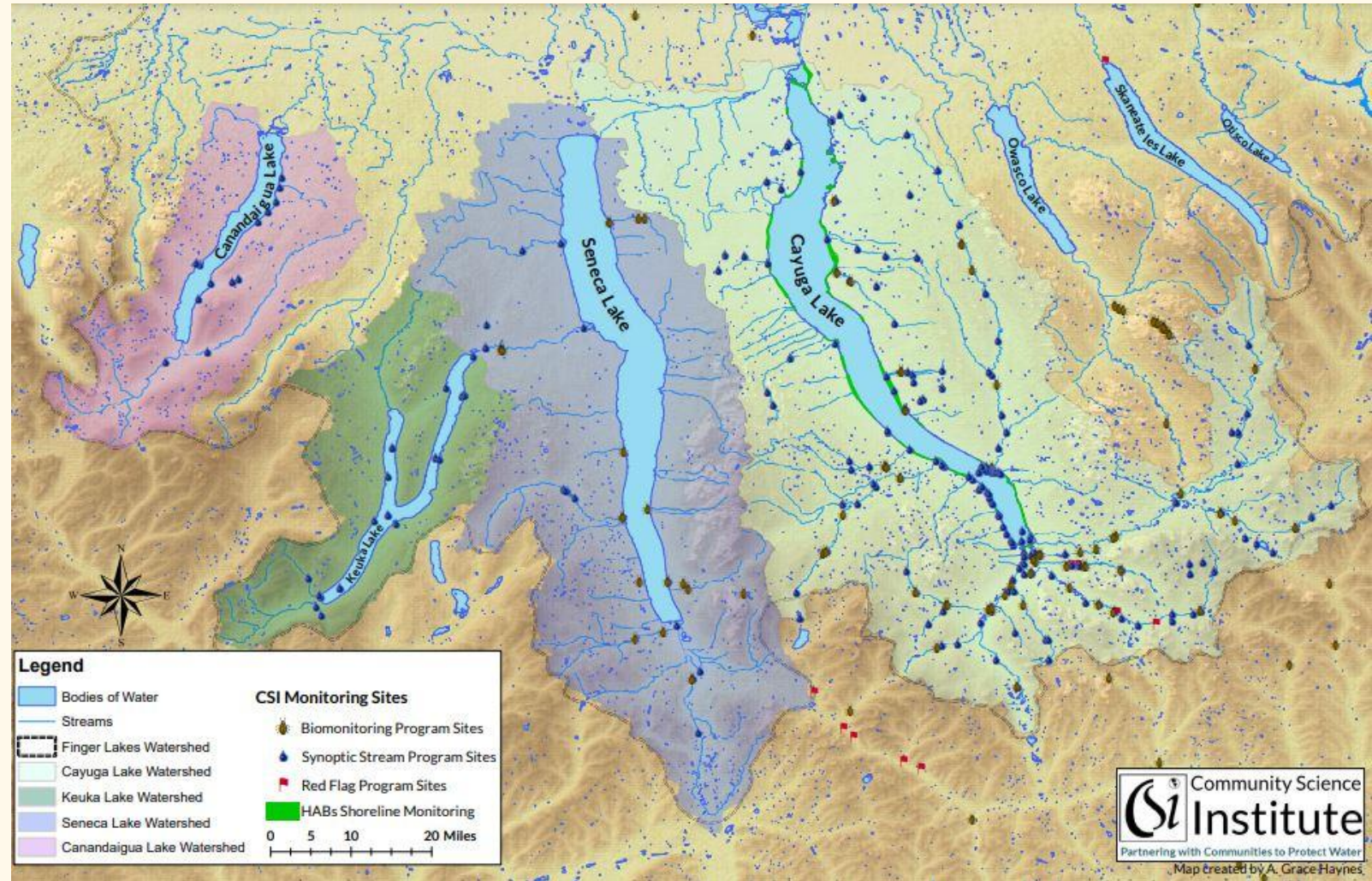


CSI's Volunteer Water Monitoring Partnerships

Monitoring Partnerships

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

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



Synoptic Stream and Lake Monitoring



David has been monitoring water quality on Fall Creek with us since 2002!

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
- Sediment
- Bacteria
- Salt
- pH, conductivity, temperature, etc.



Synoptic Stream and Lake Monitoring



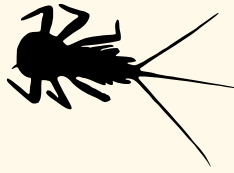
Volunteers collect samples from their designated stream 3 times each year: “stormwater” and baseflow

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

Biomonitoring Partnership



Biomonitoring



Purpose: Determine the ecological and long term health of streams while educating community members about local aquatic biodiversity

Collect and identify samples of benthic macroinvertebrates (BMI) to calculate:

- Total Family Richness
- EPT Richness
 - Ephemeroptera = mayflies, Plecoptera = stoneflies, Trichoptera = caddisflies
- Family Biotic Index
- Percent Model Affinity
- Biological Assessment Profile



Volunteers collect samples in the field then sort and identify organisms in the lab

Biological Monitoring Results



ARK

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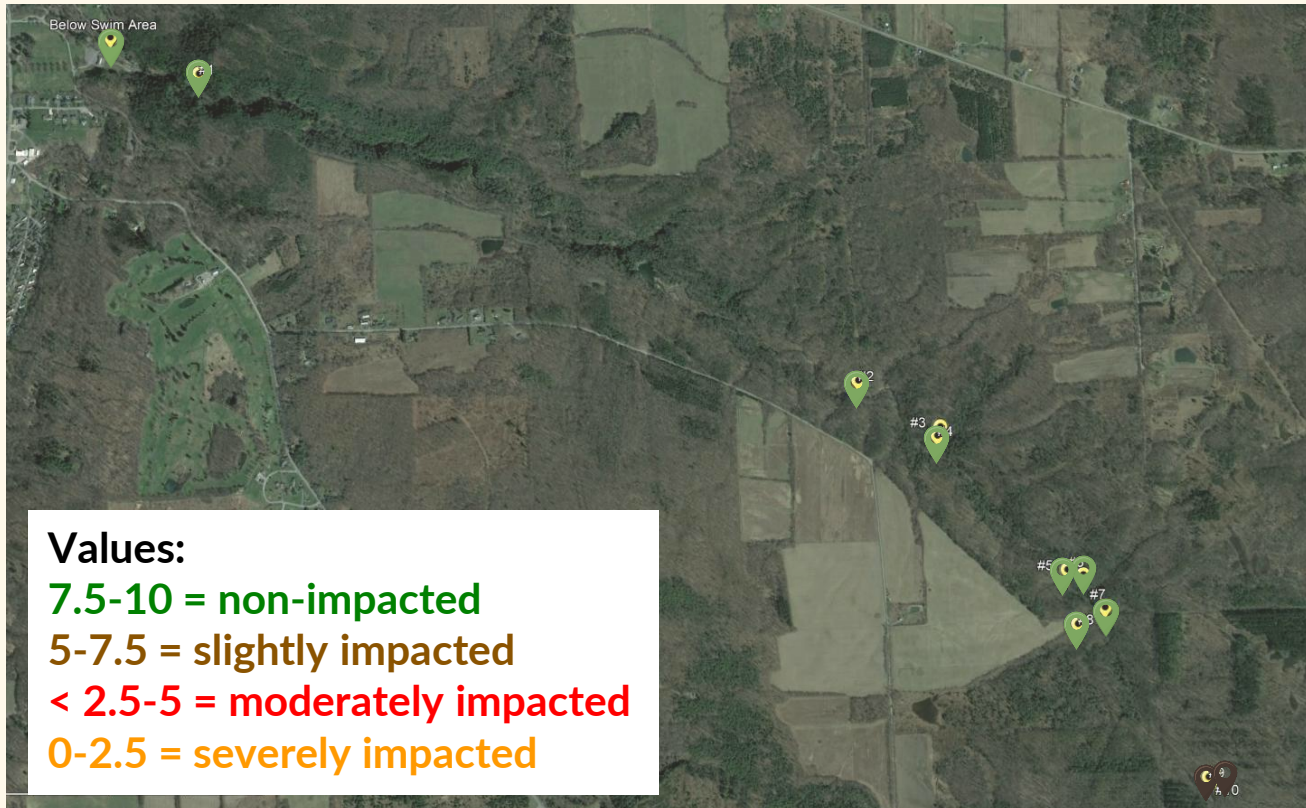
Lake

3771 ft

#9
#10

Past Biomonitoring in the Owasco Lake Watershed

How is a BMI sample evaluated? What are the metrics?



Site Name	Latitude	Longitude	Results
Below Swim Area	42.698941	-76.415653	7.9
Site 1	42.69768826	-76.41152563	7.1
Site 2	42.68727777	-76.38115673	8.5
Site 3	42.68572108	-76.37742201	NA
Site 4	42.68542696	-76.37755453	7.7
Site 5	42.680947	-76.371681	7.4
Site 6	42.680775	-76.370972	8.3
Site 7	42.679699	-76.369999	8.0
Site 8	42.679145	-76.371228	7.8
Site 9	42.674087	-76.3654	6.7
Site 10	42.674177	-76.3651	6.3

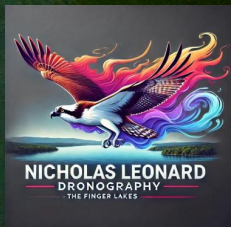
Biological Assessment Profile (BAP):

This metric combines Total Family Richness, Family Biotic Index, EPT Richness and Percent Model Affinity in a single metric called the BAP.

Each of these four metrics is converted to a value from 0 to 10 using a mathematical equation. The four converted values are averaged, and the average represents the overall water quality for the sampling location.

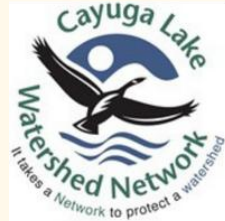
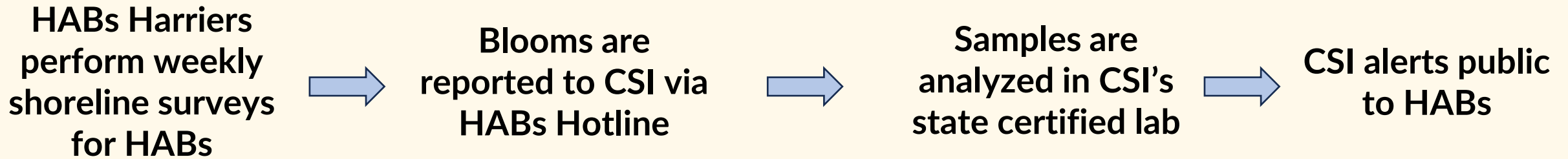


September 19, 2024



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.



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

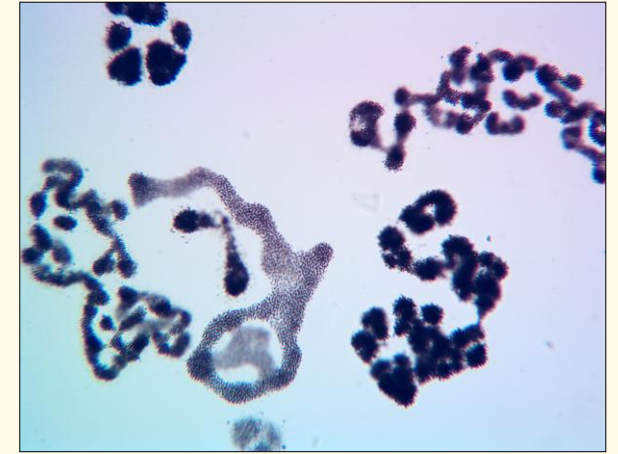
Cayuga Lake Harmful Algal Bloom (HAB) Monitoring Partnership

HAB samples are analyzed to:

- Identify cyanobacteria genera
- Measure chlorophyll a
- Measure microcystin

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

CSI reports all blooms to county health department
officials and NYSDEC



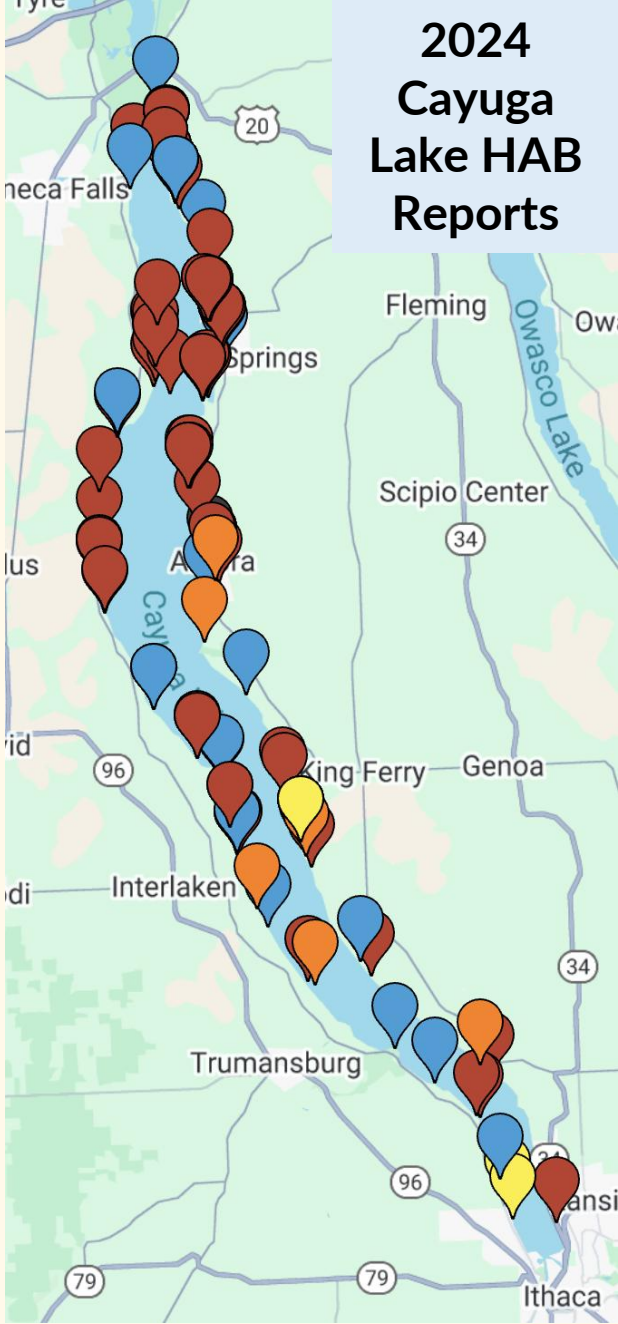
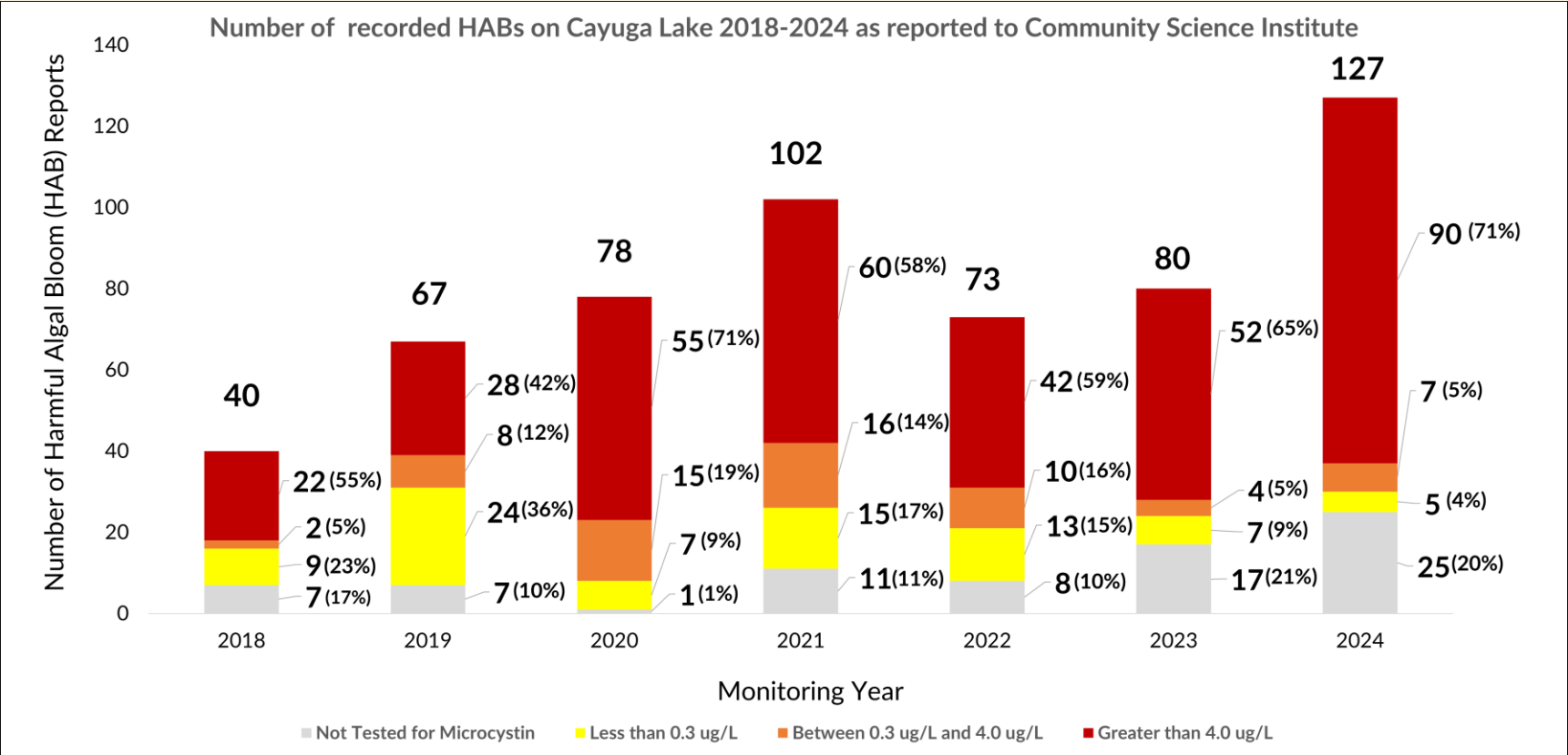
Microcystis sp.



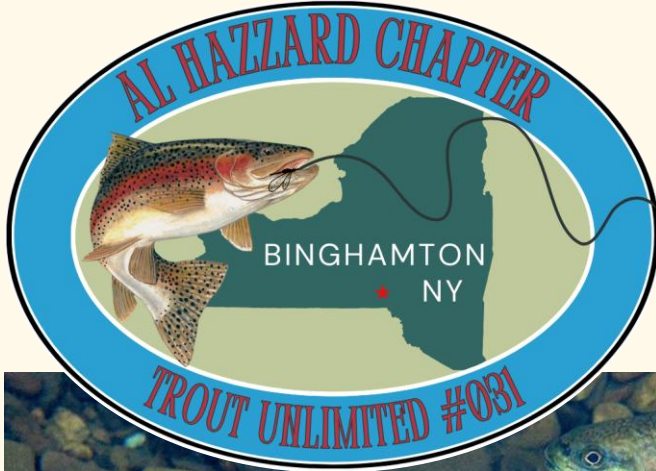
Dolichospermum sp.



Cayuga Lake Harmful Algal Bloom (HAB) Monitoring Partnership



Owego Creek Monitoring Project



Partnership with the Al Hazzard Chapter of Trout Unlimited

Project duration: 2025-2026

We aim to collect valuable water quality data from the headwaters of Owego Creek in a similar manner to our former Red Flag monitoring program.

The goal: to identify critical trout spawning habitat in tributaries of the Owego Creek system so that native, wild trout can be reintroduced in these areas.



CSI Data Makes a Difference



Removal of the southern end of Cayuga Lake from the 303(d) list for pathogenic bacteria

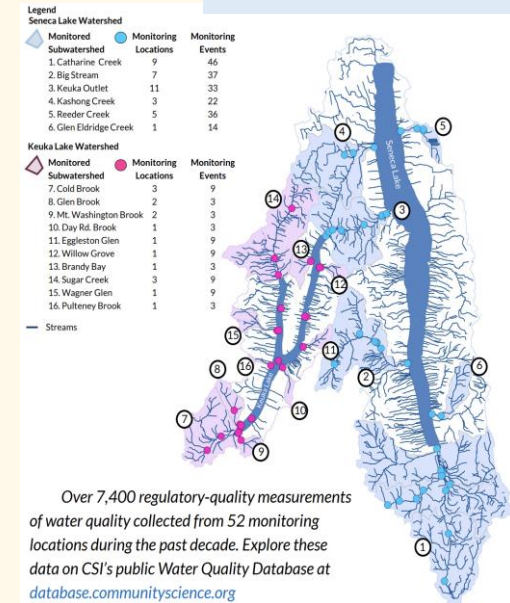


Trumansburg Wastewater Plant upgrades



Validate the Cayuga Lake Modeling Project's model of Fall Creek phosphorus loading

Seneca-Keuka 9E Plan



Peer-reviewed research

Using Citizen Based Science to Provide Insights on Toxic Cyanobacteria Blooms in a New York Lake

Howarth, R., Swaney, D., Smith, C., Marino, R., Figueroa, A., & Penningroth, S. (2023). Using Citizen Based Science to Provide Insights on Toxic Cyanobacteria Blooms in a New York Lake. Abstract of presentation at the meeting of the Association of the Sciences of Limnology and Oceanography (ASLO) "Resilience and Recovery in Aquatic Ecosystems" – Mallorca, Spain; June 4-9, 2023

Community-Based Risk Assessment of Water Contamination from High-Volume Horizontal Hydraulic Fracturing

Penningroth, S. M., Yarrow, M. M., Figueroa, A. X., Bowen, R. J., & Delgado, S. (2013). Community-Based Risk Assessment of Water Contamination from High-Volume Horizontal Hydraulic Fracturing. NEW SOLUTIONS: A Journal of Environmental and Occupational Health Policy, 23(1), 137–166. <https://doi.org/10.2190/NS.23.1.i>

Long-Term Study of Soluble Reactive Phosphorus Concentration in Fall Creek and Comparison to Northeastern Tributaries of Cayuga Lake, NY: Implications for Watershed Monitoring and Management

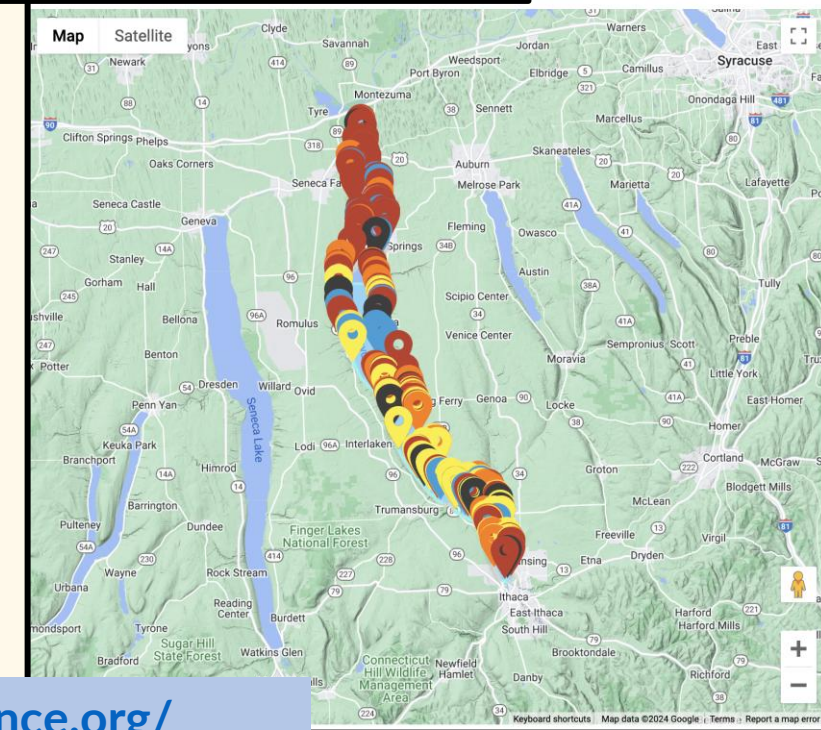
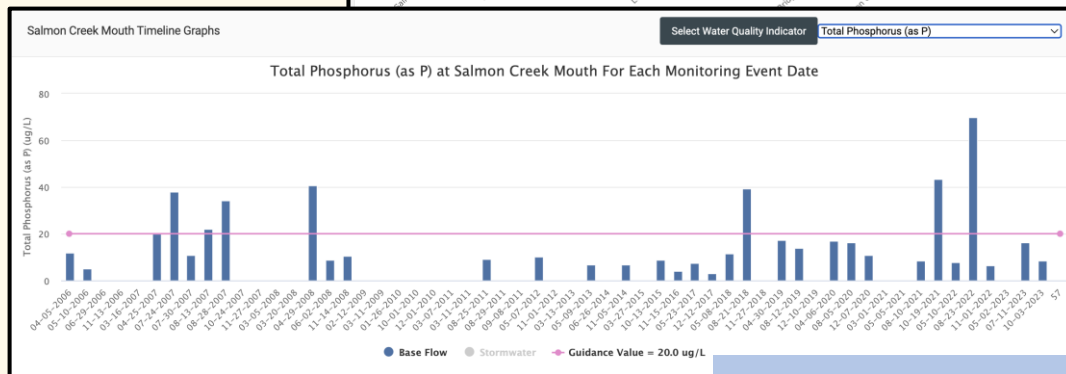
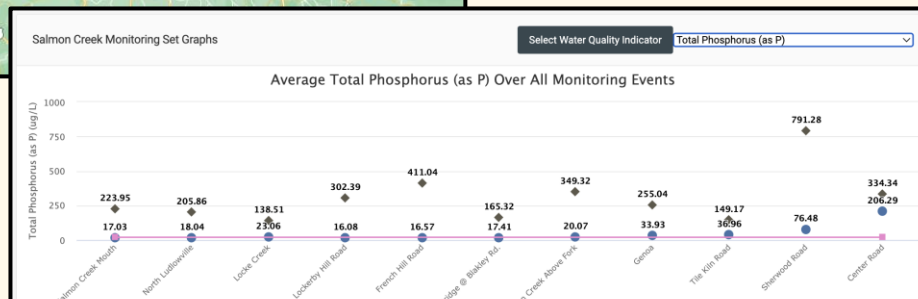
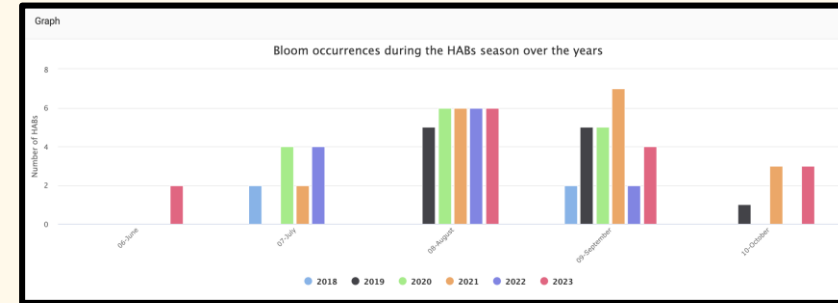
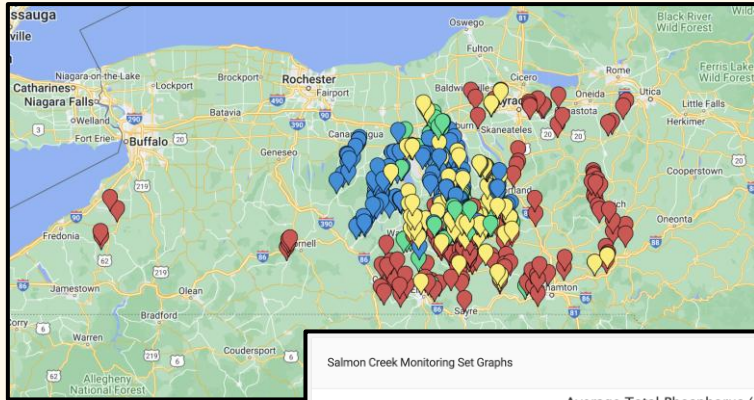
O'Leary, N.; Johnston, R.; Gardner, E.L.; Penningroth, S.M.; Bouldin, D.R. Long-Term Study of Soluble Reactive Phosphorus Concentration in Fall Creek and Comparison to Northeastern Tributaries of Cayuga Lake, NY: Implications for Watershed Monitoring and Management. *Water* 2019, 11, 2075. <https://doi.org/10.3390/w11102075>

Read "The Power of Community-Collected Data" for more details: <http://www.communityscience.org/2022/09/22/power-of-community-collected-data/>

CSI's Water Quality Database

Harmful Algal Blooms

Stream and Lake Chemistry



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

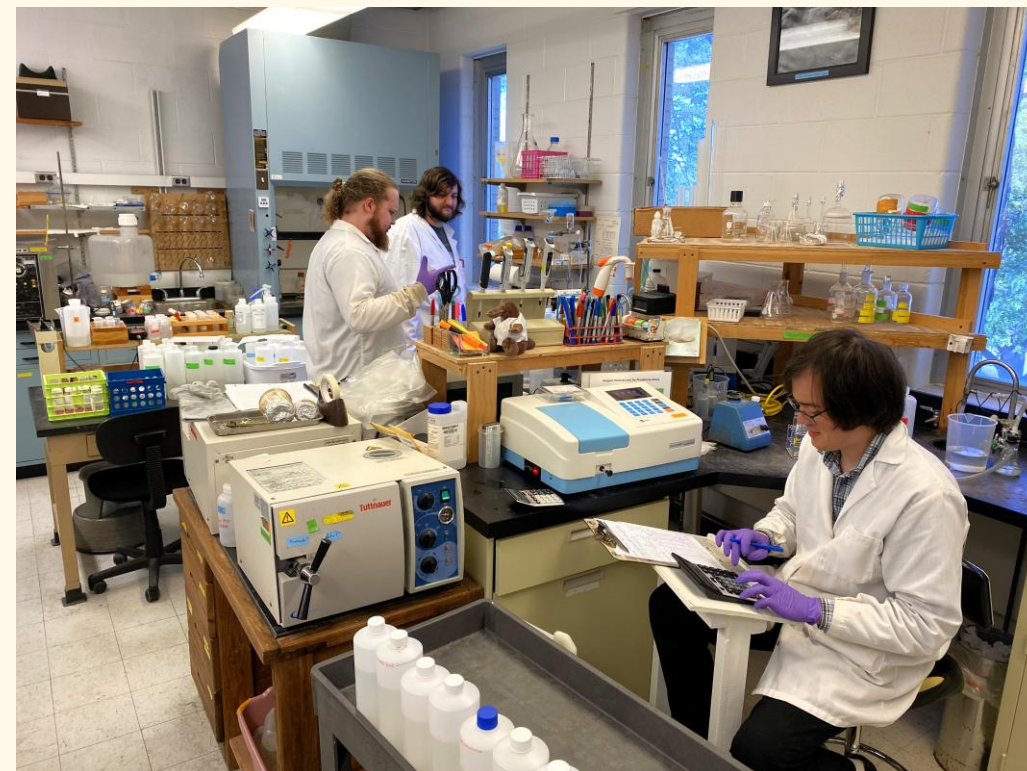
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Institute

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Fee-for-Service Water Testing

Outreach and Education



Fee-for-Service Water Testing

We test water from private wells, municipal water systems, swimming beaches, effluents, and more!



Residents

- Home sales
- Routine testing
- Health/taste/quality concerns

We serve:

Local Businesses

- Farms
- Restaurants
- Breweries
- Wineries
- Mobile Home Parks
- Apartment Buildings

Government Agencies

- Tompkins County Health Dept.
- NY State Parks
- NYS Dept. of Environmental Conservation
- NYS Dept. of Health

In 2024, CSI's lab tested more than 2,900 drinking water and wastewater samples!

NYSDOH-ELAP #11790

In-House Testing

Potable Only

Total Coliform/ <i>E.coli</i>
Standard Plate Count
Nitrate, Nitrite
Calcium Hardness
Sulfate
Conductivity
Turbidity
Orthophosphate (SRP)

Both

pH
Chloride
Alkalinity
Total Dissolved Solids
Turbidity
Microcystin

Non-Potable Only

<i>E.coli</i> Enumeration
Fecal Coliform
Nitrate+Nitrite (NO _x)
Total Kjeldahl Nitrogen (TKN)
Ammonia Nitrogen
Soluble Reactive Phosphorous
Total Hardness
Total Solids
Total Suspended Solids
Dissolved Oxygen
Chlorophyll a

We partner with larger labs to subcontract testing for other analytes such as heavy metals, PFAS, BOD, etc.

Resources

FAQ page on CSI's website

Handouts on common questions such as how to shock a well, iron and manganese bacteria, and microcystin in beach wells

Referrals for local water treatment specialists

Sample bottles available for pick up at:

- CSI's Lab by the Ithaca Airport
- Greenstar on Cascadilla Street
- ShurSave in Trumansburg
- A new location near you??

Water Testing Frequently Asked Questions

- + How do I know if my water is safe for drinking?
- + What should I test my water for?
- + How can I get my water tested?
- + What kinds of toxic chemicals might be in my water?
- + My water tested positive for coliform bacteria. What should I do?
- + What can I do to take care of my well?
- + How can my water get contaminated?
- + How often should I test my water?
- + What kind of water treatment system should I install?
- + My water looks, tastes, or smells funny. What should I do?
- + I'm concerned about hydrofracking contaminating my well. What should I do?
- + What's the difference between water in streams and lakes and the water in a well?
- + How does my well water quality compare to others in this region?

Coming Soon...

Water Testing Assistance Fund

*to provide discounted water testing to
those who otherwise could not afford
the cost of drinking water testing*

Why offer this service?

It is needed!

CSI is the only commercial ELAP-certified lab in Tompkins County and the Cayuga Lake watershed

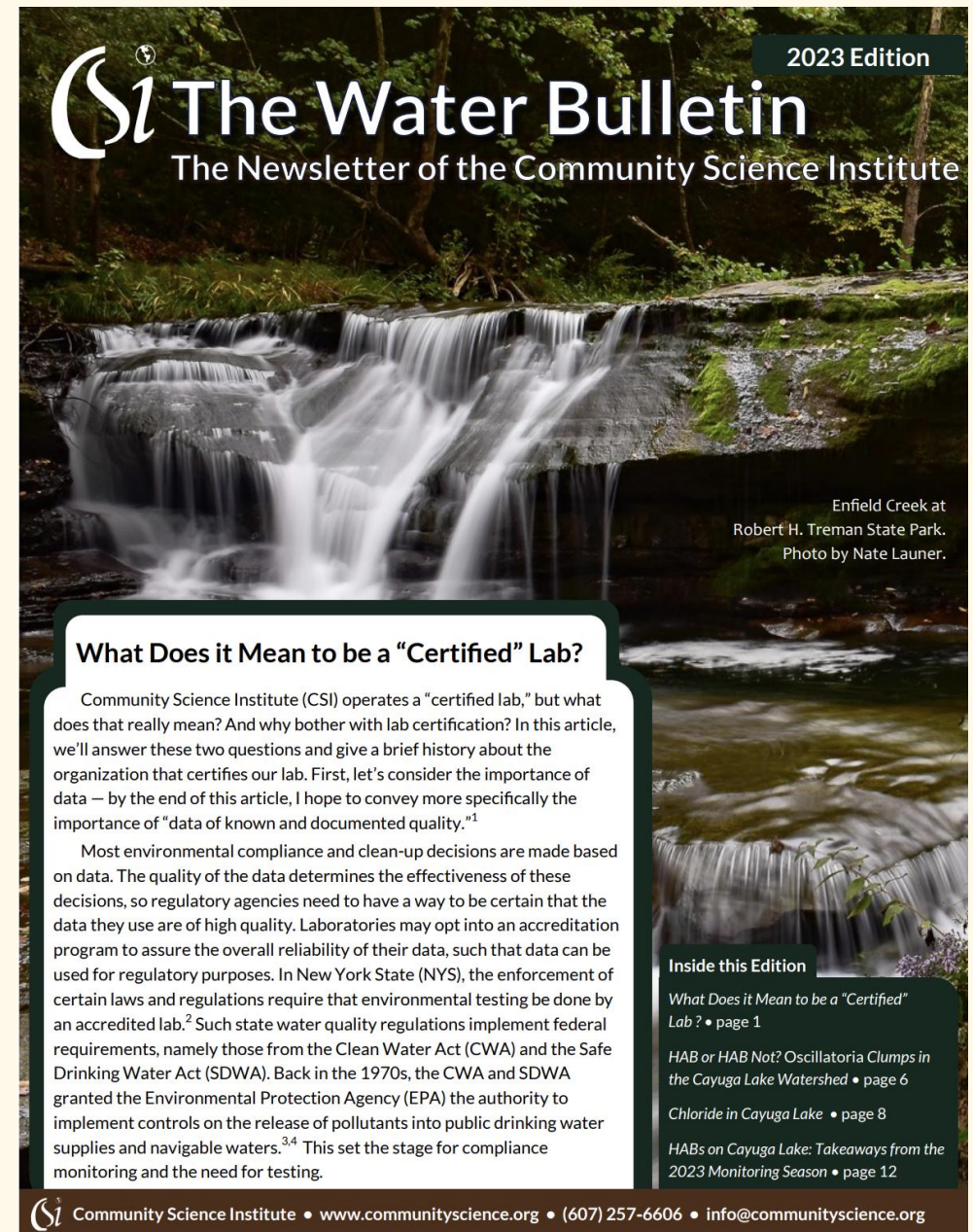
Filling in the gap for a large lab in Syracuse that lost its certification in July 2024



We provide valuable education to clients about their drinking water resources and recommended testing to fit their specific needs and budgets

Provides a sustainable source of income (~ 50% of our income in 2024)

For more information
about what it means to be
an ELAP-certified lab,
check out our
2024 Water Bulletin
Newsletter!



Fee-for-Service Water Testing Q&A

Testing Your Water at CSI's Certified Lab

Hours of Operation: Monday – Friday 9 AM – 5 PM

Sample Drop-Off Hours:

- Monday – Thursday
- 9:00 AM – 3:00 PM



*Please note: Samples dropped off outside of these times may or may not be accepted, at the discretion of CSI staff. If you are unable to drop off samples during these hours, please call 607-257-6606 to make special arrangements. **Bacteriological samples cannot be accepted on Fridays.***

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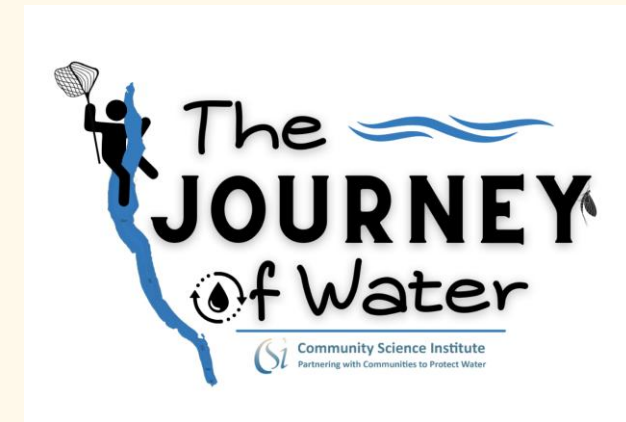
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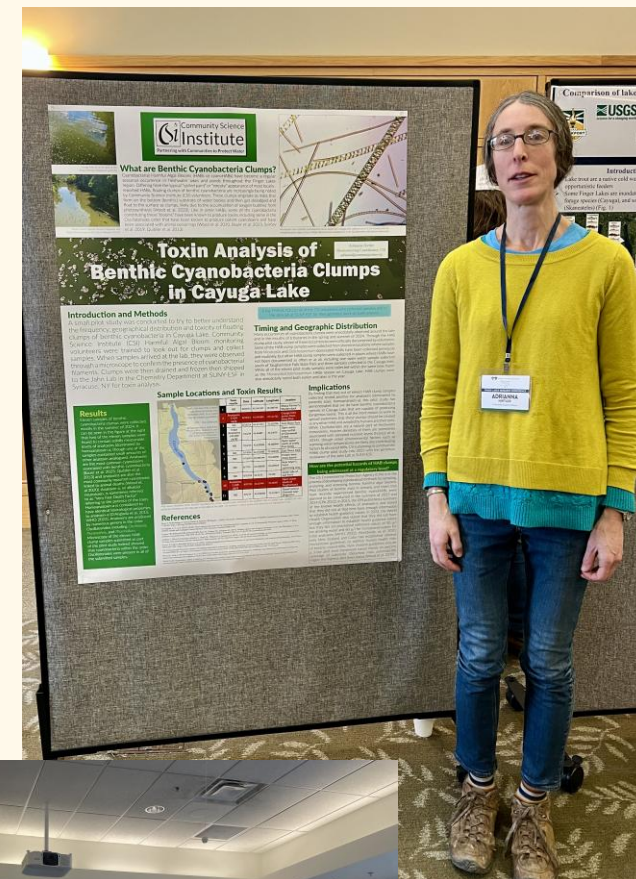
Journey of Water Summer Youth Education Series



PARK
FOUNDATION



Public Events and Presentations



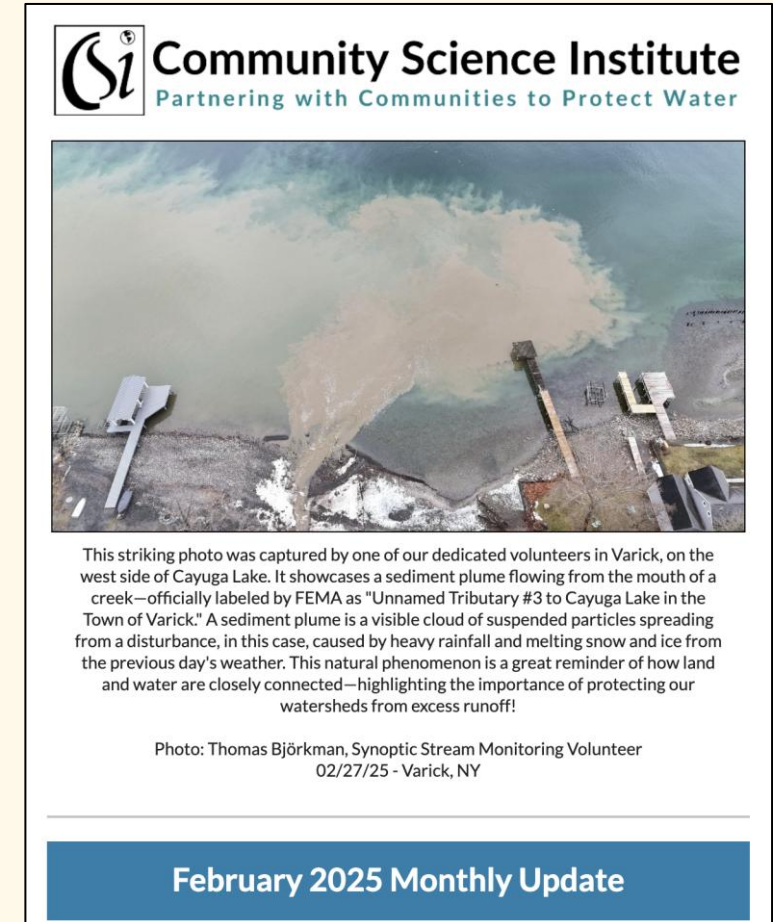
Educational Materials



Annual Water Bulletin Newsletters



Online Learning Materials



Monthly Email Updates

Acknowledgements

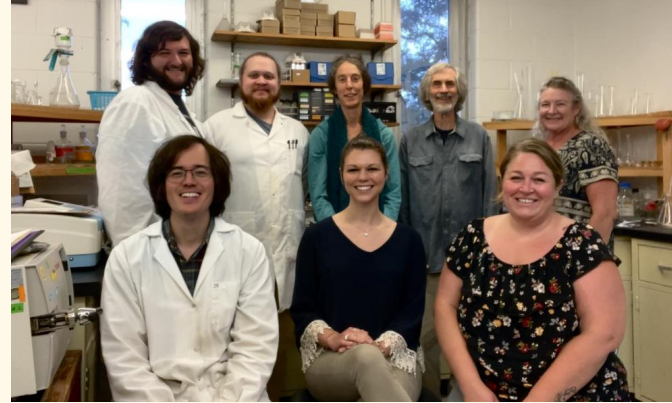


Dedicated volunteers!



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 Scipio
Town of Ulysses
Village of Cayuga Heights

Thank you!

Stay in touch!

Join CSI's email list for
monthly updates



Follow us on social media



@communityscienceinstitute

Set up a meeting with me

alyssa@communityscience.org

(607) 257-6606

www.communityscience.org

Questions?

Emerson Park Pier
Owasco Lake
03/27/25

