CAYUGA COUNTY
Water Quality Management Agency
NEWSLETTER

September 2025

Protect Our Waterways by Participating in Recycling Events This Fall

By Evan Tuthill, Senior Planner, Cayuga County Department of Planning & Economic Development

This October, Cayuga County residents have two great opportunities to responsibly recycle household items while helping protect our lakes, streams, and drinking water. These programs keep hazardous and toxic materials out of landfills, storm drains, and waterways – a simple but powerful way to improve water quality and reduce the risk of harmful algal blooms (HABs).

Fall Electronics Recycling Event – Saturday, October 18, 2025

Cayuga County is preparing to host its second Electronics Recycling Collection Event of the year, offering residents a free and responsible way to dispose of old or unused electronics. This event is coordinated by the Cayuga County Department of Planning & Economic Development, in partnership with Cornell Cooperative Extension of Cayuga County and Sunnking Sustainable Solutions.

The event will feature one central drop-off location at Cayuga Community College, which will require pre-registration at https://www.sunnking.com/events/cayuga-10-18-25 and will operate from 8:30 AM to 12:30 PM. For those who prefer to drop off items without registering or are unable to travel to Auburn, two satellite locations – located at the Ira and Venice Highway Garages – will be available from 10:00 AM to 1:00 PM that day. Accepted items include computers and accessories, TVs and entertainment equipment, mobile devices, office electronics, and small household appliances. Please note that certain items will not be accepted, including anything containing refrigerants (such as air conditioners or dehumidifiers), large appliances, household batteries, and mercury-containing devices like thermostats and fluorescent bulbs. A full list of accepted and restricted materials, and the registration link for the central drop-off, will be available on the County website in September.

Household Hazardous Waste Collection Event – Saturday, October 25, 2025

Cayuga County residents will also have a valuable opportunity to safely dispose of hazardous household materials during the annual Household Hazardous Waste Collection Event. This no-cost event is organized by the Cayuga County Department of Planning & Economic Development through its Solid Waste and Recycling Program, with support from Cornell Cooperative Extension of Cayuga County and the Cayuga County Soil & Water Conservation District and funded by Cayuga County and the New York State Department of Environmental Conservation.

Pre-registration is required online at https://www.cayugacounty.us/1817/Household-Hazardous-Waste-Program. Phone assistance is available at 315-253-1203 for residents who do not have internet access. Your registration ticket will provide all the information you need to drop materials off.

Accepted materials include a wide range of common household items such as:

- cleaning products,
- pesticides,
- oil- and lead-based paints,
- solvents and adhesives,
- pool chemicals,
- driveway sealers,
- oil and gas mixtures,
- vehicle fluids,
- small propane tanks,
- 4- and 8-foot fluorescent bulbs, and
- button cell batteries.

However, certain items will not be accepted, including:

- asbestos,
- electronics,
- Freon-containing appliances,
- rechargeable and alkaline batteries,
- CFL bulbs,
- explosives,
- medical waste, and
- large compressed gas cylinders.

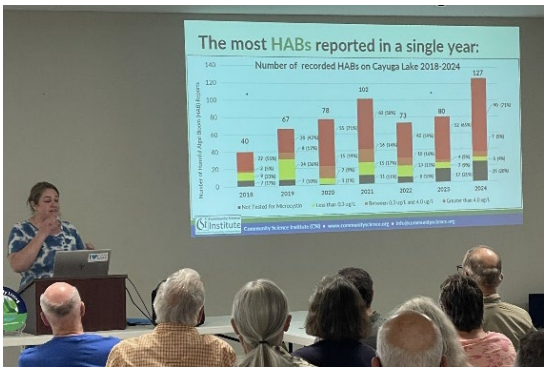
By participating in these programs, you're not only decluttering your home – you're also helping keep harmful chemicals, heavy metals, and excess nutrients out of our environment, supporting cleaner water and healthier communities across Cayuga County.

2025 Canoga Community Conference: HABs History, Monitoring, New Technology, & Sourcing the Cause
Hilary Lambert, Cayuga Lake Watershed Network Water Writer

A lively, well-informed audience of over 70 people attended the Cayuga Lake Watershed Network's (CLWN) Canoga Community Conference on June 25 to hear three Harmful Algal Blooms (HABs) related presentations. Our thanks to the Canoga Volunteer Fire Department for providing access to their big meeting space, and to our volunteers and Board members who helped set up the refreshments and made sure there was delicious hot pizza after the presentations. In addition, the CLWN and partner organizations provided information tables around the room. Thanks to the Community Science Institute (CSI), Discover Cayuga Lake's Watershed Internship Program (WIP) Interns, the Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM), Seneca County Soil & Water Conservation District, and the Seneca County Health Department for participating.

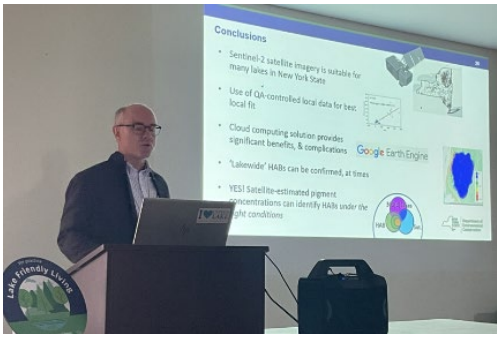
Alyssa Johnson, CSI's Cayuga Lake HABs Monitoring Program Coordinator presented on the "2024 Cayuga Lake HAB Season in Review: Earliest, Latest, and Most Blooms Ever." Johnson explained that CSI's volunteer HABs Harriers who monitor weekly for HABs will continue surveys this summer across all monitoring zones, but that sample collection for lab analysis of HABs composition and toxin concentrations will focus on 14 priority monitoring areas around the lake which have been identified by the Health Departments for each lakeshore county. Resources such as drinking water and recreational water use are vulnerable to potentially toxic HABs outbreaks.

Johnson summarized the 2024 “extreme HABs” season: a record 127 HABs were reported between June 3 and October 31, the longest season ever; and 11 nonconforming “HABs clumps” were collected for a pilot study. There were 98 Harriers, 8 Carriers (who transport water samples to the lab), a drone operator, and a sky diving company supporting this year! Learn more about HABS and CSI at www.communityscience.org. CLWN continues to recruit volunteers and support communications for this important program, and this presentation is viewable on our website http://www.cayugalake.org under Resources > “Conference Presentations” sub header.



Dr. Lewis McCaffrey, Research Scientist with the NYS Dept of Environmental Conservation (DEC), Division of Water, Finger Lakes Watershed Program, presented on the question “Can we use satellites to identify HABs in the Finger Lakes?” His short answer to this question, provided at the end of an engaging summary of the pilot study and model building was “Satellites can detect HABS in the Finger Lakes – under the right conditions.” McCaffrey says at present there are biases in how HABs data are collected. One example is that there are too many volunteer monitors on some lakes, and few or none on others. Last year, 50% of all HABs reported statewide were found in the 11 Finger Lakes, each of which has many well-trained HABs volunteers. There are 2,096 regulated lakes across the state, many with few or no HABs observers.

McCaffrey’s DEC team wants to determine if HABs data obtained from satellite imagery of NYS lakes statewide could reduce the bias of bunching up in-person monitoring around a handful of lakes. They compared some of the water quality data collected through CSLAP (Citizens Statewide Lake Assessment Program), the state’s volunteer lake monitoring program with the free data from Sentinel 2, an Earth observation program that consists of three satellites operated by the European Satellite Agency, which has a 5-day revisit period. They found many challenges to comparing in-person reports to remote data. For example, satellites are confused by duckweed, and lake shoreline details are obscure, a problem because that is where most HABs are found. This interesting work will continue. CLWN sponsors and recruits volunteers for the CSLAP program for Cayuga Lake, with the goal of informing NYS long-term water quality monitoring and research. Dr. McCaffrey’s presentation is posted on our website under Resources > Conference Presentations.



The final speaker was Dr. Michael Schummer, Assistant Professor, SUNY College of Environmental Science and Forestry, Department of Environmental Biology who presented “Microbial source-tracking: an evidence-based approach to improving Cayuga Lake water quality.” The purpose of this research was to determine the sources, by species, of nutrients flowing into Cayuga Lake to deliver science-based information to watershed decision-makers and land managers.

For three years, four trained CLWN volunteers have been sampling water from the mouths of 8 creeks along the Seneca County and Cayuga County shoreline of Cayuga Lake. They conducted 36 sample events, took 287 samples, 2 to 3 times per month, year-round from March 2021 to January 2024. This epic endeavor was carried out by volunteers Bill Ebert, Tom Casella, and Brad and Holly Davidson; CLWN

members who were trained over the years by both CSI and Upstate Freshwater Institute. Thanks to support from SUNY ESF, this project was managed by M.S. student Emma Bland, with advisory oversight by Schummer, Dr. Hyatt Green, and CLWN Steward Liz Kreitinger. Funding was provided via the CLWN thanks to Emerson Foundation grants and private donations.

Researchers used a lab method called Microbial Source Tracking (MST) to identify sources of fecal contamination in local streams. This technology looks for tiny fragments of DNA from bacteria that live in the guts of different animals — in this case, humans, dogs, birds, and ruminants (like cows and deer). While MST can't differentiate between cows and deer, cows generally produce far more manure than deer, meaning their impact on water quality is typically much more significant.

Overall, across the studied creeks, results suggest tributary phosphorus pollution originated predominantly from ruminants but there are interesting differences between creeks. Detailed analysis and findings are being prepared for manuscript publication in a scientific peer-reviewed journal and additional outreach presentations are planned for land managers.

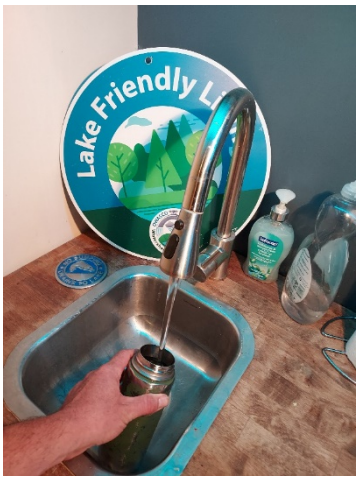
Schummer listed several potential applications for these results, including increasing riparian buffer zones, re-establishing hedgerows, investigating impacts of land use practices and increased tile drain usage, and notifying land managers of potential human sewage contamination. CLWN will share the results of this work online and in print once the professional research publication is finalized.

Conservation Field Days
By: Val Horning, Cayuga County Soil and Water Conservation District and Michele Wunderlich, Cayuga County Department of Planning and Economic Development

For over thirty years, the Cayuga County Soil and Water Conservation District has hosted Conservation Field Days. This year's event took place on September 16 and 17, 2025, and offered an exciting opportunity for sixth grade students from across Cayuga County to explore natural resources and the environment firsthand. Thirteen schools participated in the event, with approximately 800 students and teachers in attendance. Professionals from various fields conducted short educational sessions, allowing the students to learn not only about the subject matter discussed, but also see nature and conservation occupations in action. One of the interactive stations was led by Michele Wunderlich and Natalie Stanton from the Cayuga County Department of Planning and Economic Development, who taught students about invasive species found in Cayuga County.

Wastewater Treatment Plants, A Cornerstone to Lake Water Quality Protection
By: Jesse Lloyd, Lead Watershed Inspector, Owasco Lake Watershed Inspection and Protection Division

There are two wastewater treatment plants (WWTPs) within the Owasco Lake watershed, in the Towns of Groton and Moravia. The City of Auburn also operates a WWTP north of the watershed, which discharges into the Owasco River at the outlet to the lake. The Auburn and Moravia's WWTPs are currently undergoing substantial upgrades, with costs on the order of tens of millions of dollars. Groton also recently had its plant upgraded. WWTP operations and upgrades notwithstanding, due to efficient access to necessary resources, we may take for granted how fortunate we are to turn a knob and get clean water.



On the other side of that coin, wastewater disappears down a pipe without a second thought. For example, a radio show recently hosted commentators who joked about their ignorance regarding what happens to waste after flushing the toilet. Let's take a deeper look into WWTP operations and the fate and transport of wastewater.

WWTPs are critical to modern society. They help protect public health and the environment by removing contaminants from water before the treated discharge is released back into rivers, lakes, or oceans. Approximately 55% of Cayuga County households discharge their wastewater into a municipally owned wastewater treatment plant (http://www.cayugacountywater.org). A typical wastewater treatment plant includes several stages, each designed to remove different types of pollutants—from large solids to microscopic bacteria. Wastewater delivered to a WWTP is approximately 99% water. The remaining one percent is made up of constituents added to water under a variety of use cases. They include human wastes, toilet paper, food scraps, fats, oils and greases, soaps and detergents, pharmaceuticals and many other pollutants.

The preliminary treatment stage of a WWTP is gravity-based and designed to remove large solids and debris that could damage equipment or interfere with the treatment process. During primary treatment, wastewater enters the plant and passes through bar screens, which trap large objects. Bar screens are large metal grates that filter out large items such as sticks, rags, plastic bags, and other trash from the incoming wastewater. These materials are typically collected and disposed of in landfills. After screening, the flow then slows down and the wastewater flows into grit chambers or sand catchers. Here, heavier particles like sand, gravel, and small stones settle to the bottom. Removing grit prevents damage and abrasion to pumps and other mechanical parts downstream.

After grit removal, the wastewater flows into primary clarifiers or sedimentation tanks. Primary sedimentation tanks can be classified mainly into two types based on their shape: rectangular and circular. Each type has its own set of features, which are designed to optimize sedimentation efficiency based on flow characteristics and site conditions. At this stage, the flow is slowed significantly at a controlled rate to reduce turbulence, allowing solids to settle to the bottom and oils/grease to float to the surface. Hydraulic Retention Time (HRT), which is the average time wastewater remains in the sedimentation tank, is critical. Typical HRT values for primary sedimentation range from 1.5 to 3 hours, providing sufficient time for particles to settle without extensive energy consumption. Effective primary sedimentation hinges on minimizing turbulence within the tank. Turbulent conditions can resuspend settled particles back into the wastewater, lowering the process's efficiency. Settled solids are called primary sludge and are collected at the tank's bottom. Lighter materials, called surface scum, such as oils and grease, float to the

surface and are removed by a mechanical skimmer. Both materials are sent to sludge treatment. The water in the middle layer, called clarified effluent, moves to the secondary treatment stage.

The purpose of secondary treatment is to remove dissolved and suspended organic matter using biological processes. The WWTP in Auburn, NY uses an activated sludge process for secondary treatment. The term "activated" comes from the fact that the particles are actively teeming with beneficial, sewage digesting bacteria, and protozoa. In this process wastewater is mixed in aeration tanks with a “biological floc” of bacteria and protozoa. Oxygen is supplied (via blowers or diffusers), and microorganisms consume organic pollutants. Once the sewage has been 'bubbled' long enough, it is discharged into a clarification chamber. This allows the sludge blanket, or the biological flocs, to settle and separate from the clean water. During secondary treatment, over 90% of suspended solids are removed. The live bacteria, called activated bacterial sludge, are returned to the digestion chamber to re-seed the new raw sewage entering the tank and sustain the process. The dead bacterial crust is removed. The majority of the waste created during this process is biological sludge, while minor waste streams include scum, foam, and gaseous byproducts. Managing this sludge is a significant part of WWTP operations, often requiring more cost and effort than the secondary treatment itself. The next phase of WWTP operations is called tertiary treatment.

The tertiary process at a WWTP is crucial for ensuring that treated water meets quality standards for reuse or safe discharge into natural water bodies. This stage involves various methods to remove remaining inorganic compounds, nutrients, and pathogens that primary and secondary treatments leave behind. Common methods of tertiary treatment are filtration, chemical coagulation and flocculation, activated carbon adsorption, ion exchange, advanced oxidation processes, and disinfection (UV and/or chlorination).

Different WWTP plants use different combinations of tertiary treatment methods. Some of these processes are also incorporated into the secondary treatment. Tertiary processes at a WWTP are selected based on the plant’s effluent quality goals, regulatory requirements, site-specific conditions, and cost considerations. An important factor in choosing a tertiary process is regulatory compliance. Discharge permits issued by environmental agencies specify allowable concentrations of contaminants such as nitrogen, phosphorus, suspended solids, and pathogens.

For example, a plant discharging into a trout stream may need to meet lower phosphorus limits, prompting the use of chemical precipitation or advanced filtration. The influent wastewater also significantly affects the choice of tertiary treatment processes used. The quality and composition of the influent wastewater dictate the need for additional treatment processes to ensure the water is safe for discharge or reuse. For instance, if the influent contains high levels of organic matter or pathogens, advanced disinfection or filtration processes may be required to remove these contaminants. Conversely, if the influent is relatively clean, less rigorous processes may suffice. The influent's characteristics also influence the selection of filtration materials and the type of disinfection methods employed.

WWTPs are far more than just utility operations; they work quietly to ensure community public health and environmental integrity. Through the removal of harmful pollutants, controlling nutrients, and ensuring safe discharges, WWTPs are a cornerstone to sustaining healthy ecosystems and protecting lake water quality for generations to come.

Earth Day! Shrubs Update
By Michele Wunderlich, Principal Environmental Planner, Cayuga County Department of Planning and Economic Development

In June 2023, the Cayuga County Soil and Water Conservation District (SWCD) and the Cayuga County Department of Planning and Economic Development partnered with Nucor to celebrate Earth Day by offering coupons for free trees or shrubs. Through Nucor's generous funding, participants received coupons redeemable for either a Colorado blue spruce transplant or a red osier dogwood seedling, which were available for pick up at the SWCD's Annual Tree & Shrub Sale in May. In addition to the community giveaway, ten red osier dogwood seedlings were donated to the Owasco Watershed Lake Association for use in their rain garden at Emerson Park. Today, those seedlings matured into the tall thriving plants visible at the back of the garden in the accompanying photo. Despite being planted in a challenging location, they have successfully taken root and are helping to beautify and stabilize the area.

Photo provided by Kim Mills

Cayuga County WQMA

For more information about the Cayuga County Water Quality Management Agency, check out our website at www.cayugacountywater.org.

The Cayuga County WQMA is also on social media. For up-to-date information on water quality issues and events, please friend us on Facebook at: https://facebook.com/CayugaCoWQMA. The Cayuga County WQMA YouTube channel is https://www.youtube.com/@CayugaCountyWQMA.

The Cayuga County WQMA is looking for story ideas for its webpage and its newsletter. If you have something you would like to share, please email us at wqma@cayugacounty.gov.

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