Bridging Science and Community:
Volunteer Monitoring, Drinking Water, and Water Science Education in the Finger Lakes

SUNY ESF Water Science and Policy Seminar
3/25/26

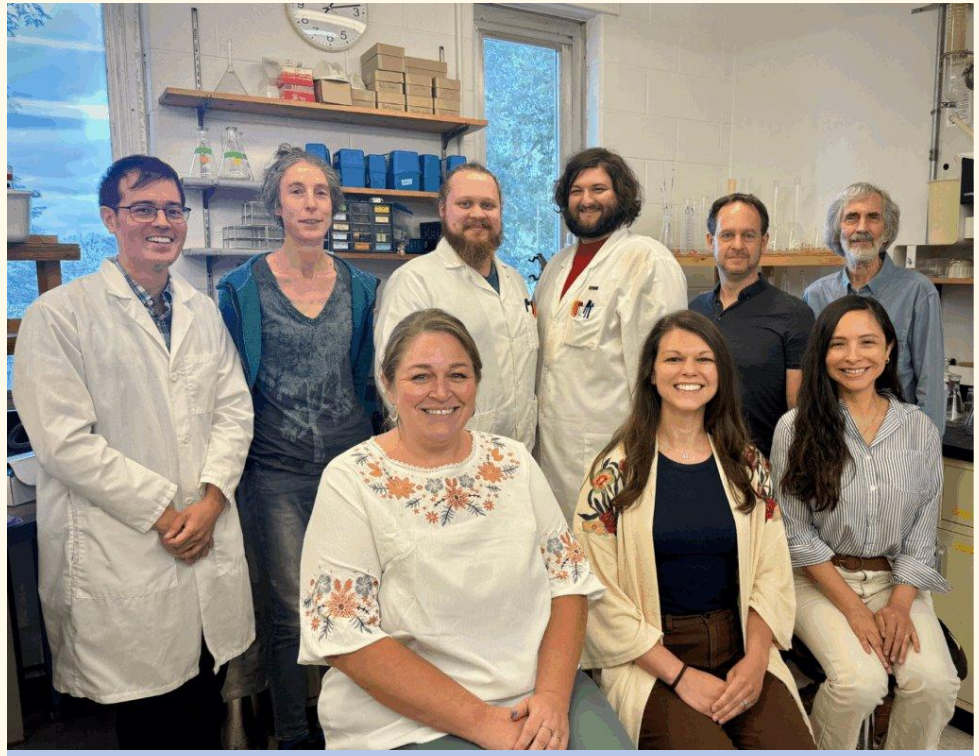
Grascen Shidemantle, PhD
Executive Director
Community Science Institute

Community Science Institute
Partnering with Communities to Protect Water

CSI Volunteer Thomas Bjorkman sampling Johnsons Creek on March 17, 2026

Agenda

- Community Science Institute
- Volunteer Monitoring Partnerships
- Water Quality Database
- Fee-for-Service Water Testing
- Outreach and Education



CSI Staff

Agenda

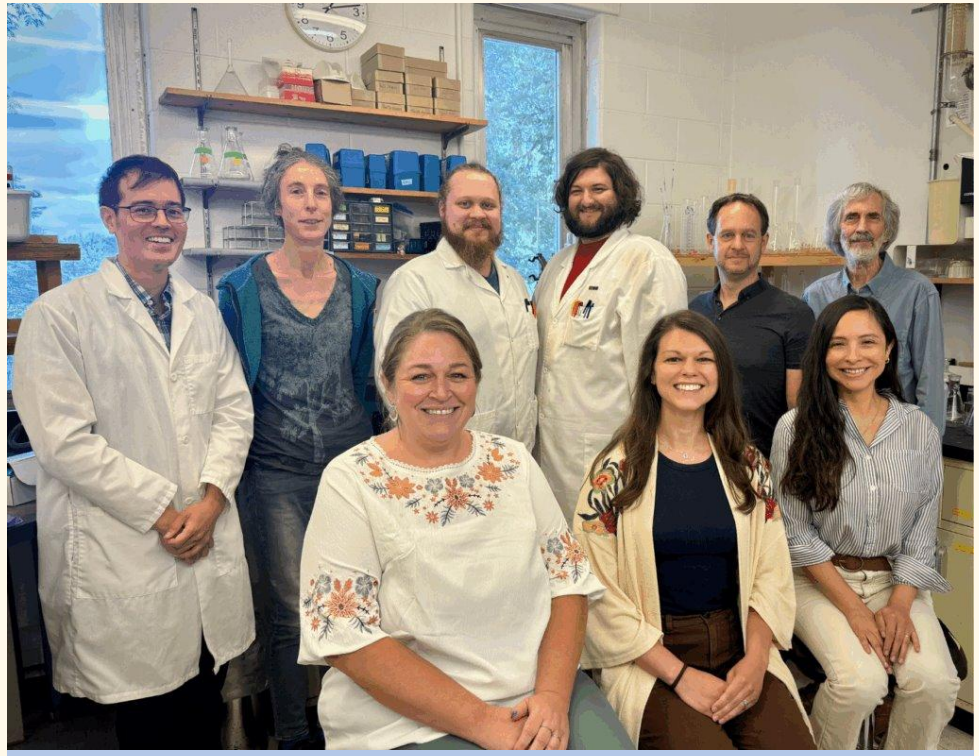
Community Science Institute

Volunteer Monitoring Partnerships

Water Quality Database

Fee-for-Service Water Testing

Outreach and Education



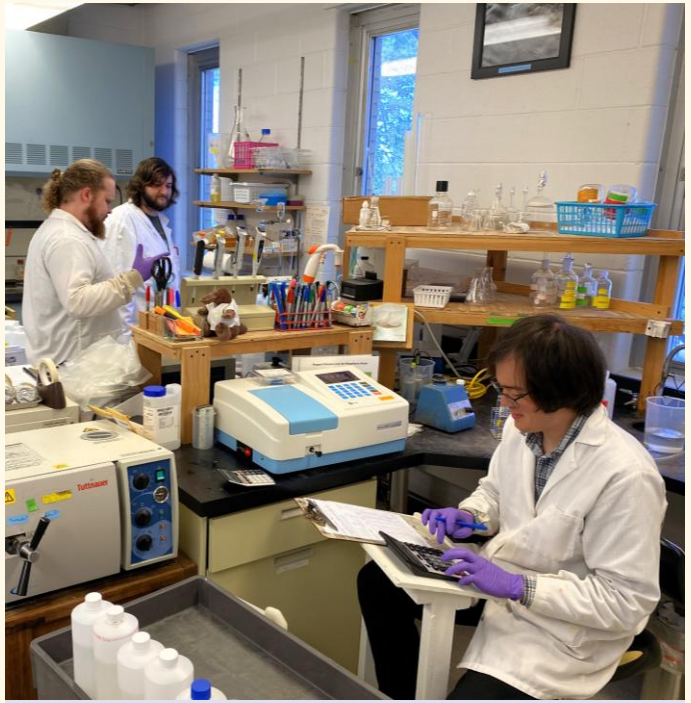
CSI Staff

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

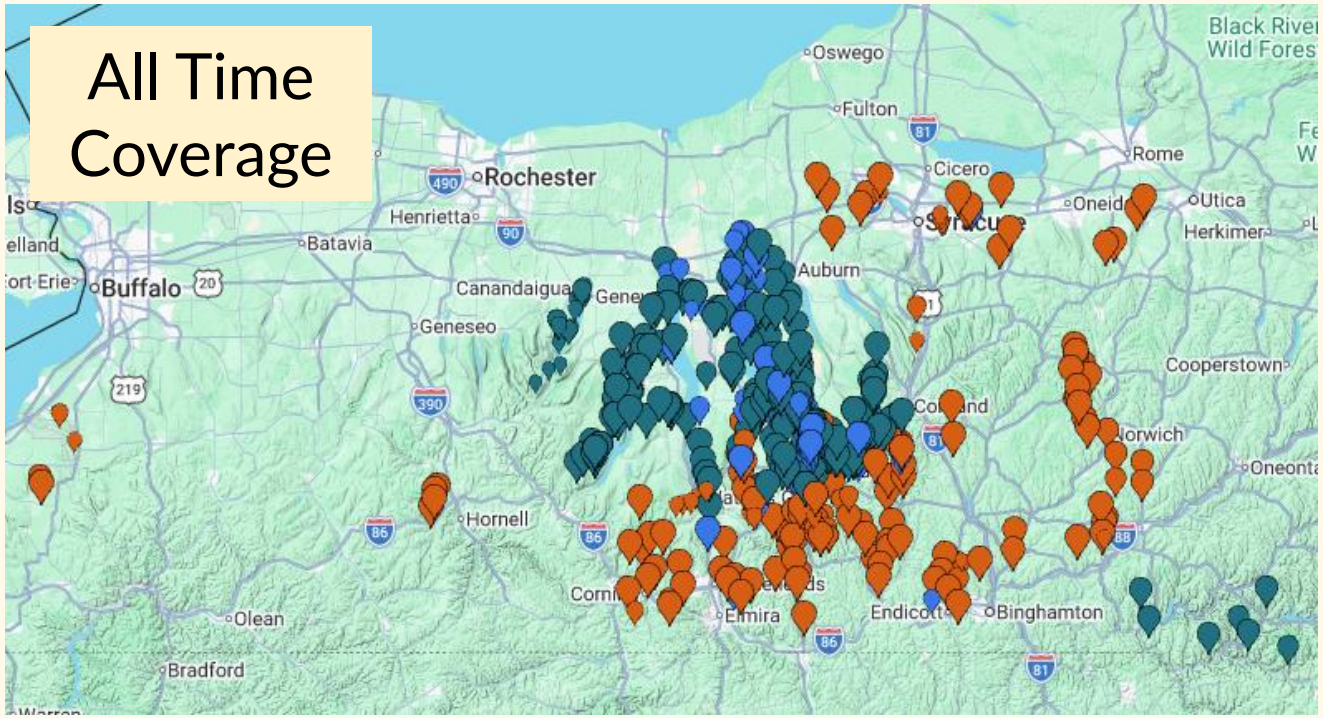


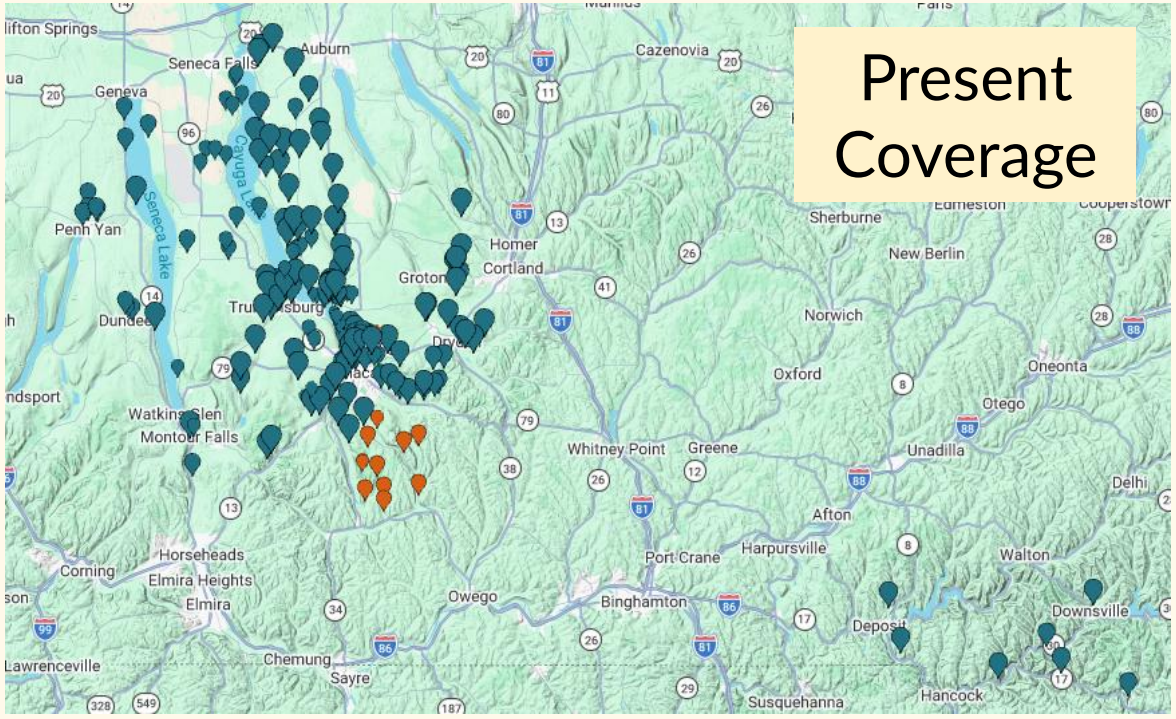
Fee-for-Service Water Testing

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.

Community Science Institute

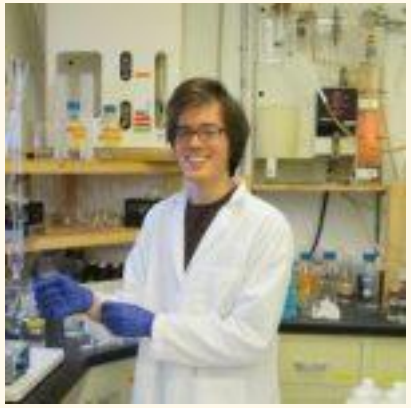
Most of our work is centered around the Cayuga Lake Watershed, but we serve other watersheds too!





Community Science Institute Team

Grascen Shidemantle
Executive Director



Noah Mark
Laboratory Director

Adrianna Hirtler
Biomonitoring Coordinator

Katia Appel
Office Administrator

Alyssa Johnson
Outreach and
Programs Coordinator

Dan Pascucci
Water Quality Scientist

Seth Bingham
Water Quality Scientist &
Quality Assurance Officer

Aditi Khare
Database Developer

Rama Hoetzlein
Database Developer

Jared Thomas
Intern - FWS Student

Agenda

Community Science Institute

Volunteer Monitoring Partnerships

Water Quality Database

Fee-for-Service Water Testing

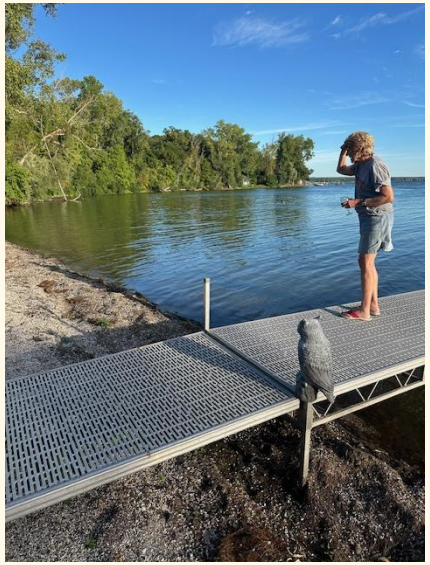
Outreach and Education

CSI Volunteer, Christina Stark

CSI's Volunteer Water Monitoring Partnerships

Synoptic Stream and Lake Monitoring

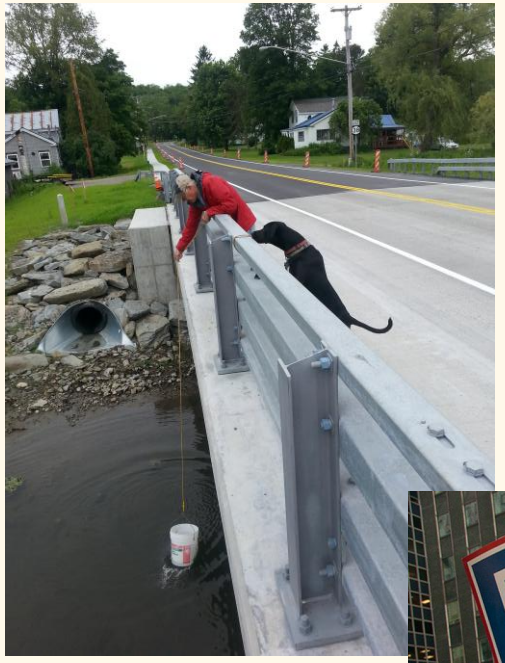
Biomonitoring



Cayuga Lake Harmful Algal Bloom (HAB) Monitoring

CSI's Volunteer Water Monitoring Partnerships

We take on other projects as need or interest arises as well



Red Flag Program and Groundwater Monitoring

Owego Creek Tributaries Monitoring Project with Trout Unlimited

Synoptic Stream and Lake Monitoring Partnership

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 under "stormwater" & baseflow conditions

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

Synoptic Stream and Lake Monitoring

Data are regulatory quality:
- Quality Assurance Project Plan (QAPP)
- Analyzed in ELAP-certified lab

Data submitted every two years to the DEC for the NYS Water Quality Report

New York State's 2020/2022 Water Quality Reports

On September 11, 2024, New York State issued the Final 2020/2022 NYS Section 303(d) List and the 2020/2022 Section 305(b) Report. The Final 2020/2022 NYS Section 303(d) List was developed based on external water quality data assembled through two, five month long public data solicitation processes (2019 and 2021), internal NYSDEC water quality data, and by following methods detailed in the 2021 CALM.

In addition, a Draft 2020/2022 NYS Section 303(d) List was made available for public comment for a 59-day public comment period that ended February 25, 2022. During that comment period, comments from various organizations, municipalities, and individuals were received.

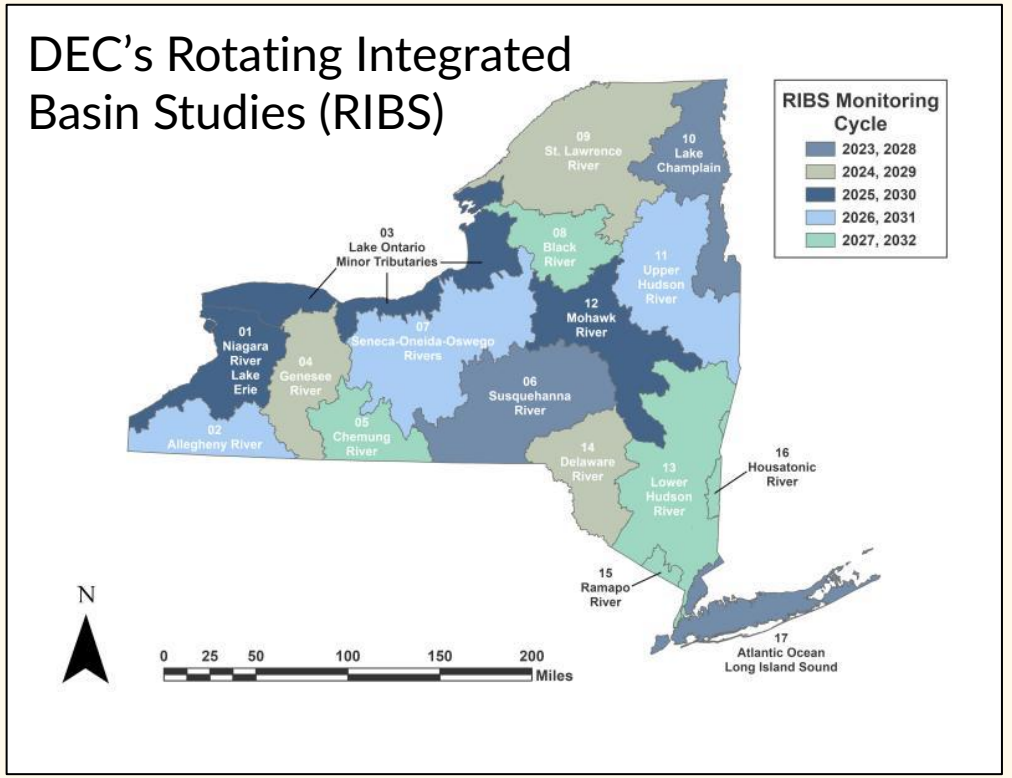
- Final 2020/2022 NYS Section 303(d) List (xlsx)
- 2020/2022 Response to Public Comment on the Draft 2020/2022 NYS Section 303(d) List
- Clean Water Act Section 305(b) Water Quality Report
- Final 2020/2022 NYS Section 303(d) List ENB Notice
- Consolidated Assessment and Listing Methodology, May 2021

Synoptic Stream and Lake Monitoring

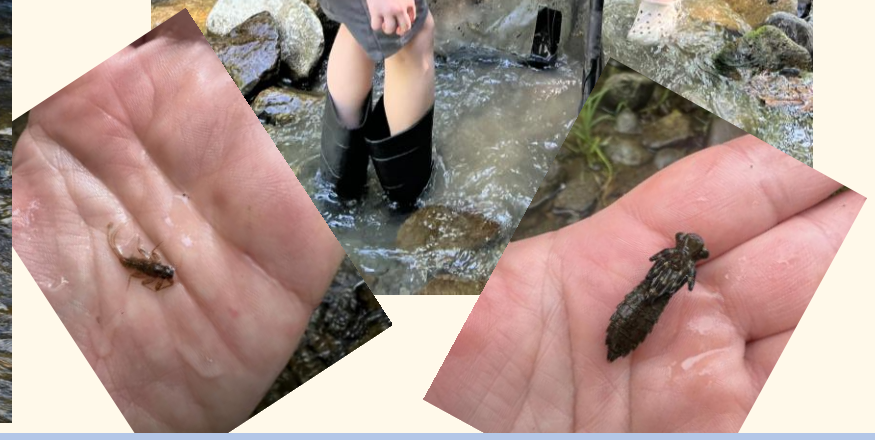
Doesn't NYSDEC monitor streams? Why do we need CSI?

DEC's Rotating Integrated Basin Studies (RIBS)

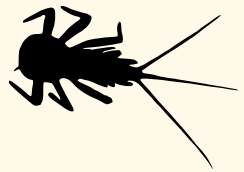
- Each drainage basin monitored once every five years
- Collect data on a limited number of streams and locations
- Only monitor analytes listed in the CALM
- Takes several years for data to become available
- Limited opportunities for volunteer/community involvement



Biomonitoring Partnership



Biomonitoring

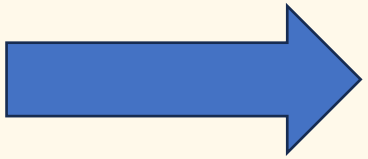


BMI = Benthic Macroinvertebrates

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

Volunteers collect samples in the field

Summer



Winter/Spring

Volunteers sort and identify organisms in the lab

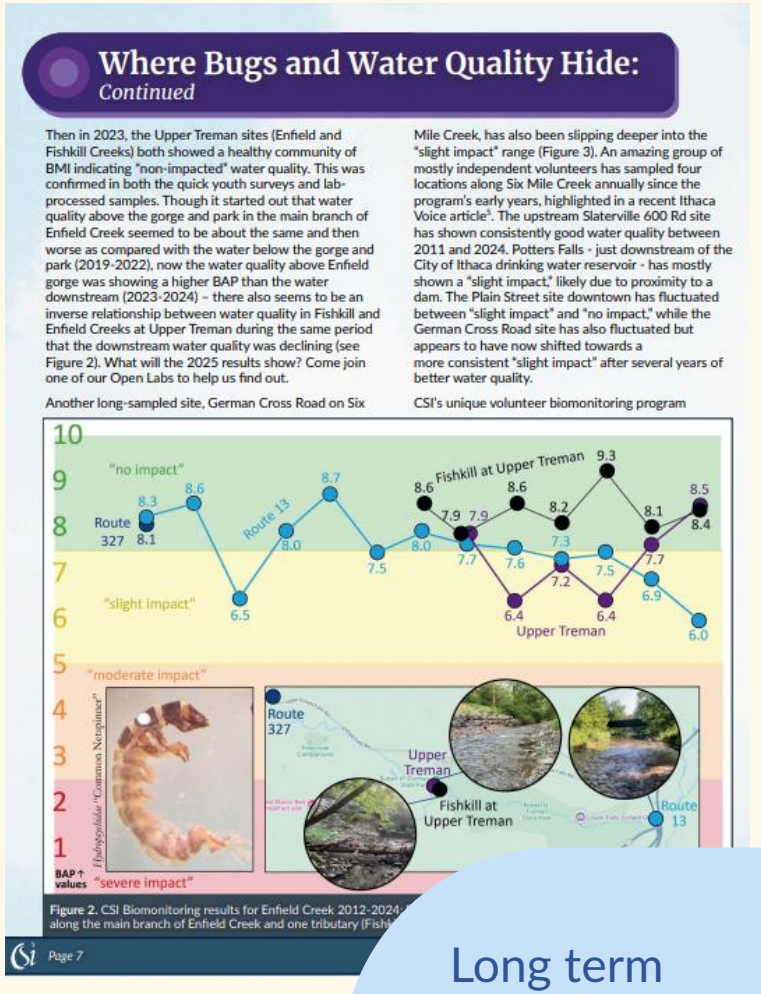
Biomonitoring

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

Permits are obtained from DEC and results are shared with DEC annually.


Where Bugs and Water Quality Hide:
Continued

Then in 2023, the Upper Treman sites (Enfield and Fishkill Creeks) both showed a healthy community of BMI indicating "non-impacted" water quality. This was confirmed in both the quick youth surveys and lab-processed samples. Though it started out that water quality above the gorge and park in the main branch of Enfield Creek seemed to be about the same and then worse as compared with the water below the gorge and park (2019-2022), now the water quality above Enfield gorge was showing a higher BAP than the water downstream (2023-2024) – there also seems to be an inverse relationship between water quality in Fishkill and Enfield Creeks at Upper Treman during the same period that the downstream water quality was declining (see Figure 2). What will the 2025 results show? Come join one of our Open Labs to help us find out.

Another long-sampled site, German Cross Road on Six Mile Creek, has also been slipping deeper into the "slight impact" range (Figure 3). An amazing group of mostly independent volunteers has sampled four locations along Six Mile Creek annually since the program's early years, highlighted in a recent Ithaca Voice article[5]. The upstream Slaterville 600 Rd site has shown consistently good water quality between 2011 and 2024. Potters Falls - just downstream of the City of Ithaca drinking water reservoir - has mostly shown a "slight impact," likely due to proximity to a dam. The Plain Street site downtown has fluctuated between "slight impact" and "no impact," while the German Cross Road site has also fluctuated but appears to have now shifted towards a more consistent "slight impact" after several years of better water quality.

CSI's unique volunteer biomonitoring program

Figure 2. CSI Biomonitoring results for Enfield Creek 2012-2024 along the main branch of Enfield Creek and one tributary (Fishk

Page 7

Long term trends reported in CSI's 2025 Water Bulletin

Cayuga Lake Harmful Algal Bloom Monitoring Partnership

Cayuga Lake HAB Monitoring

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**

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

Cayuga Lake HAB Monitoring

HAB samples are analyzed to:

- Identify cyanobacteria genera
- Measure chlorophyll a
- Measure microcystin

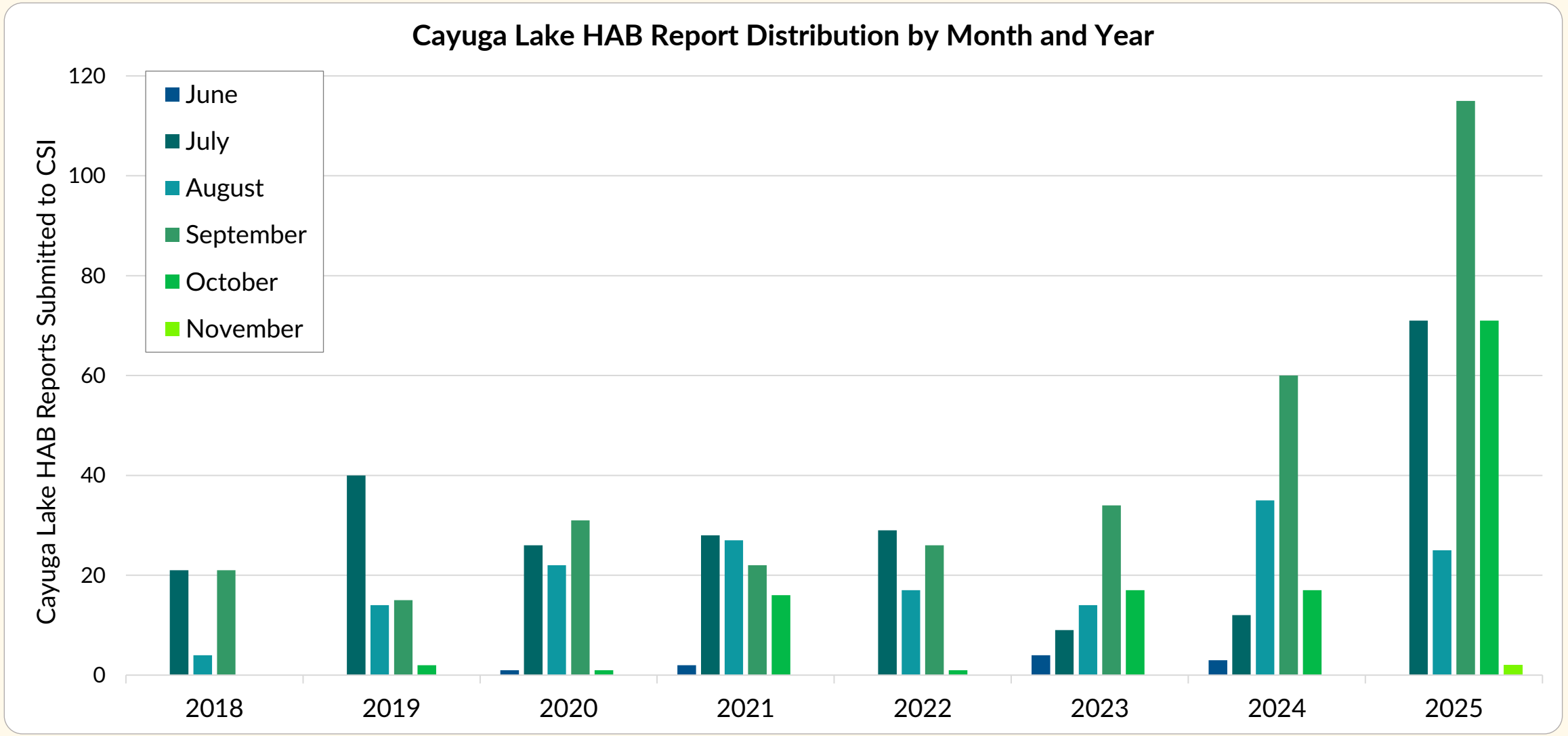
Bloom information is uploaded to CSI's
Cayuga Lake HABs Database

CSI reports all blooms to county health department officials and NYSDEC (NYHABS)

Microcystis sp.

Dolichospermum sp.

2018-2025 Cayuga Lake HAB Reports

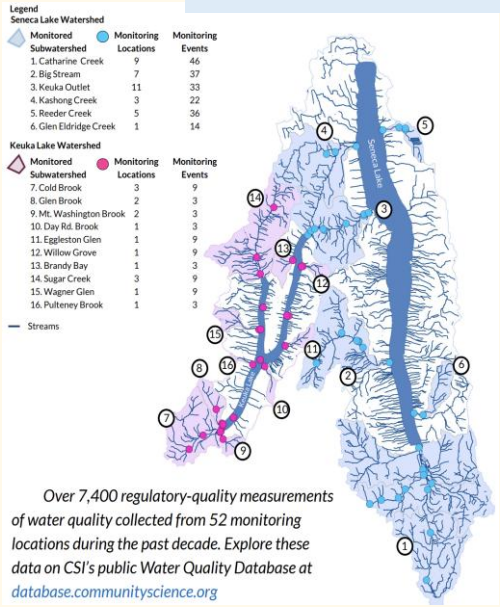


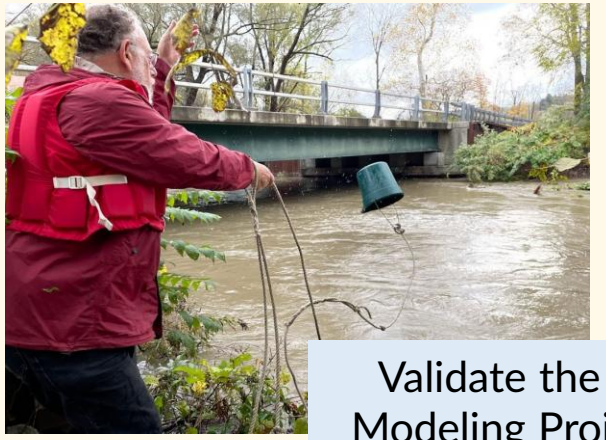
CSI's Data Make a Difference

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

Trumansburg Wastewater Plant upgrades

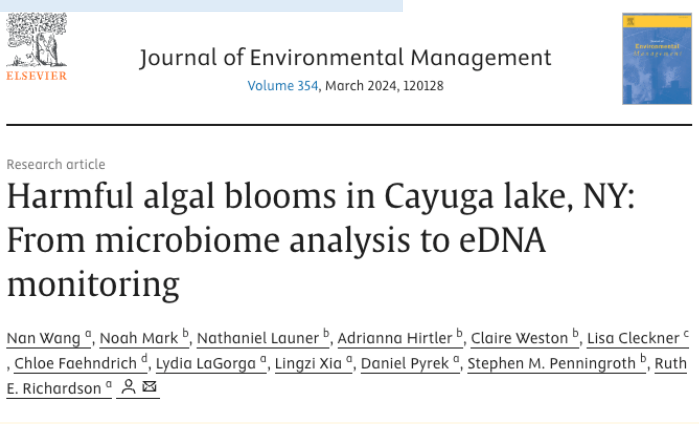
Seneca-Keuka 9E Plan

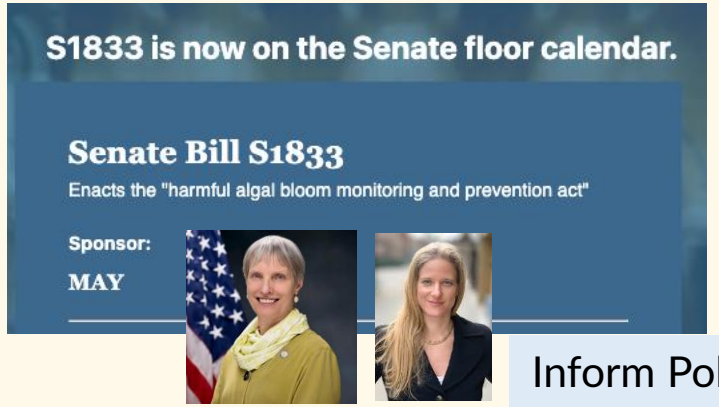




Validate the Cayuga Lake Modeling Project's model of Fall Creek phosphorus loading

Peer-reviewed research





Inform Policy

Agenda

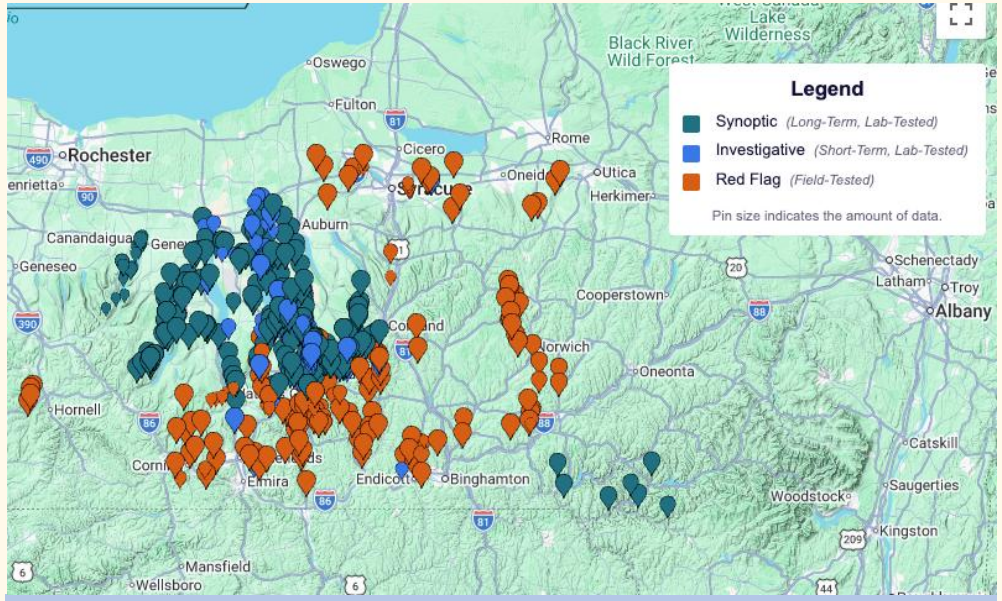
Community Science Institute

Volunteer Monitoring Partnerships

Water Quality Database

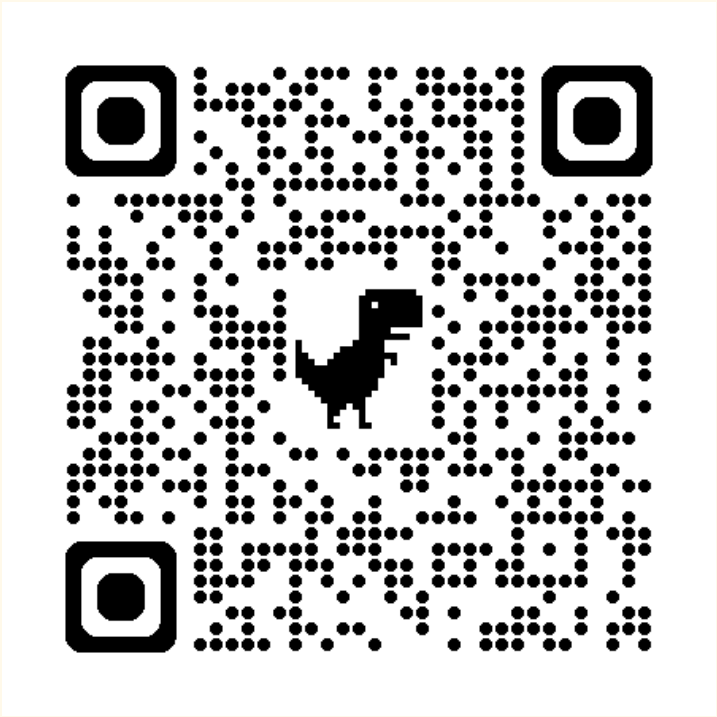
Fee-for-Service Water Testing

Outreach and Education



CSI Streams and Lakes Chemistry Database

CSI's Water Quality Database



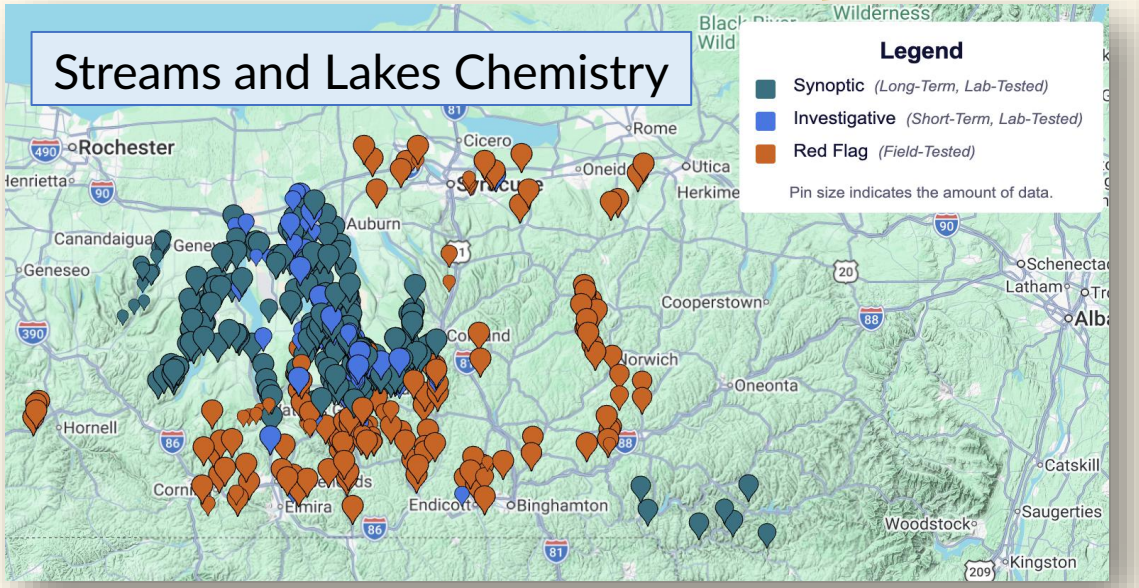
www.database.communityscience.org

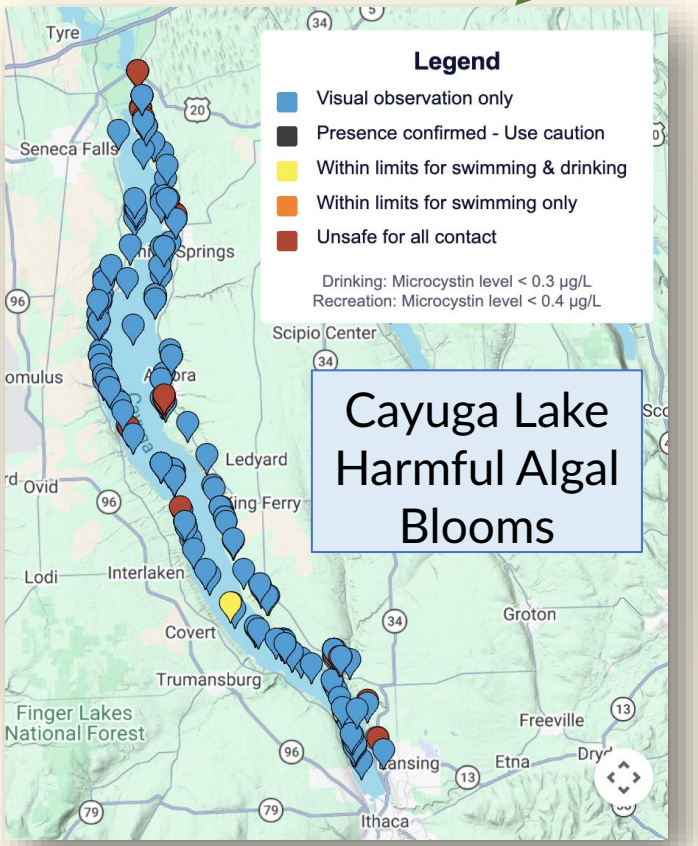
CSI's Water Quality Database – 3 Sections

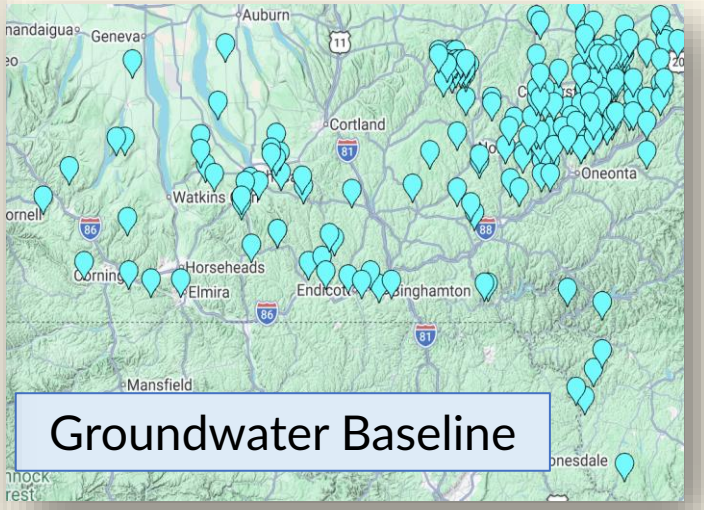
Community Science Institute | Database
Partnering with Communities to Protect Water

Login | Donate

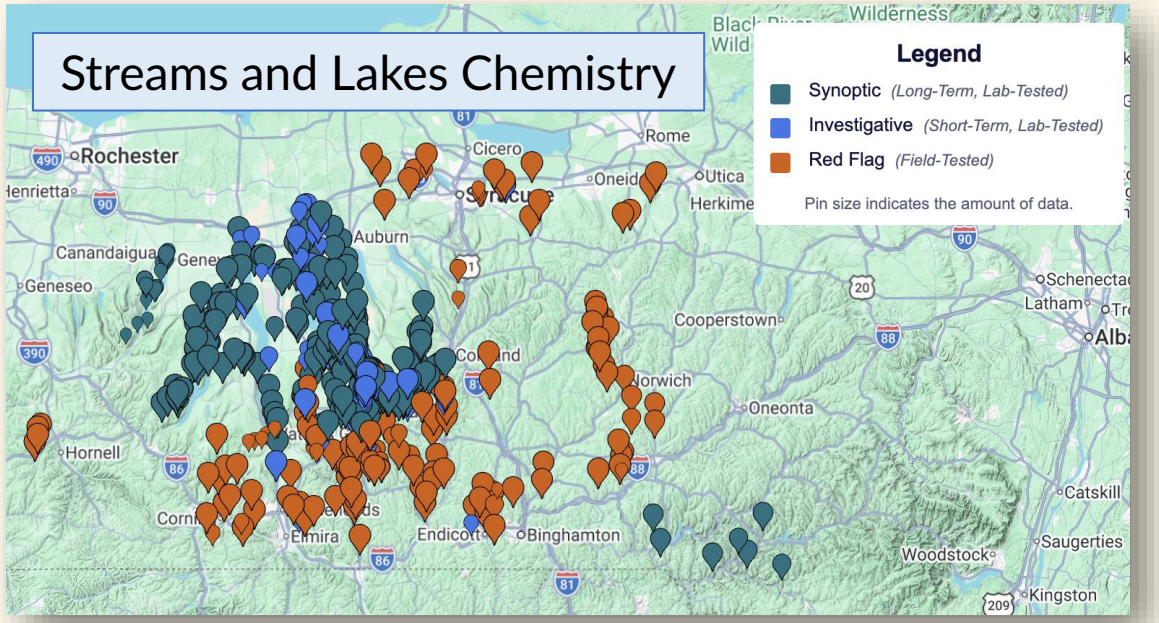
About | Streams and Lakes Chemistry | Harmful Algal Blooms (HABs) | Groundwater Baseline







“Streams and Lakes Chemistry” Water Quality Indicators



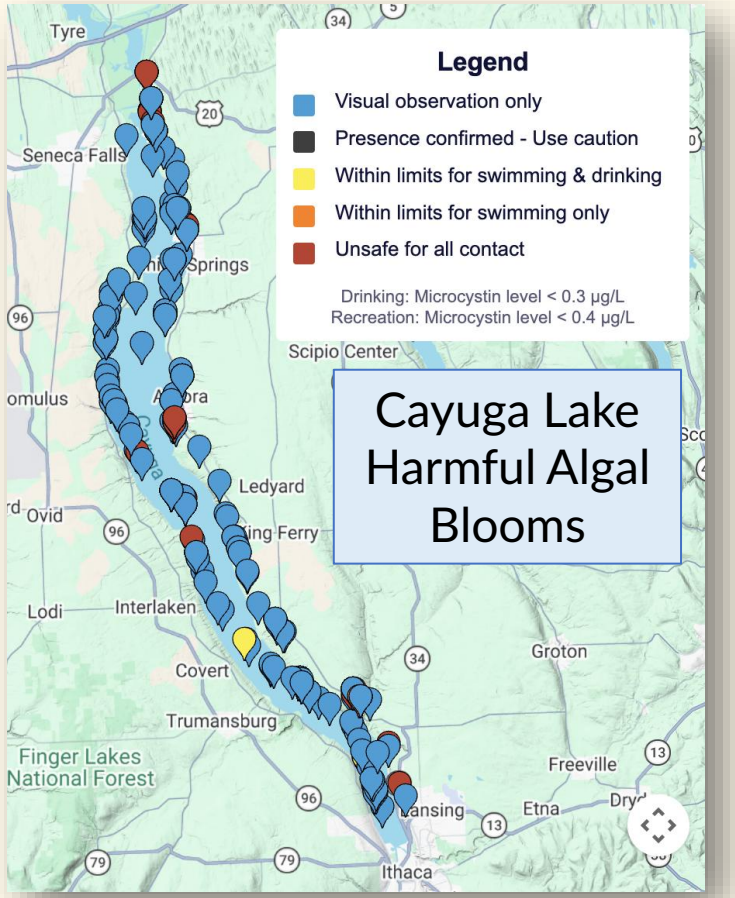
Red Flag: Field-Tested

- pH
- Total Hardness
- Conductivity
- Dissolved Oxygen
- Temperature

Synoptic: Long-term, Lab-Tested

- pH
- Alkalinity
- Total Hardness
- *E.coli*
- Nutrients
  - Total Phosphorus
  - Soluble Reactive Phosphorus
  - Nitrate-+Nitrite-Nitrogen
  - Total Kjeldahl Nitrogen
- Turbidity
- Total Suspended Solids
- Conductivity
- Chloride
- Chlorophyll (lakes only)

“Harmful Algal Blooms” HAB Report Data



- **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

Agenda

Community Science Institute

Volunteer Monitoring Partnerships

Water Quality Database

Fee-for-Service Water Testing

Outreach and Education

CSI's Water Testing Lab

Fee-for-Service Water Testing

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

We serve:

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

Local Businesses
- Farms
- Restaurants
- Breweries
- Wineries
- Mobile Home Parks
- Apartment Buildings
- Daycares

Government Agencies
- Tompkins County Health Dept.
- NY State Parks
- NYS Dept. of Environmental Conservation
- US Army Corp of Engineers
- NYS Dept. of Health

NYSDOH-ELAP #11790

Public Health Impacts

New York State Parks, Recreation and Historic Preservation

At least weekly swimming area testing

Water treatment plant testing for microscystin

US Army Corps of Engineers®

Fluridone testing for Hydrilla treatment

TOMPKINS COUNTY Whole Health

Routine drinking water testing for local businesses

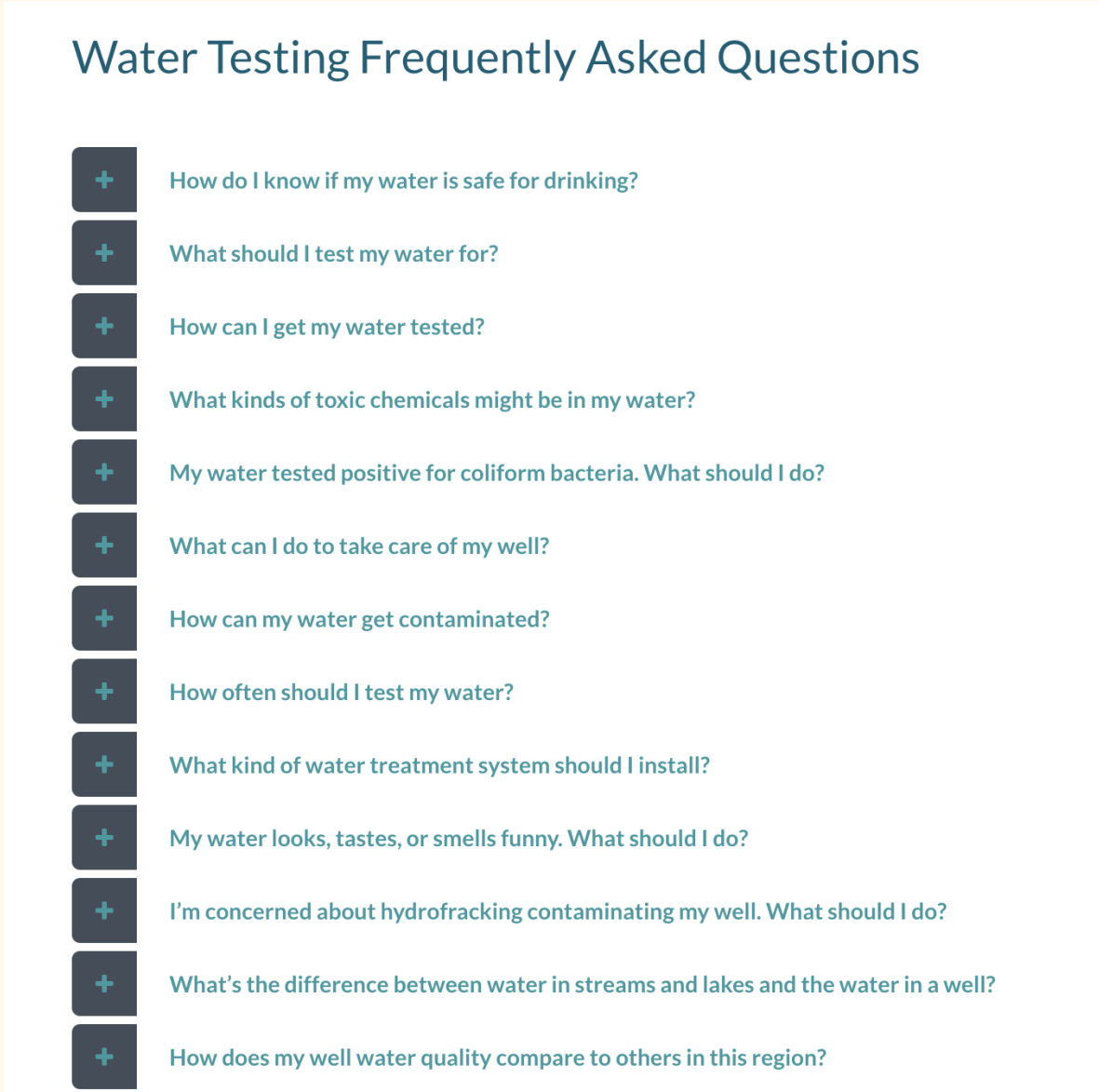
Resources

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

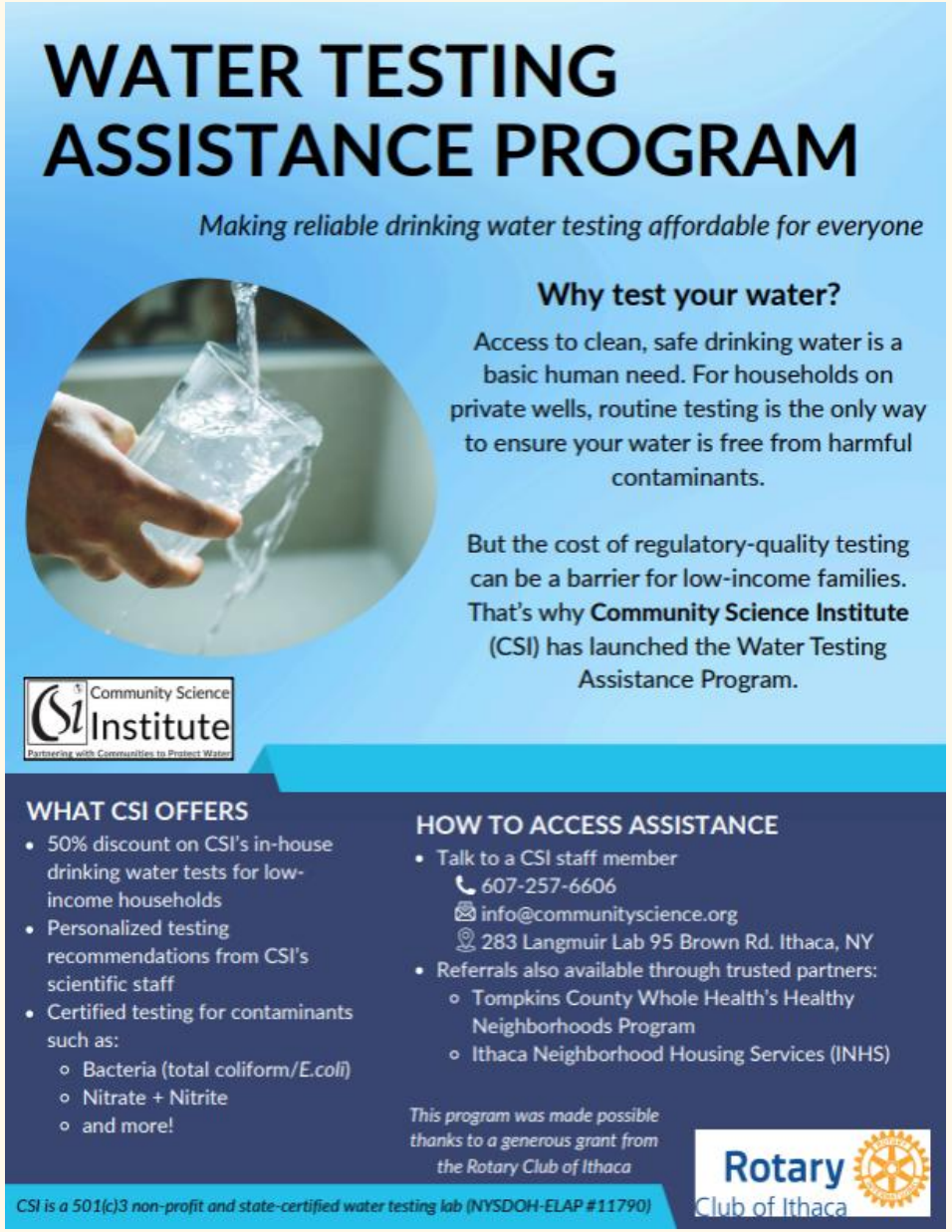
Sample bottles available for pick up at:
- CSI's Lab by the Ithaca Airport
- Greenstar on Cascadilla Street
- ShurSave in Trumansburg



Water Testing Assistance Program

50% discount on in-house water tests for those facing financial hardship

We believe that everyone has the right to know if their water is safe to drink!



Agenda

Community Science Institute

Volunteer Monitoring Partnerships

Water Quality Database

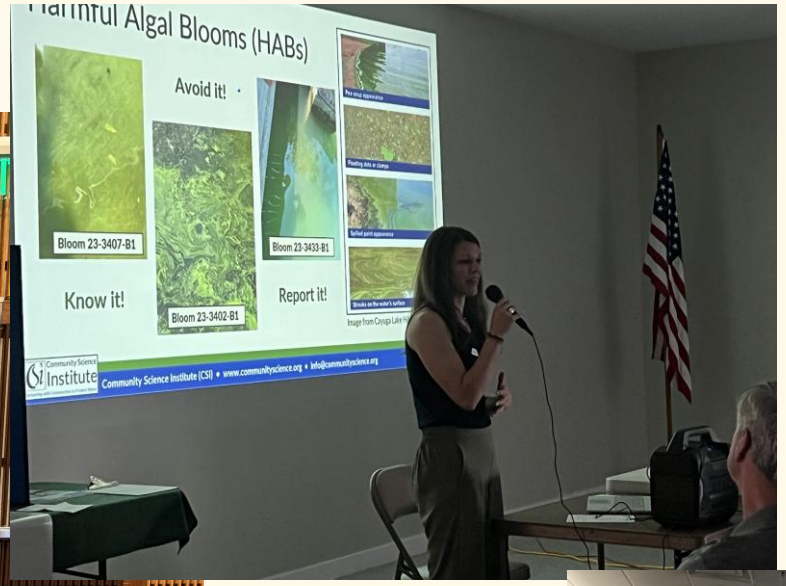
Fee-for-Service Water Testing

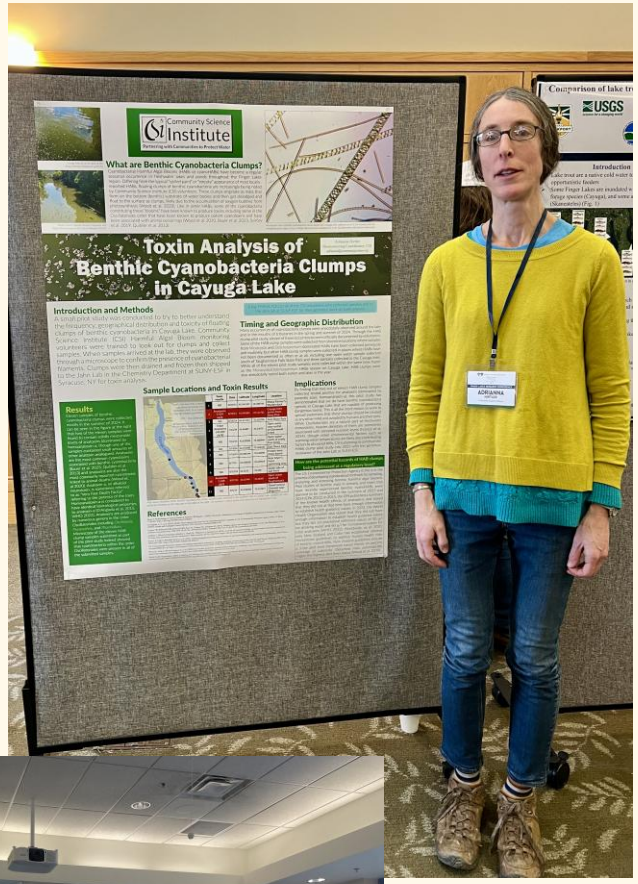
Outreach and Education

Wild Wetlands, Fantastic Filters Program

Journey of Water Summer Youth Education Series

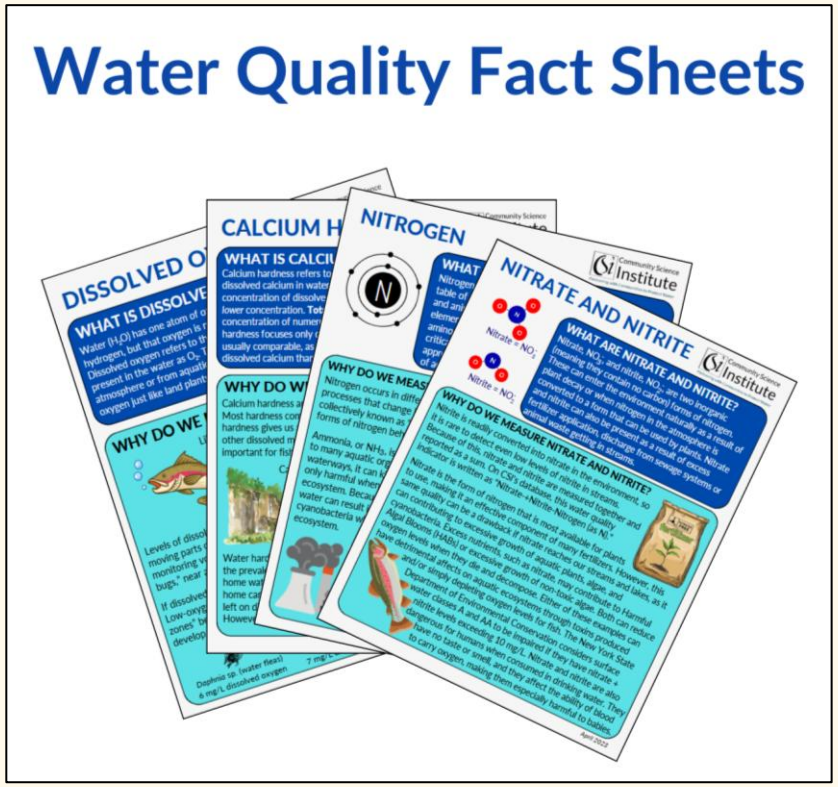
Public Events and Presentations



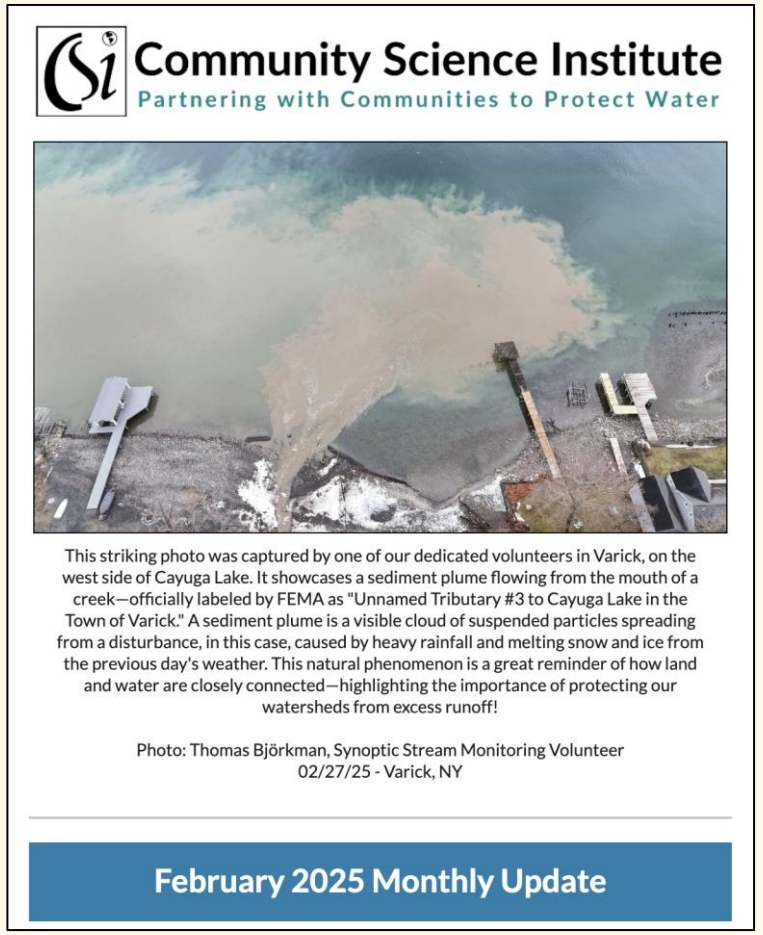


Educational Materials

Annual Water Bulletin Newsletters



Online Learning Materials



Monthly Email Updates

Agenda

- Community Science Institute
- Volunteer Monitoring Partnerships
- Water Quality Database
- Fee-for-Service Water Testing
- Outreach and Education

Journey of Water – Water Quality Cruise

Acknowledgements

Dedicated volunteers!

Local Governments

CSI Members

CSI Staff Past and Present

Partners

Cayuga Lake Watershed Network

Cayuga Lake Watershed Intermunicipal Organization

Discover Cayuga Lake

Seneca Lake Pure Waters Association

Al Hazzard Chapter Trout Unlimited #938 Binghamton NY

NEW YORK STATE OF OPPORTUNITY. Parks, Recreation and Historic Preservation

West Shore Neighborhood Association

Business Members

The Plantsmen Nursery

Inn at Taughannock Falls

Farmer Group

gimme!

Airy Acres Vineyard

Fingerlakes Wealth Management

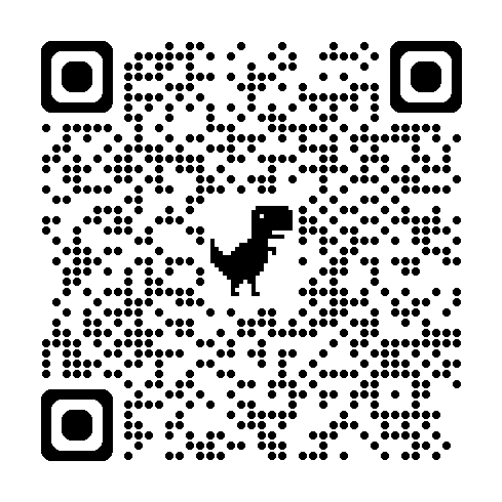
T-Burg Shur-Save

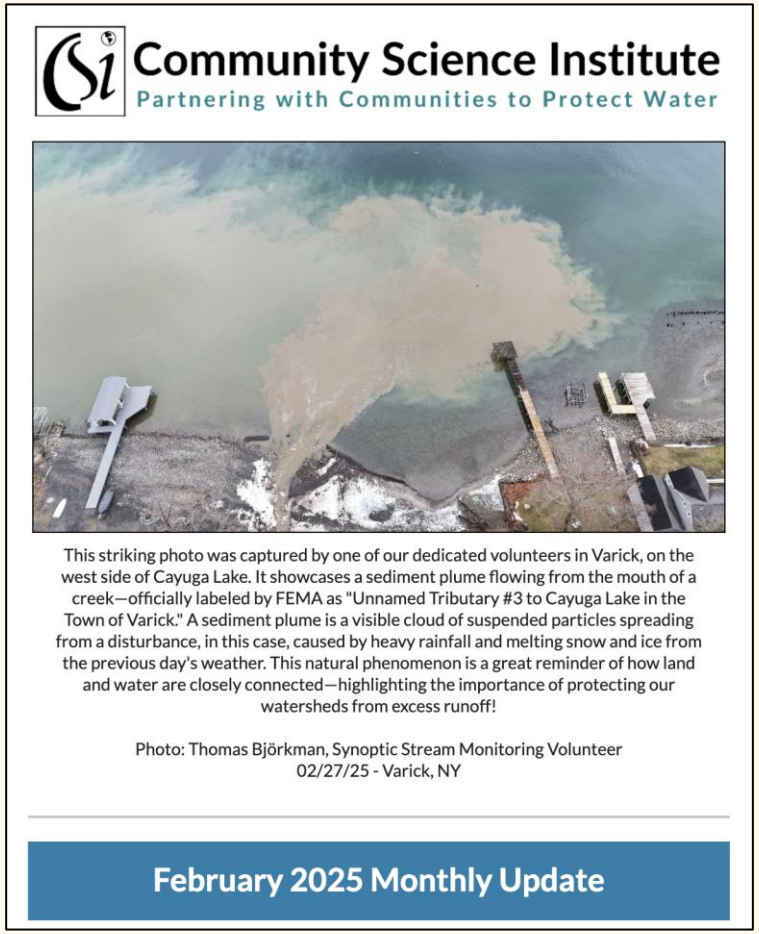
CFCU Community Credit Union

Since 1984 HALCO Home Solutions

Stay in touch!

Join CSI's email list for monthly updates





Follow us on social media

@communityscienceinstitute

Set up a meeting with me

gshidemantle@communityscience.org

(607) 257-6606

www.communityscience.org

Q&A

Kita and Dolly enjoying the Finger Lakes