Partnering with communities to protect water at Community Science Institute

Caroline Town Board Meeting
7/17/24, 7 PM

Grascen Shidemantle, Ph.D.
Executive Director

Community Science Institute
Partnering with Communities to Protect Water

Community Science Institute

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

CSI offers three types of programming:

- **Volunteer Water Monitoring Partnerships**
- **Fee-for-Service Water Testing**
- **Outreach and Education**

CSI's Mission

To foster and support environmental monitoring in partnership with community-based volunteer groups in order to better understand our shared natural resources and how to manage them for long-term sustainability and protection.

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Volunteer Monitoring Partnerships

Four Monitoring Partnerships

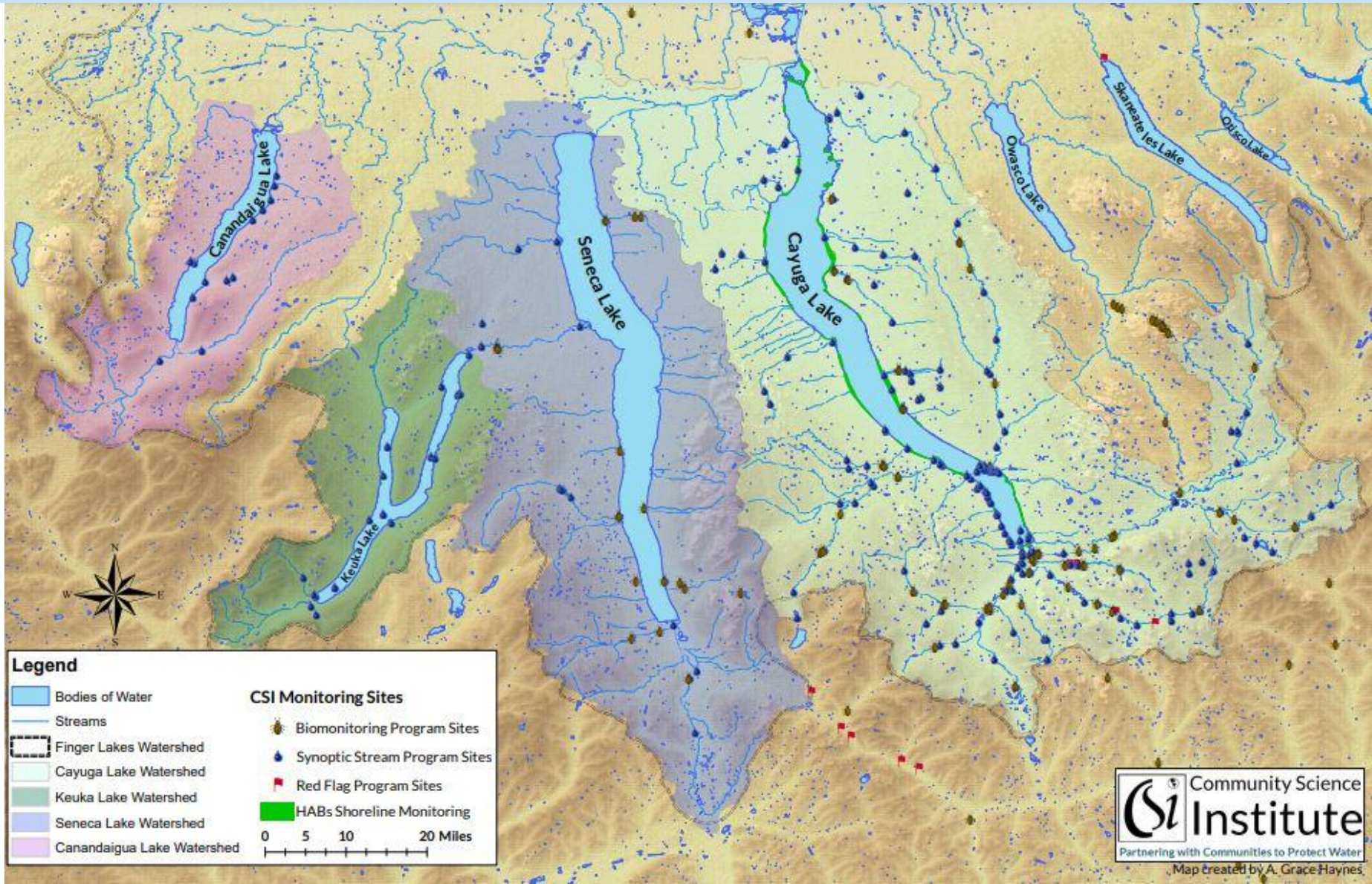
1. Synoptic Stream and Lake Monitoring

2. Biomonitoring

3. Harmful Algal Bloom (HAB) Monitoring

4. Red Flag Monitoring

CSI recruits, trains, and coordinates over 250 volunteers



Synoptic Stream and Lake Monitoring Partnership

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.

Kristen and Hope monitoring Six Mile Creek on 7/17/24

Monitor streams and lakes for:

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

Volunteers collect samples from their designated stream 3 times each year

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

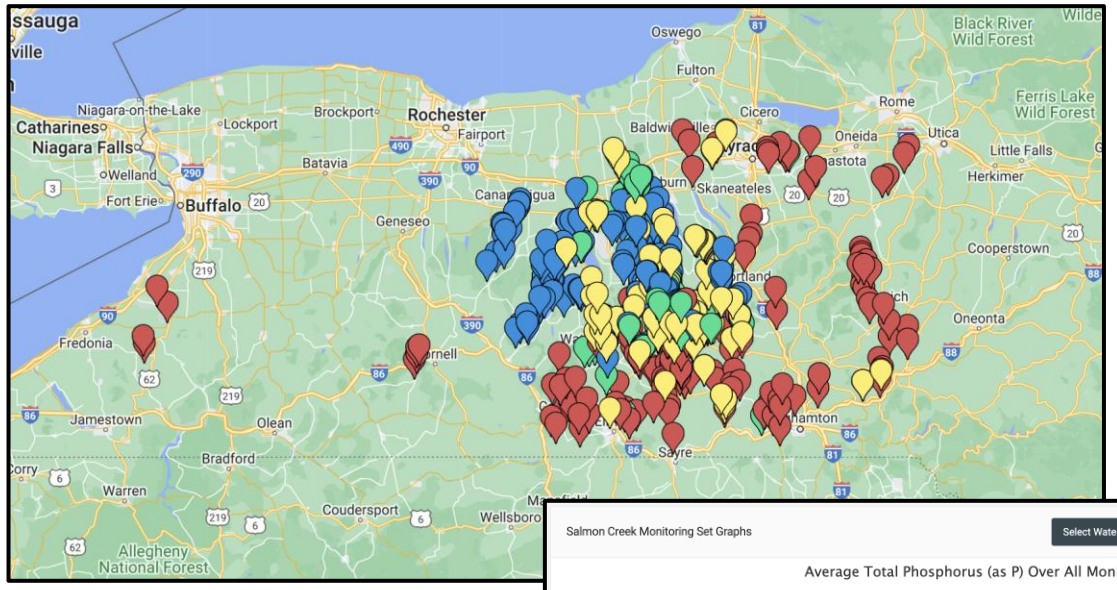
Synoptic Stream Monitoring in the Town of Caroline

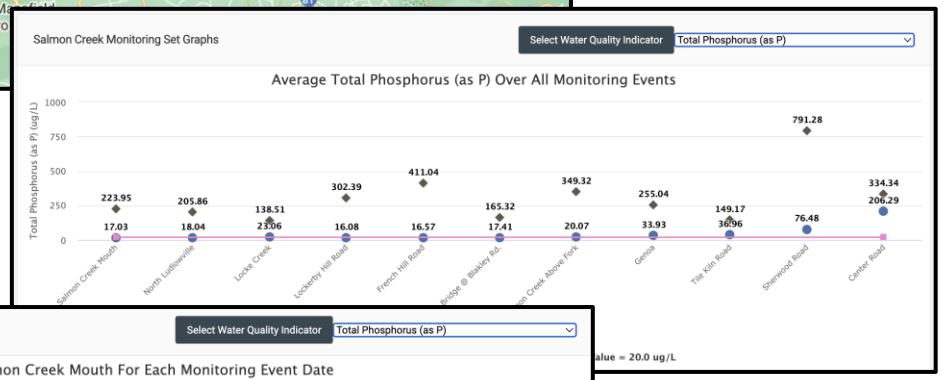
CSI volunteers have been monitoring Six Mile Creek since 2004.

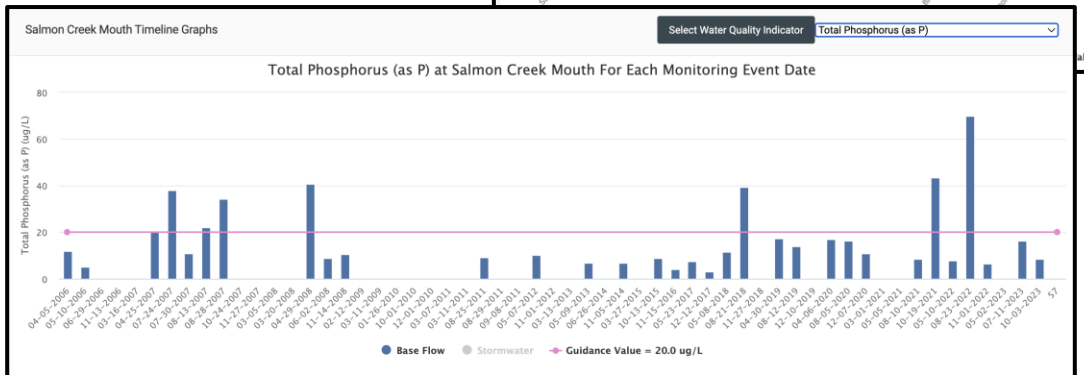
7 of the 14 monitoring sites on Six Mile Creek fall within the Town of Caroline.

CSI's Public Database – Streams and Lakes Chemistry

Our database houses over 85,000 regulatory-quality measurements of water quality!







www.database.communityscience.org

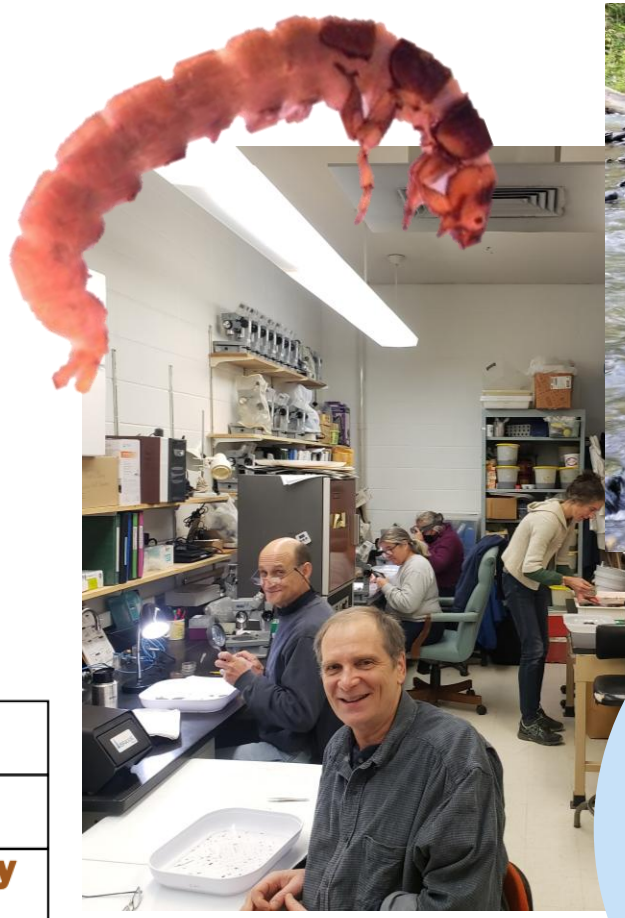
Biomonitoring Partnership

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

non-impacted
slightly impacted
moderately impacted
severely impacted



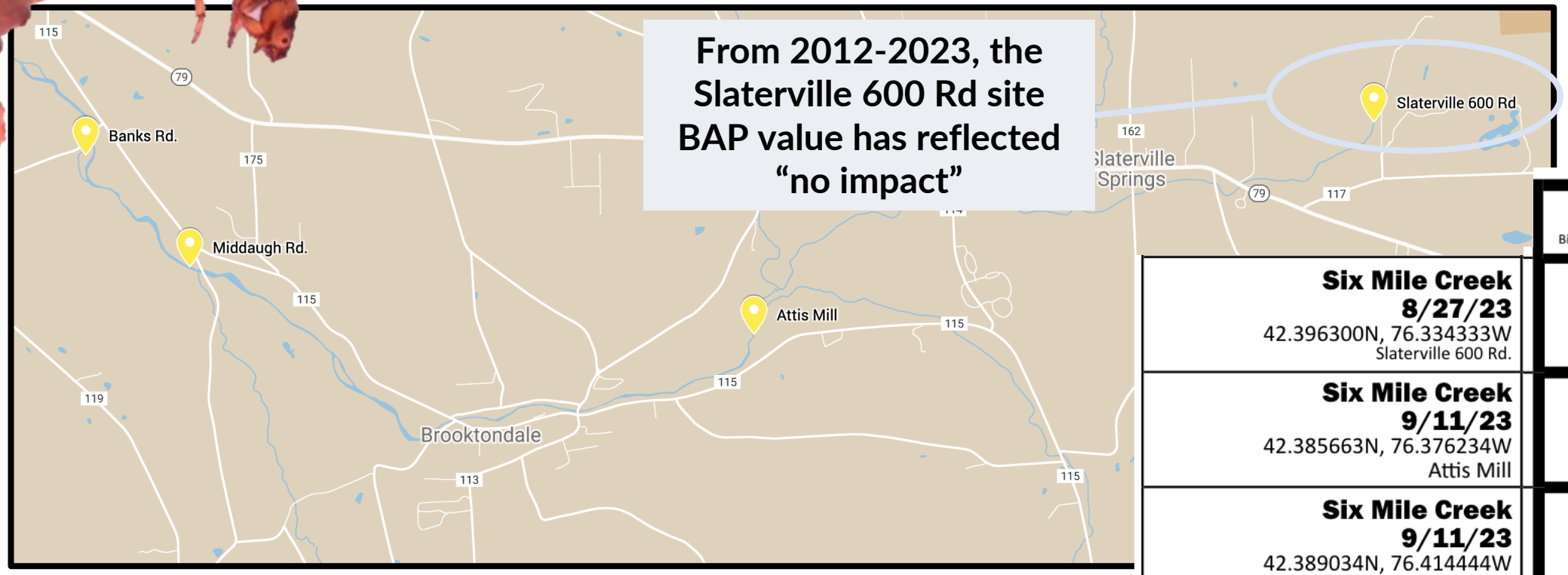
Volunteers collect samples in the field then sort and identify organisms in the lab

Biological Monitoring Results

Biomonitoring in the Town of Caroline

Biomonitoring volunteers have been monitoring Six Mile Creek since 2011.

There are four monitoring sites in the Town of Caroline.



From 2012-2023, the Slaterville 600 Rd site BAP value has reflected "no impact"

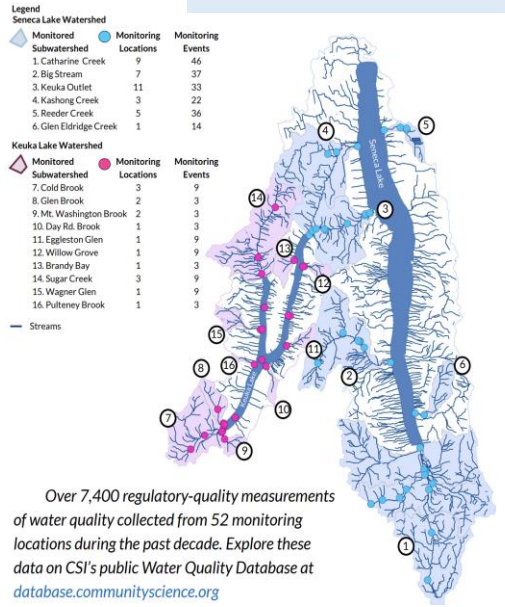
	BAP Value Biological Assessment Profile
Six Mile Creek **8/27/23** 42.396300N, 76.334333W Slaterville 600 Rd.	**9.0** no impact
Six Mile Creek **9/11/23** 42.385663N, 76.376234W Attis Mill	**7.6** no impact
Six Mile Creek **9/11/23** 42.389034N, 76.414444W Middaugh Rd.	**6.5** slight impact

CSI data make a difference locally

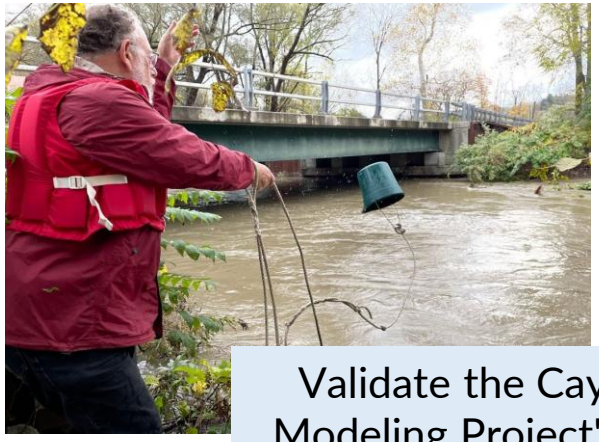
Removal of the southern end of Cayuga Lake from the 303(d) list for pathogenic bacteria

Trumansburg Wastewater Plant upgrades

Seneca-Keuka 9E Plan



Over 7,400 regulatory-quality measurements of water quality collected from 52 monitoring locations during the past decade. Explore these data on CSI's public Water Quality Database at database.communityscience.org



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

Peer-reviewed research

Harmful algal blooms in Cayuga lake, NY: From microbiome analysis to eDNA monitoring

Wang, N., Mark, N., Launer, N., Hirtler, A., Weston, C., Cleckner, L., Faehndrich, C., LaGorga, L., Xia, L., Pyrek, D., Penningroth, S., Richardson, R. (2024). Harmful algal blooms in Cayuga lake, NY: From microbiome analysis to eDNA monitoring. *Journal of Environmental Management* 2024, *354*, 120128. https://doi.org/10.1016/j.jenvman.2024.120128

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

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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

Government Agencies
- Tompkins County Health Dept.
- NY State Parks
- NYSDEC

In 2023, CSI's lab tested more than 2,500 drinking water samples!

NYSDOH-ELAP #11790

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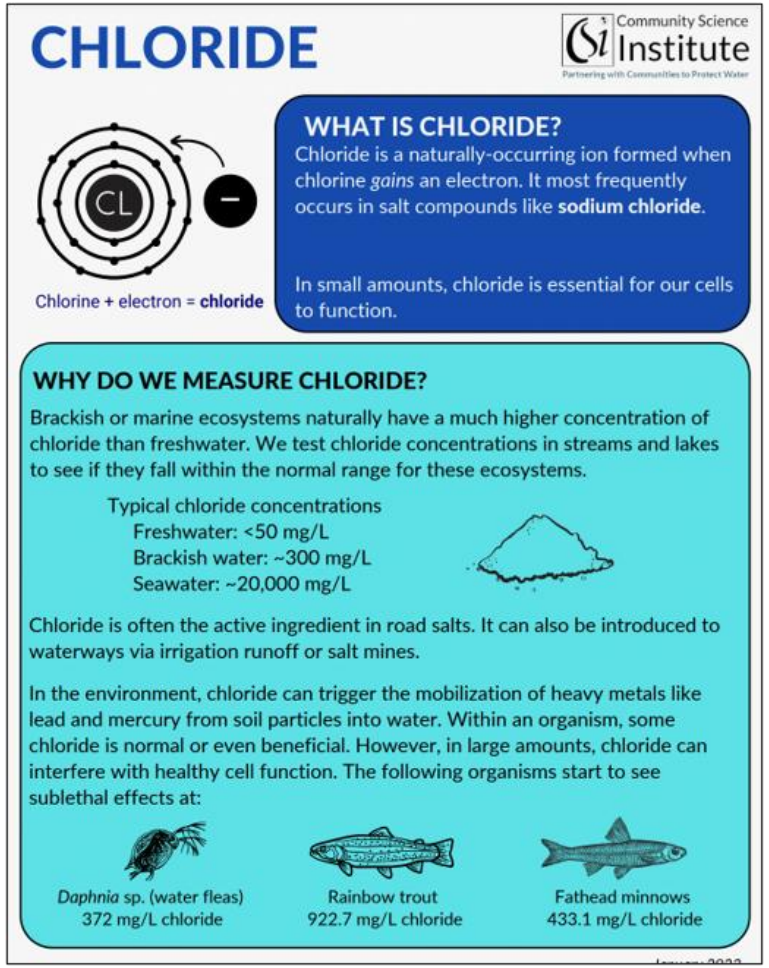
Outreach and Education

Journey of Water Summer Youth Education Program

Annual Water Bulletin Newsletter



Free Learning Materials

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Questions?

Join our email list for monthly updates

Follow us on social media

@communityscienceinstitute

Stay in touch and learn more

info@communityscience.org

(607) 257-6606

www.communityscience.org

Community Science Institute

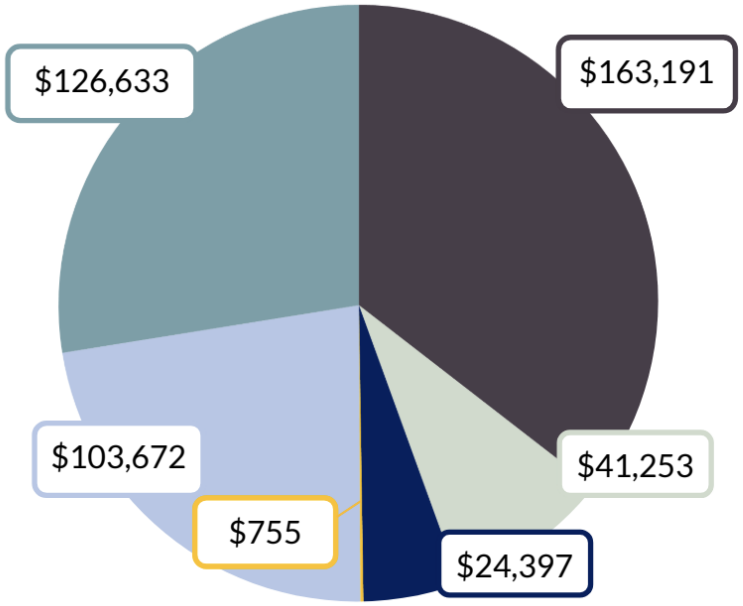
Partnering with Communities to Protect Water

Extra Slides

CSI's 2023 Finances

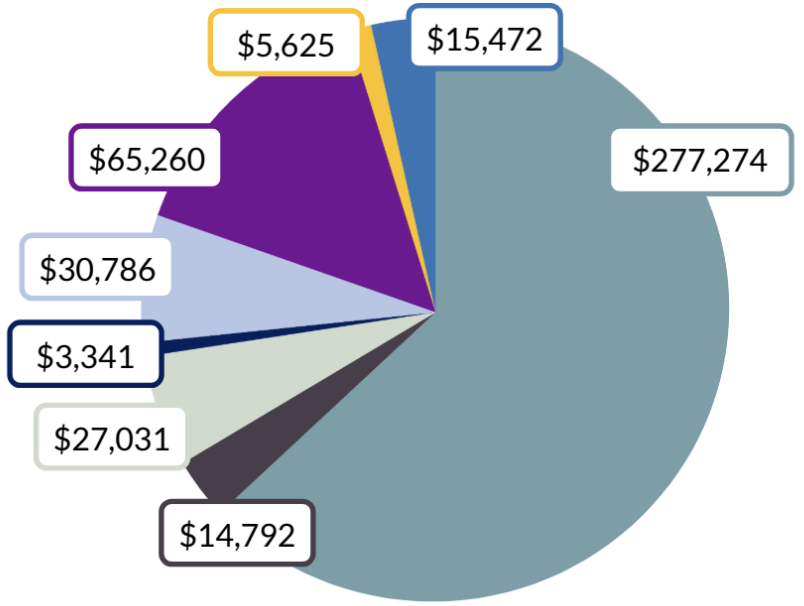
Financial Report

CSI 2023 Income
Total: $459,948.36
Includes $49.49 interest and dividends



- Local Government Support for Stream and Lake Monitoring°
- Grants from Foundations & Not-for-Profits (NFPs)‡
- Donations
- Agency and Lake Association Testing Contracts
- Fee-for-Service Drinking Water Tests
- Silent Auction

CSI 2023 Expenses
Total: $440,780.13
Includes $1,200.10 travel and transportation



- Personnel
- Indirect Costs
- Web Services
- Strategic Planning
- Sub-Contract Lab Tests
- Contract Labor
- Lab and Office Supplies
- Fees and Miscellaneous Expenses

Thank you to the local governments who support CSI's monitoring partnerships!

Town of Enfield	$2,601
Town of Lansing	$7,140
Town of Caroline	**$3,432**
Town of Danby	$4,376
Town of Ulysses	$6,567
City of Ithaca	$10,790
Town of Dryden	$11,420
Town of Ithaca	$22,844
Town of Newfield	$6,532
Town of Scipio	$500
Cayuga County	$39,594
Seneca County	$5,300
Tompkins County	$42,095