



LAKEWATCH

SUMMER 2019 – Annual Report

Mission:

Enhance and preserve the quality of Seneca Lake

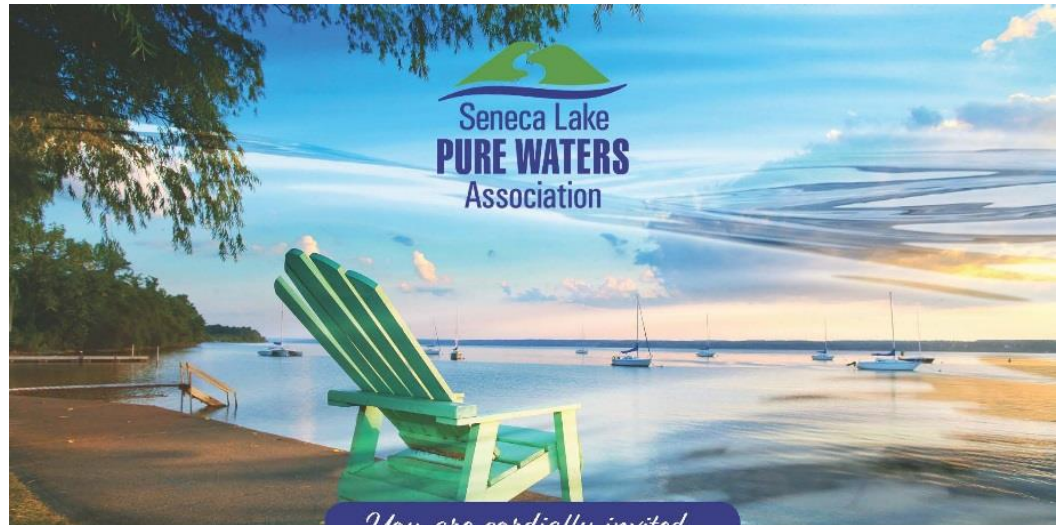
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Dan Corbett, VP of Water Quality
Jacob Welch, VP of Operations
Peter Muller, Secretary
Frank Case, Treasurer

Board of Directors:

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www.SenecaLake.org



You are cordially invited

28th Annual Dinner *Saturday, August 3*

Saturday, August 3 from 4:00-9:00pm

Meeting at 4pm • Dinner at 5pm • Dancing, Live & Silent Auction at 6pm
Music by The Cool Club and the Lipker Sisters

Climbing Bines Hop Farm & Brewery
511 Hansen Point Road, Penn Yan

RSVP by July 22
senecalake.org
or Mail a Check to:
PO Box 247, Geneva, 14456

The cost is \$50 per person

Hosted by the Seneca Lake Pure Waters Association



9 Element Plan and Related Funding: A Process Abstract

By Rick Weakland, President

What is a 9 Element Plan?

The development of watershed based management plans is intended to outline a strategy to improve water quality in a watershed. Keuka Lake and Seneca Lake share a watershed and together the two lakes contain more than half of the water in the Finger Lakes. The watershed is challenged by various conditions affecting water quality, but lack a comprehensive plan that identifies the quantity and source of pollutants, determines water quality goals or targets, defines pollution reductions needed to meet the goals and describes the actions of best management practices needed to achieve the reductions that will improve water quality.

Nine Element Plans (9E) are consistent with the EPA and NYSDEC framework to develop watershed plans. The framework consists of nine key elements which are intended to identify contributing causes and sources of nonpoint source pollution. The related planning process is structured to engage key stakeholders in the planning process and to identify restoration and protection strategies that will address the water quality concerns.

The nine minimum elements to be included in the watershed plan can be summarized as follows:

1. Identify and quantify sources of pollution in the watershed.
2. Identify water quality target or goal and pollutant reductions needed to achieve goal.
3. Identify the best management practices (BMP's) that will help to achieve the reductions needed.
4. Describe the financial or technical assistance needed to implement the BMP's.
5. Describe the outreach to stakeholders, how their inputs were incorporated and their role in plan implementation.
6. Estimate a schedule to implement each BMP.
7. Describe the milestones and estimated time frames for the implementation of the BMP's.
8. Identify criteria that will be utilized to assess water quality improvement as the plan is being implemented.
9. Describe the monitoring plan that will collect water quality data needed to measure water quality data needed to measure water quality improvements against the criteria established in 8.

Role of Consultant

The consulting firm selected should be able to help us conduct the planning process associated with addressing the nine watershed plan elements for Seneca Lake and Keuka Lake and define a comprehensive plan and strategy for each Lake and the overall watershed. The resulting Plan should be acceptable to both NYSDEC and USEPA, particularly from a subsequent project funding perspective. The consultant should facilitate development of the Plan via a process that engages key stakeholders from both Seneca and Keuka Lakes and the watershed they are both part of. In other words, the consultant should not be positioned to independently develop the Plan, rather there should be ongoing interaction between the consultant and the stakeholder team with the stakeholder team guiding the Plan development and ultimately owning its content.

Funding

We will seek grant funding from the NYS Department of State for three quarters of the Plan's cost, which is estimated to be in the range of \$360,000. The remainder (~\$90,000) needs to be raised locally, although some level of in-kind, such as via costs to support the SWIO staff person that are not funded by New York State, may help. To date, Corning Enterprises has committed \$50,000 and the two lake associations and intermunicipal organizations have each committed \$5,000. In addition, Yates, Ontario, Schuyler and Steuben have provided resolutions of support, as well as \$5,000 contributions.

Role of Stakeholder Team

It will be critical to have a stakeholder team made up ideally of representatives from both Lakes. Because there will likely be unique, as well as similar conditions affecting each Lake, the team may function with each Lake's stakeholders independently interacting with the consultant, but ultimately the Plan for both Lakes should be guided by the overall stakeholder team. Selection of team members will be completed by the associations and intergovernmental organizations representing each Lake, but the stakeholder team should ultimately assess the knowledge, skills and abilities needed for the overall team to be effective.

Financial Report

By Jacob Welch, VP of Operations

As of May of this year we had \$116,688.55 in assets and liabilities of \$4,679.08. Our income going back a year from May was 72,808.00 which lags behind the 88,498 we have spent over that same time. That means we are using past assets to meet our budgetary needs. Major expenses were \$42,519.16 for HABs and stream monitoring, \$22,755.30 for our part time secretary, website and postage as well as \$22,219 to host the annual dinner and fund the membership drive. As to the latter, membership is the key to improving our financial picture. If more lake folks can be invited to join we can continue and even increase efforts made to keep our lake a healthy resource.

Operations Report

By Jacob Welch, VP of Operations

I am most pleased to provide a very positive report concerning the operations side of our organization. More particularly, I have seen a real increase in energy and focus aimed at improving our organization and also how we will go forward to actually stop pollution sources affecting our lake.

First, we have really amped up our membership efforts. You probably have seen Pure Waters billboards along our roadside. We are also sending out literally thousands of letters to people in Watkins Glen and Geneva who use and drink lake water. If they depend that much on it they should join in our efforts to keep Seneca lake clean and pristine.

We have and will also be taking a closer look at how we can best improve ourselves. This has been under the tutelage of our dedicated Compass coordinators Peggy Focarino and Bill Roege .

While our HABs program and stream testing still remain at top levels (for not just this region but the entire state) our organization has been willing to take a giant leap from (a) reporting pollution problems to (b) actually stopping it from occurring in our lake.

To be more specific, our largest pollution sources remain (1) waste water treatment plants and (2) farm runoff. (See excellent article on stream sampling submitted by Kelly Coughlin as part of this report.) Changing both of these problems for the better will be quite the monumental task to say the least. We do, however, have a plan.

In coordination with myself as well as board members William McAdoo and Larry Martin, we have approached the Penn Yan wastewater treatment manager. She seems open to dialogue. We have identified a state grant that would afford up to \$100,000 for an engineering study of the plant. Penn Yan has exceeded their SPEDES permit by discharging phosphates and E. coli into Keuka Outlet, a major water source which pours into Seneca Lake. There are also matching state funds available for plant renovations. Keep in mind that Geneva has markedly improved discharges from their wastewater plant and, hopefully, by working with Penn Yan we can obtain a similar result.

As to farm runoff, we have advised the new regional water manager, Ian Smith, of our desire to dedicate \$30,000 that was bequested to our organization years ago by Bob Kinner. We can use this 30k as seed money to improve farm runoff into our streams in a very interesting manner. To explain, there exists a three to one state grant open to municipalities. If we can get the four counties that surround the lake to match our 30,000 that totals \$150,000. When added to the three to one matching state funds a total of \$600,000 could be dedicated to improve farm runoff problems. That's certainly a wow and can furnish lot of financial incentives for farm change.

Ian Smith has also made an effort to connect myself, our Water Quality Vice President Dan Corbett, our Invasive Species coordinator Richard Adams and others with the four County soil and water teams. We have also been invited to view some local farms to see, up close, why problems exist and how they best can be rectified.

In short, while we have not as yet actually stemmed the tide of unwanted nutrient loading, we have definitively started on the road of (1) not only testing and locating point sources of pollution but also (2) taking the extra step of stopping it in its

tracks. We have a lot of talented people on board. This should garner success regardless of how difficult the task appears.

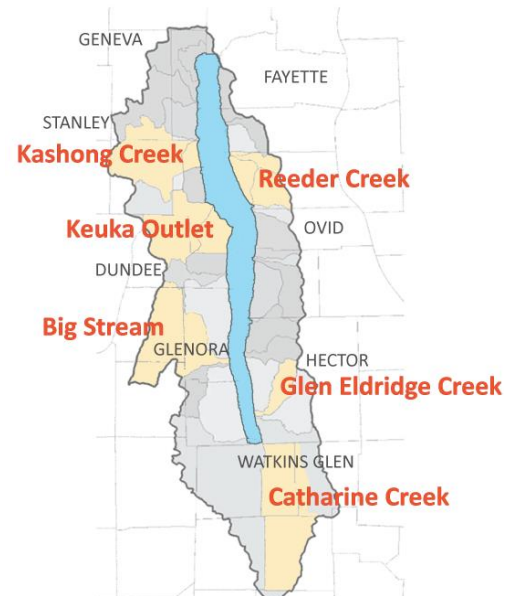
In closing, let me heartfully extend my thanks to all Pure Water members as well as all those who generously contribute to our organization. We could never do any of this valuable work without your kind support.

Stream Monitoring

By Kelly Coughlin, Stream Monitoring Team Leader

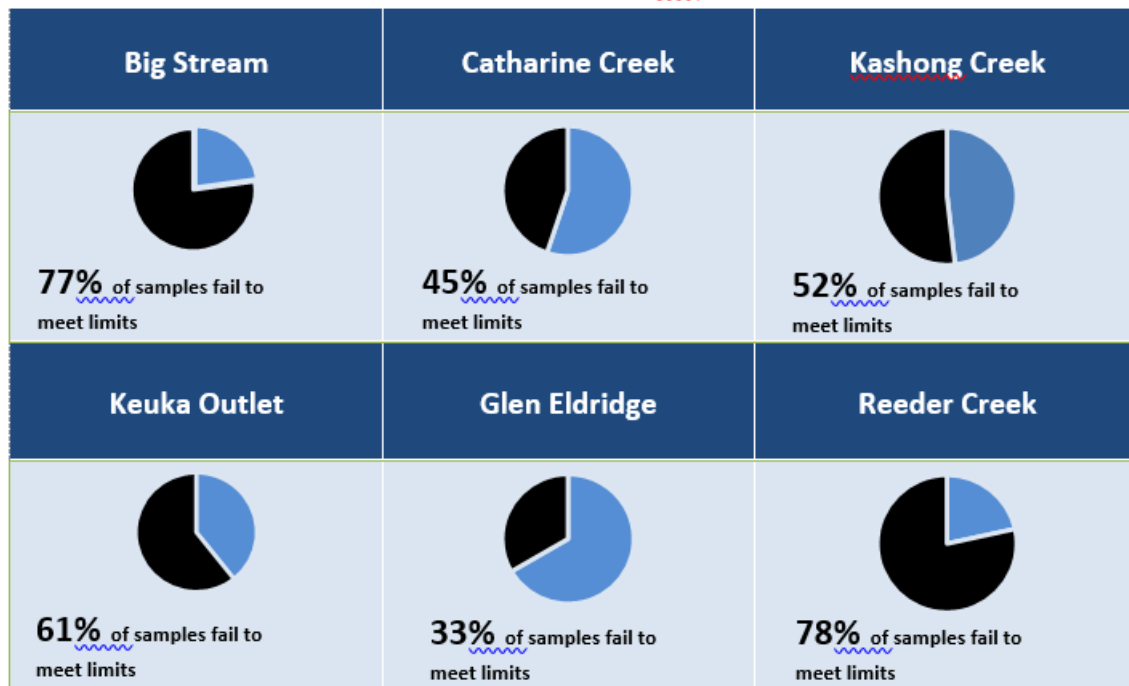
Seneca Lake Pure Waters Association's (SLPWA's) stream monitoring project has nearly completed its sixth consecutive year. Our team of more than fifty dedicated volunteers collect water samples at Catharine Creek, Big Stream, Kashong Creek, Keuka Outlet, Reeder Creek and Glen Eldridge Creek. Most streams have multiple sampling sites, with multiple sampling teams to cover the headwaters to the stream mouths at Seneca Lake. Glen Eldridge Creek was added last year, for a total of six streams in the monitoring program. SLPWA's partner in this monitoring, Community Science Institute of Ithaca, NY, performs laboratory tests for water quality and assists in interpretation of results.

Each of the streams sampled have unique conditions and characteristics that contribute valuable information to the program, and nearly all have been adversely affected by the intense storms in recent years, with bank erosion and high waters bringing increased bacteria and nutrient loads from upstream runoff.



Map of sampled streams on Seneca Lake (stream subwatersheds in yellow).

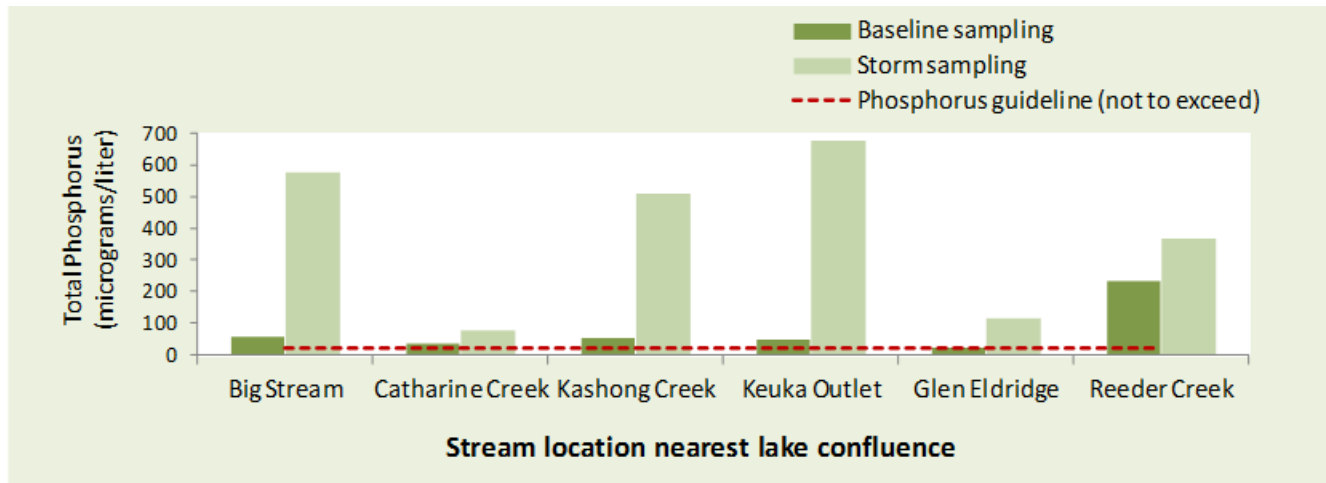
Streams do not always comply with bacteria limits for swimming. Shown are percentage of stream samples that fail to meet *E. coli* bacteria limit of 235 cfu/100 mL, results from 2014-2018.



For example, Keuka Outlet has very good water quality near Keuka Lake, but shows very high levels of nutrients and bacteria at downstream locations, especially during heavy rain flows. Penn Yan waste water treatment plant (WWTP) effluent on the Outlet has very high levels of both nutrients and bacteria. Similarly, high levels of nutrients and bacteria are

evident in Big Stream downstream of the Dundee WWTP. Reeder Creek was added to New York's 303(d) list of impaired water bodies in 2018 for elevated phosphorus, due in part to upstream wastewater treatment discharges but also to munitions disposal at the former Seneca Army Depot. In contrast, Glen Eldridge Creek is relatively pristine, with lower bacteria and nutrient concentrations, with few municipal or agricultural inputs upstream. Catherine and Kashong Creeks fall somewhere in between, with more moderately elevated concentrations.

Phosphorus levels are elevated after storm events, and most streams exceed the phosphorus guideline of 20 micrograms per liter (dotted red line). Shown are average total phosphorus samples collected during baseline and wet weather, results from 2014-2018.



Our findings on the major streams feeding Seneca Lake continue to show high levels of nutrient input, in particular phosphorus, which can lead to algae overgrowth. High levels of *E. coli* bacteria have also been identified in all streams, which is concern for recreational and drinking water resources. SLPWA continues this work to better understand and isolate contributors to pollution in Seneca Lake, and to bring about improvement actions.



Sampling in Keuka Outlet

SLPWA would like to thank the volunteers that support this monitoring effort, and to our financial sponsors, the Tripp Foundation and Fresh Water Futures.

CSLAP Annual Report

By Larry Martin, CSLAP Chair

Pure Waters has reentered into the Citizen Statewide Lake Assessment Program (CSLAP) in 2017, and currently has 4 sampling sites throughout the lake. Our full time volunteer teams consist of: Addison and Diane Mason, Jake and Karen Welch, Larry and Sue Martin, and Dave Youst and Faye Phillips. Lake water samples are collected in deep and surface locations biweekly, then processed on shore, and shipped to a state sponsored lab. These results reveal interesting data used by DEC to assess Lake health. Seneca Lake continues in a downward transition in the mesotrophic category of lake health. Phosphorus and Nitrogen levels are rising while salinity levels are dropping lake wide. Seneca ranks in the middle of all the Finger Lakes on the Trophic index rankings.

Shoreline Monitoring Program: Identifying and Reporting Harmful Algal Blooms (HABs)/Cyanobacteria

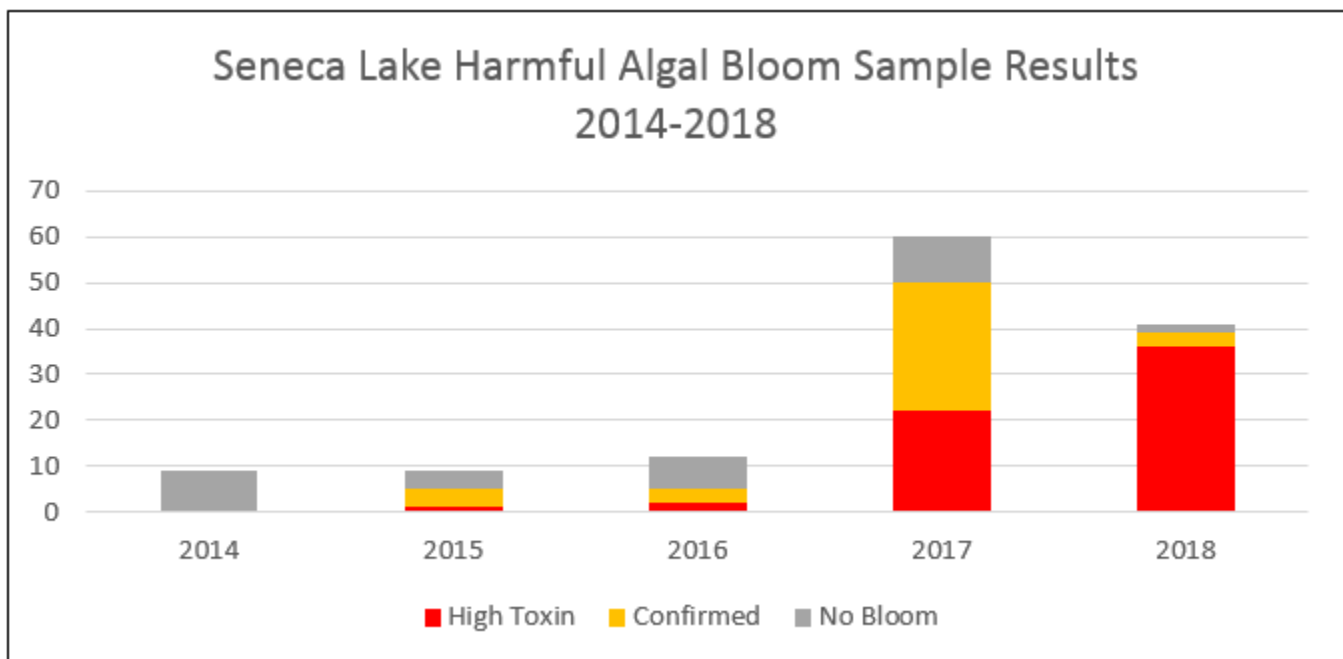
By Frank DiOrio, HABs Director and Bill Roege, Assistant HABs Director

Our Pure Water Harmful Algal Blooms (HABs)/Cyanobacteria Program continues to grow and become stronger each and every year. The primary purpose of this effort is timely identification and awareness of blooms that may be toxic and dangerous to lake users- swimmers, boaters, and especially those using the lake as a drinking water source. In 2014, a single Pure Waters expert responded to an email report of a HAB on Seneca Lake. Today, we have over 125 fully trained volunteers monitoring over 56 miles of shoreline and we have one of the most highly regarded programs in NY State. Our focus remains the same—keep people and pets safe whenever blooms are occurring on Seneca Lake.

The primary engine behind our program is our dedicated network of volunteers who monitor the shoreline for approximately 10 weeks starting in August. After monitoring their assigned zones, volunteers report findings on their smart phones or home computers. Bloom data is available to the public as a map on our website. The volunteer-gathered data is also key information for researchers. No one else can gather actual bloom data and get pictures to the extent our volunteer network does.

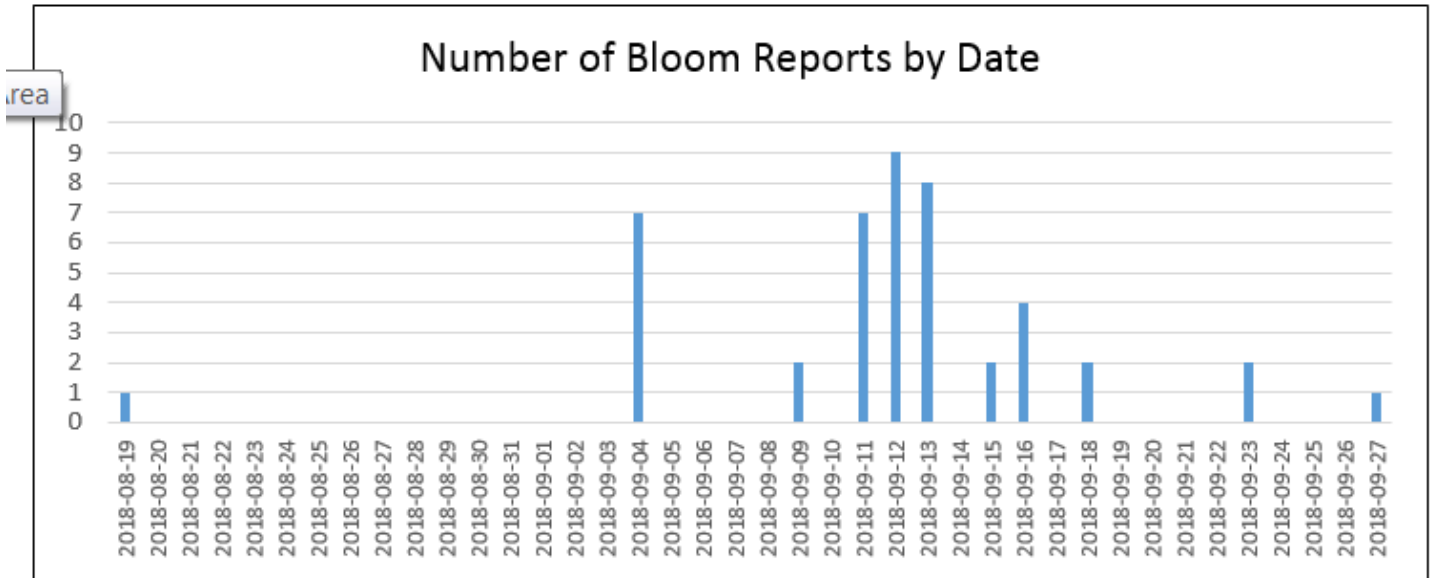
In addition to our volunteers, we are fortunate to have very strong partners that support our program. This includes the New York State Department of Environmental Conservation (NYS DEC) and Finger Lakes Institute (FLI) at Hobart and William Smith Colleges and the Upstate Freshwaters Institute (UFI). These groups help us train volunteers, test water samples and conduct water quality research.

The chart below summarizes our HABs/Cyanobacteria results for 2014-2018:



In 2018, 41 samples were collected and analyzed. Of the 41, 39 were confirmed blooms (greater than 25 micrograms/liter blue-green chlorophyll) and 36 of the 39 were also highly toxic (greater than 20 micrograms/liter microcystin toxin). The relatively large number of samples taken in 2017 and 2018 are a result of more volunteers looking for and taking samples. They do not mean there have been more blooms or that there were less blooms in 2018 than 2017. The key takeaways are 1) the high confidence we now have that volunteers know a bloom when they see it and 2) that it appears the percentage of blooms that are highly toxic is increasing. The high percentage of toxic blooms underscores the official guidance to treat all blooms as toxic and avoiding them.

The graph below shows the pattern for bloom reports over the season. There were 11 “bloom-days” total, but the vast majority of blooms we found were concentrated in September, especially between September 9th and 16th. The 2017 results showed a similar pattern.



In 2018, the primary “bloom-days” were during the week. Volunteers concentrated their surveys on the weekends, so it is very possible we missed a lot of areas where blooms were occurring. In 2019, we are encouraging volunteers to monitor the shoreline over the whole week. We hope this will help us better understand the magnitude of cyanobacteria blooms on the lake.

This year, via a generous grant from The Tripp Foundation, the program is partnering with Hobart and William Smith Colleges to deploy 8 dock-mounted monitoring stations around the lake. These stations will collect weather data, water temperature and time-lapse water surface photographs. In addition, we will conduct water sampling periodically throughout the summer at 4 of the locations. The resulting persistent data will give researchers an idea of how conditions vary around the lake and over time. The data, in conjunction with the bloom data, will provide insights into local conditions when blooms form.

2019 is shaping up to be an exciting year for the HABs program!

It is important that everyone know how to identify HABs. If you don't know what it is, you can't take proper precautions (stay away and tell neighbors about it). Two of our typical 2018 photos are shown here. However, HABs can take many forms. If in doubt, seek out the volunteer in your area.



Note the blue-green, spilled paint appearance. This is typical of Cyanobacteria.

Finally, we always need more volunteers. We have about 125 this year, up from 102 last year, but we still have room to grow. In addition, managing such a large group requires a strong leadership team. We have room for people to help with communications, information technology, training and most importantly, leading volunteer teams. If you can join us, we would enjoy having you on the team! Click on our website anytime if you are interested and would like to learn more.

Water Quality Improvement Partnership Committee

By Richard Ahola, Committee Chair

The Water Quality Improvement Partnership Committee meets monthly at the Pure Waters conference room in Geneva. In 2018-19 the committee met with the following watershed partners:

- * Ian Smith Seneca Lake Watershed Steward;
- * Lew McCaffrey DEC Finger Lakes HUB;
- * Jeff Case Seneca County Fire Coordinator;
- * Government Soil and Water experts;
- * Environmental Consultants;
- * Municipal waste water treatment operators and consultants
- * Farmers

The committee received reports on lake and stream water quality including harmful algal blooms. The highest priorities are the Pure Waters Lake Friendly Home project, Lake Friendly Farms and activities to control runoff affecting lake water quality.