

Honeoye Lake Watershed Task Force Newsletter

Fall 2015



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NYSDEC Honeoye Lake Total Maximum Daily Load (TMDL) Update Meeting

The NYSDEC held a public Honeoye Lake TMDL project update meeting to present an overview of their TMDL process, to share their preliminary analysis results, and to solicit public feedback on the TMDL analysis information. The meeting was held on Wednesday, August 26, 2014 at the Livonia High School.

Basically, the TMDL process will model the various external and internal nutrient sources that contribute to our lake's water quality issues, set target nutrient/pollution levels for each controllable nutrient source. Going forward our grant proposals to address the actions recommended in the DEC TMDL Final Report will receive a higher priority for funding.

A very good overview of the TMDL process and its benefits can be found at:

<http://www.dec.ny.gov/chemical/23835.html>

A copy of the NYSDEC Honeoye Lake TMDL Project Update presentation which contains preliminary watershed modeling information can be found at: <http://www.dec.ny.gov/chemical/99672.html>

Honeoye Lake Watershed Taskforce Chairman's Letter

Terry Gronwall

Our Fall Newsletter covers all of the 2015 projects to help in improving the water quality in Honeoye Lake and its watershed. The common focus for most of these Honeoye Lake Watershed Management Plan based projects is to implement Best Management Practices (BMP's) to reduce external sources of nutrients and sediments from reaching Honeoye Lake:

NYSDEC Honeoye Lake Total Maximum Daily Load (TMDL) Analysis Project – The TMDL process will model the various external and internal nutrient sources that contribute to our lake's water quality issues, set target nutrient levels for each controllable nutrient source. In the future our grant proposals to address the actions recommended in the DEC TMDL Final Report will receive a higher priority for funding. This effort will be completed in 2016.

NYSDEC WQIP Round 11 Grant Project – In June 2015 Ontario County Soil and Water Conservation District (OCSWCD) and HLWTF received the final NYSDEC Water Quality Improvement Program (WQIP) Round 11 Grant contract for over \$170,000 including local match funding to address stream bank erosion issues in public road right of ways, build several detention basins, and vernal pools in the Honeoye Lake Watershed. Implementation work for this grant project is being scheduled for 2016.

NYSDEC WQIP Round 12 Inlet Restoration Grant Proposal – This grant proposal includes four elements that will work together so that inlet stream flows produced by storms can spread out, slow down, and drop the sediment and nutrients they carry before reaching the lake. OCSWCD submitted a grant proposal to fund the implementation of the Inlet Restoration Project in July 2015. The grant request was \$300,000 with \$100,000 of local matching funding.

Yard Waste Disposal Initiative - Fall Schedule Sat. 11/7, and Sat. 11/14 noon – 4 PM at Richmond & Canadice Transfer Stations. This initiative is sponsored by the Towns of Richmond, and Canadice, Watershed Task Force, OCSWCD, Ontario County Planning, & HVA

Blue-green Algae Monitoring Project - At the request of the NYSDEC samples are being collected weekly from Honeoye Lake June through October 2015 for testing for blue-green algae blooms and toxin levels. Results posted on DEC Blue-Green Alert web site on Fridays.

10 Year Macrophyte (aquatic plant) Survey – Bruce Gilman, FLCC completed this survey in the fall of 2014 - This survey provides us with very valuable information on how the macrophyte (aquatic vegetation) community has changed over the last 10 years.

Zebra Mussel Survey – Bruce Gilman, FLCC completed this survey in summer 2014 - This survey provides us with zebra mussel population trend information. He found a population decline of ~33% since 2002. No quagga mussels or Asian clams were found.

These efforts to improve the Honeoye Lake and watershed water quality are a true partnership between The Nature Conservancy, New York State Department of Conservation, Ontario County Planning Department, Ontario County Soil and Water Conservation District, Finger Lakes Community College, Finger Lakes Institute, Honeoye Valley Association, the Towns of Richmond, Canadice, Bristol, South Bristol, and Naples and all lake users and residents.

We appreciate everyone's support!

Terry Gronwall, HLWTF Chairman
Please contact me at 585-367-3000 or
watershedtaskforce@gmail.com

Revitalizing Honeoye Lake



The Honeoye Lake Watershed Task Force, Ontario County Soil and Water Conservation District, The Nature Conservancy, NYS Department of Environmental Conservation and US Fish and Wildlife Service have teamed up to improve the water quality of Honeoye Lake. The Honeoye Inlet Restoration Project will utilize green infrastructure techniques to filter sediment and nutrients from the lake's largest tributary, the Honeoye Inlet.

Honeoye Lake lies in the Western Finger Lakes Region of New York State. It is one of the smallest, shallowest and most biologically productive of the Finger Lakes. It is inhabited by 27 different fish species and supports an excellent warm-water fishery featuring walleye, largemouth and smallmouth bass, perch and other panfish. The southern end of Honeoye Lake is bordered by a 760-acre silver maple-ash swamp, one of the largest and best examples of its kind in New York.

Though this shallow Finger Lake is a known eutrophic system, water quality issues are intensifying. With warmer air and water temperatures and increasing storm frequency and intensity, harmful algal blooms are more common. Honeoye Lake is listed on the New York State Department of Environmental Conservation's (NYSDEC) Priority Waterbody List as impaired due to water supply concerns relating to nutrients. Users of the lake have consistently expressed their concern regarding the negative effects of excessive aquatic plants and algal blooms on recreational opportunities, property values, and the economy of their community. In 2013, a toxic bloom in Honeoye closed beaches for most of the summer.

Nitrogen, phosphorus and other nutrients are required for plant and algal growth. Since phosphorus is the nutrient that is in short supply in natural systems, its availability generally limits the amount of plant and algal growth that occurs. When it increases by even a small amount, under the right conditions it can cause accelerated plant growth, algae blooms, low dissolved oxygen, and the death of certain fish, invertebrates, and other aquatic animals. For this reason, phosphorus, and sediment that carries it, have been and will continue to be the focus of water quality improvement efforts.

Study Results

In 2013, The Nature Conservancy (TNC) partnered with the Honeoye Lake Watershed Task Force (HLWTF) to commission an independent study that would identify not only the parts of the watershed requiring the greatest attention because of their high contributions of nutrients and sediment, but those areas where

reducing sediment, nitrogen and phosphorus is technically feasible. This information has helped the Watershed Task Force select and prioritize management projects with the greatest overall benefit.

While the most sediment and nutrients per unit area are contributed by subwatersheds Northwest, Affolter Gully and Cratsley Gully, the Honeoye Inlet was identified as the greatest contributor in total loadings due to its large size (it drains 43% of the lake's watershed). Annual loads from the Inlet account for approximately 50% of the total sediment, nitrogen and phosphorus entering the lake each year. The study found that green infrastructure techniques would remove 24-37% of the total amount of phosphorus entering Honeoye Lake from surface flows.

The Solution

To address the sediment and nutrients coming from Honeoye Inlet, a four part restoration plan has been designed by USFWS for the portion of the Inlet that runs through Honeoye Inlet Wildlife Management Area. The plan utilizes services provided by nature to filter water before it enters the lake. Such a restoration project would meet many objectives, including a reduction in nutrient and sediment loading, the attenuation of peak flows, reduced flooding, minimal long-term maintenance, restoration of previously damaged habitat, creation of new habitat, and expanded recreational use of the Wildlife Management Area.

The four elements of the design will work together so that stream flows in the Inlet produced by storms can spread out, slow down, and drop the sediment and nutrients they carry before reaching the lake.

First, the Inlet will be diverted from the agricultural ditch it was placed in in the 1960s and placed in a new stream course. This will reconnect stream flows with their floodplain which allows them to spread out and slow down before reaching the lake. Second, we will re-create meanders in the stream channel to slow water down before it enters the existing forested wetland. Third we will construct a backwater wetland that will absorb flood waters during storms. Finally, we will strategically plug ditches that run perpendicular to the Inlet's stream channel, reducing the amount of sediment and nutrient laden water that is shunted from the valley sides to the Inlet and then to the lake by forcing storm flows out of the ditches and into vernal pools.

Benefits to the Community

The economy of the Honeoye Lake community is driven by seasonal residents and tourists who are responsible for the large boost in retail and service business during summer months. From Memorial Day to Labor Day, 25 to 100% of increases in business (depending on the business type) can be attributed to seasonal residents and tourism. For example, a local restaurant doubles its staff during these months, while a local marina adds 14 jobs. If either seasonal residents or tourists choose not to return because of beach closures and toxic algae blooms, the community will suffer.

The proposed project serves as an important step in comprehensive management of Honeoye Lake's water quality issues. OCSWCD submitted a grant proposal to fund the implementation of the Inlet Restoration Project in July 2015. The grant request was for \$300,000 with \$100,000 of local matching funding. The HLWTF, TNC, OCSWCD, HVA, and the Towns of Richmond and Canadice are committed to providing the cash and in-kind match for the betterment of their lake, their watershed, and their community.

2016 Ontario County Water Resources Grants Awarded to Support Honeoye Lake Water Quality Initiatives

<i>Title/ Purpose of Grant</i>	<i>Agency Requesting</i>	<i>Amount</i>
Enhancement Of Soil Erosion Control Garden, Sandy Bottom Park	Soil & Water Cons. District	\$1684
2016 Summer Mapping Of Aquatic Plant Biovolume	HLWTF	\$925
Preliminary Study Of The Role Of Nitrogen In Harmful Algal Blooms In The Finger Lakes	Finger Lakes Institute	\$2000
To Help Purchase Of A New Water Quality Monitoring Probe	FL Community College	\$2000

Honeoye Lake's Pilot Composting Project Report by Edith Davey

The Honeoye Lake Yard Waste Composting 2015 Pilot Project scored a success during the spring events in May and June and the first of three Fall sessions. Participation in this project is open to all residents of the Honeoye Lake Watershed, which includes persons living in the hamlet of Honeoye, Towns of Richmond and Canadice; as well as areas of Bristol, South Bristol and Naples.

Honeoye Lake Watershed Task Force members, the Ontario County Planning Office, the Honeoye Valley Association, the Highway Departments of the Towns of Richmond and Canadice, and Ontario County Soil and Water Conservation District have cooperated in this pilot project.

The Fall session of the Composting Project will began at noon – 4 pm, September 6, at the Town of Canadice Transfer Station and at the Town of Richmond Brush Pit.

Two Saturdays in November; the 7th and 14th, will also offer free mulching services to residents from noon – 4 pm. Free leaf bags are available to participants at the Town Halls while supplies last, and staff will be available to help with unloading at the brush pits.

Both brush pits are open for deposits at their usual times as well. Residents should check the brush pit site to ensure that it is open and accessible before loading their carts, trucks, trailers.

Some residents from the Town of Richmond, Hamlet of Honeoye, Town of Canadice and the Town of Bristol agreed to respond to a survey when they dropped off materials during the spring events. The survey included questions about the amount of yard waste, the means of hearing of the event, proximity of homes to the Lake and the reasons for participation.

Responses revealed that 1470 gallons of yard waste arrived in bags. 11 pickup loads and 9 trailer loads were deposited, and two “other” means were indicated. Posters, word-of-mouth, Honeoye Valley Association e-mails and habitual use of the brush pits were cited as sources of information. The reasons for participation ranged from the desire to avoid adding nutrients to Honeoye Lake, to the ease of disposing of yard waste, to the desire to support community projects. The majority of respondents indicated that they lived within 500 feet of the lake.

Raking or blowing leaves or grass clippings into Honeoye Lake or any other fresh water body directly feeds algae and water weed growth by adding nutrients to the water. One pound of phosphorus entering Honeoye Lake (or any other Finger Lake for that matter) will support the growth of 500 pounds of algae or water plants. Mulching woody debris and composting leaves and grass clippings on land keeps these nutrients from entering the lake and produces a useful soil additive



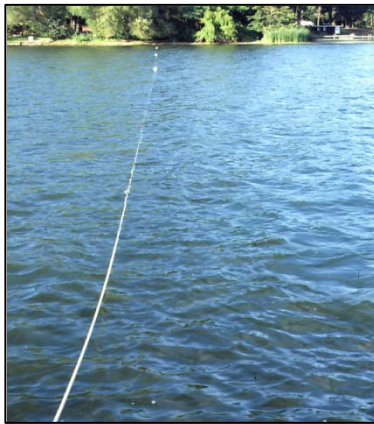
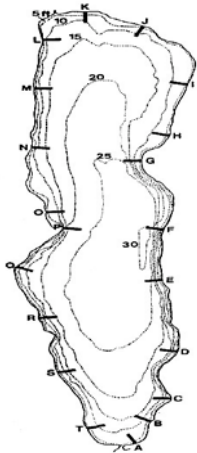
Photographs by Terry Gronwall: Resident given assistance by staff. Brush piles at Richmond Brush Pit.

THIRTY YEARS OF CHANGE IN THE FALL STANDING CROP BIOMASS OF MACROPHYTE COMMUNITIES IN HONEOYE LAKE

Bruce Gilman, John Foust, Jason Hanselman

Department of Environmental Conservation and Horticulture, Finger Lakes Community College

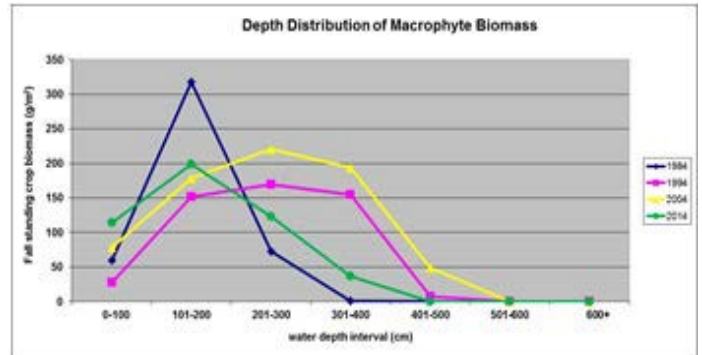
Aquatic macrophyte communities were sampled along 20 transects through use of SCUBA. Each transect began at the shoreline and extended perpendicularly towards the lake center.



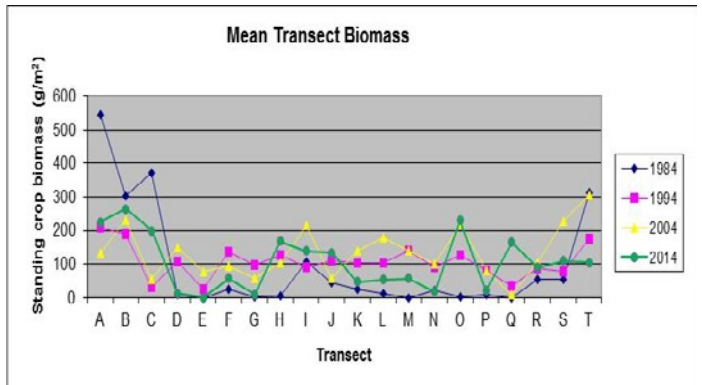
Individual sites were summarized by species composition, sample richness, overall diversity and standing crop biomass. Among the year 2014 samples, richness ranged from 1 to 13 species while dry weight biomass ranged from 0.06 g/m² to 516.56 g/m².



Similar investigations in 1984, 1994 and 2004 allow for thirty year trend analyses in macrophyte fall standing crop biomass. Flux in transect data is influenced by changing maximum depth of the littoral zone (1984: 4.30 m, 1994: 5.70 m, 2004: 5.35 m, 2014: 3.72 m) among other factors.



Each year, fall standing crop biomass is affected by water clarity, nutrient loading, growing season conditions and interspecific competition among vascular species as well as with littoral algae and periphyton. Variability produces dynamic responses in plant community structure and function.



In 2014, macrophyte community composition was dominated by native species including eelgrass (*Valisneria spiralis*), coontail (*Ceratophyllum demersum*), flat-stem pondweed (*Potamogeton zosterifolius*), water stargrass (*Heteranthera dubia*), small pondweed (*Potamogeton pusillus*), elodea (*Elodea canadensis*), star-leaved duckweed (*Lemna trisulca*), large-leaf pondweed (*Potamogeton amplifolius*) and clasping-leaf pondweed (*Potamogeton richardsonii*).

Acknowledgments: Ontario County Planning Department, Town of Canadice, Town of Richmond, Ontario County Water Resources Council, Finger Lakes Community College and the Crusher 5000

	1984	1994	2004	2014	mean
Eelgrass (<i>Vallisneria spiralis</i>)	44.2	12.7	15.0	30.7	25.7
Eurasian water milfoil (<i>Myriophyllum spicatum</i>) *	6.2	34.9	13.8	7.1	15.5
Coontail (<i>Ceratophyllum demersum</i>)	8.6	9.9	22.1	21.1	15.4
Water stargrass (<i>Heteranthera dubia</i>)	8.0	5.2	11.4	8.5	8.3
Elodea (<i>Elodea canadensis</i>)	6.5	7.3	10.0	4.8	7.1
Large-leaf pondweed (<i>Potamogeton amplifolius</i>)	7.3	7.0	10.1	3.7	7.0
Flat-stem pondweed (<i>Potamogeton zosteriformis</i>)	1.8	5.8	4.7	6.0	4.6
Star-leaved duckweed (<i>Lemna trisulca</i>)	3.8	3.4	3.5	3.5	3.6
Curly-leaf pondweed (<i>Potamogeton crispus</i>) *	3.0	4.1	0.7	3.9	2.9
Water marigold (<i>Bidens beckii</i>)	6.0	1.5	1.6	0.0	2.3
Small pondweed (<i>Potamogeton pusillus</i>)	0.0	0.9	1.3	4.2	1.6
Clasping-leaf pondweed (<i>Potamogeton richardsonii</i>)	0.6	0.6	0.4	2.4	1.0

* invasive species

TABLE 1 – Relative importance values (%) of submerged aquatic vegetation in Honeoye Lake, 1984-2014. Importance value calculated as mean of relative frequency and relative dominance (derived from standing crop biomass data).

		
Eelgrass	Eurasian water milfoil	Coontail
		
Water Stargrass	Elodea	Largeleaf-pondweed

WHAT'S HAPPENING TO OUR ZEBRA MUSSELS (*Dreissena polymorpha*)?

by Bruce Gilman, Ph.D., Finger Lakes Community College, Canandaigua, New York

My first visit to Honeoye Lake was in 1977 while attending an Independence Day picnic at a friend's cottage. Little did I know then about how important the lake and its watershed would become to my subsequent research activities. Over the years, with FLCC colleagues and students assisting, I have studied the composition and productivity of macrophyte communities, fish populations, water quality, benthic invertebrates, internal nutrient loading, and land use/land cover patterns.

In 2001, unusual surface foam streaks appeared on neighboring Canandaigua Lake and at the same time zebra mussel shells were washing up in great numbers along its shoreline. We hypothesized that a mussel die-off had occurred and their dead remains were somehow contributing to the foam. The following year we used a PONAR dredge to sample the lake bottom at several locations. Using shell length as a proxy for mussel age, we discovered that nearly all of the living mussels were less than a year old, verifying that a die-off had indeed taken place the prior year. To compare the Canandaigua Lake "recolonizing" population age-class structure to a normal one composed of many cohorts, we also sampled the Honeoye Lake zebra mussel population in 2002.

Last fall, Honeoye Lake residents reported that they were finding very few zebra mussels on their docks when they were removed in preparation for the winter ice. Had a die-off of mussels also occurred in Honeoye? There were no tell-tale foam streaks or large wrack lines of empty shells, but maybe that should not have been expected at Honeoye. With most of the lake bottom composed of soft silty substrates, the zebra mussel populations were never as great as in Canandaigua Lake. Perhaps they had simply declined due to lack of palatable algae brought on by their own selective filter feeding of the plankton community. The best way to verify a zebra mussel population decline would be to resample the same locations studied in 2002, and compare our results. This would also provide us an opportunity to discover if other bottom dwelling invasive species had entered the lake, especially Asian clams (*Corbicula fluminea*) and quagga mussels (*Dreissena rostriformis bugensis*).

So in mid-July 2014, we surveyed the zebra mussel population in Honeoye Lake again. Assisting this time were Nadia Harvieux (FLI educator), an FLCC student, the Ontario County aquatic vegetation management staff and four Nature Conservancy students interns from New York City. Needless to say, that was quite a field crew! I processed all of the samples in the lab, tallying and weighing the mussels. Overall, the zebra mussel density declined by about 30% (from 1647/m² in 2002 to 1199/m² in 2014). Total mussel biomass declined by about 35% (from 292 g/m² in 2002 to 188 g/m² in 2014). Indeed the perception of the public was correct.

And about the other benthic invasive species, both good news and bad news – we found no quagga mussels in our dredge samples but four European fingernail clams (*Sphaerium corneum*) were collected on gravelly substrates along the eastern shore of Honeoye Lake.

<u>Sandy Bottom</u>	<u>density</u>	<u>biomass (g)</u>
<u>nearshore</u>	-323	-205
<u>midshore</u>	+4651	+217
<u>offshore</u>	-357	-52
<u>Trident Marine</u>		
<u>nearshore</u>	-1459	-323
<u>midshore</u>	+467	+155
<u>offshore</u>	+175	+116
<u>California Point</u>		
<u>nearshore</u>	+68	-50
<u>midshore</u>	-1392	-360
<u>offshore</u>	-1742	-86
<u>Forest View</u>		
<u>nearshore</u>	-710	-309
<u>midshore</u>	-158	+97
<u>offshore</u>	-4592	-444

Table: Net change in zebra mussel population parameters (per m²) 2004 – 20014.

DEC Water Quality Improvement Program
Round 11 Grant Project
by P J Emerick and Megan Webster, Ontario County SWCD

Round 11
Water Quality Improvement Project
Grant Proposal

The Honeoye Lake Watershed Task Force and the Ontario County Soil and Water Conservation District have been awarded grant funding under Round 11 of the Water Quality Improvement Project (WQIP) program. Ontario County Highway Department, Finger Lakes Community College, NYS DEC and the Towns of Richmond and Canadice would partner to accomplish the proposed tasks.

Funding for water quality improvements under this program is available for municipalities, Soil and Water Conservation Districts and non-profit organizations. The WQIP program is a competitive, reimbursement grant program funded primarily by the Environmental Protection Fund (EPF) and NY Works II for projects that reduce polluted runoff, improve water quality and restore habitat in New York's waterbodies.

The 21-page application requires a detailed information about the proposed project sites, pollutant reduction estimates, permits, easements, personnel and letters of intent from all cooperating municipalities and partners.

The HLWTF /SWCD proposal includes:

- stream bank stabilization
- debris guards at two locations
- road bank stabilization and readjustment
- two sediment basins
- water control structure on existing sediment basin
- construction of vernal pools
- reworking of forestry practices on DEC land
- construction of a detention pond with a water control structure

Ontario County SWCD will secure the necessary permits for the work. The cooperating entities will contribute to the in-kind match necessary to secure funding. This project work is being scheduled for 2016.



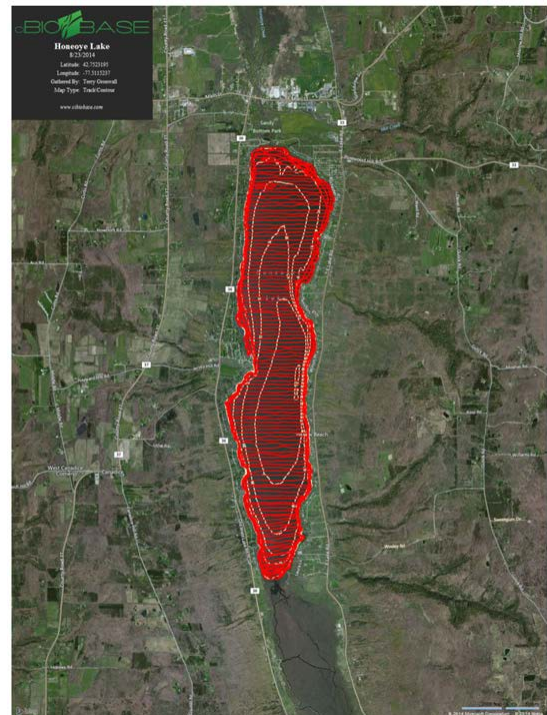
Pictured: Debris guard for a culvert
HAAALA Industries

Bathymetric and Bottom Hardness Mapping
By Terry Gronwall

The effort to create new Honeoye Lake Bathymetric and Bottom Hardness maps was supported by grant funding from the Ontario County Water Resources Council in 2014.

Terry and Dorothy Gronwall spent over 30 hours on the lake collecting GPS coordinates and depth readings with their Lawrence Depth Finder every 5 seconds while traveling at 5 MPH along East West transects spaced approximately 200' apart.

The new Honeoye Lake Bathymetric and Bottom Hardness maps they created are on the following pages.



BIOMBASE

Honeoye Lake
 8/23/2014
 Latitude: 42.7523195
 Longitude: -77.5115237
 Gathered By: Terry Gronwall
 Map Type: Contour
 www.cibibare.com

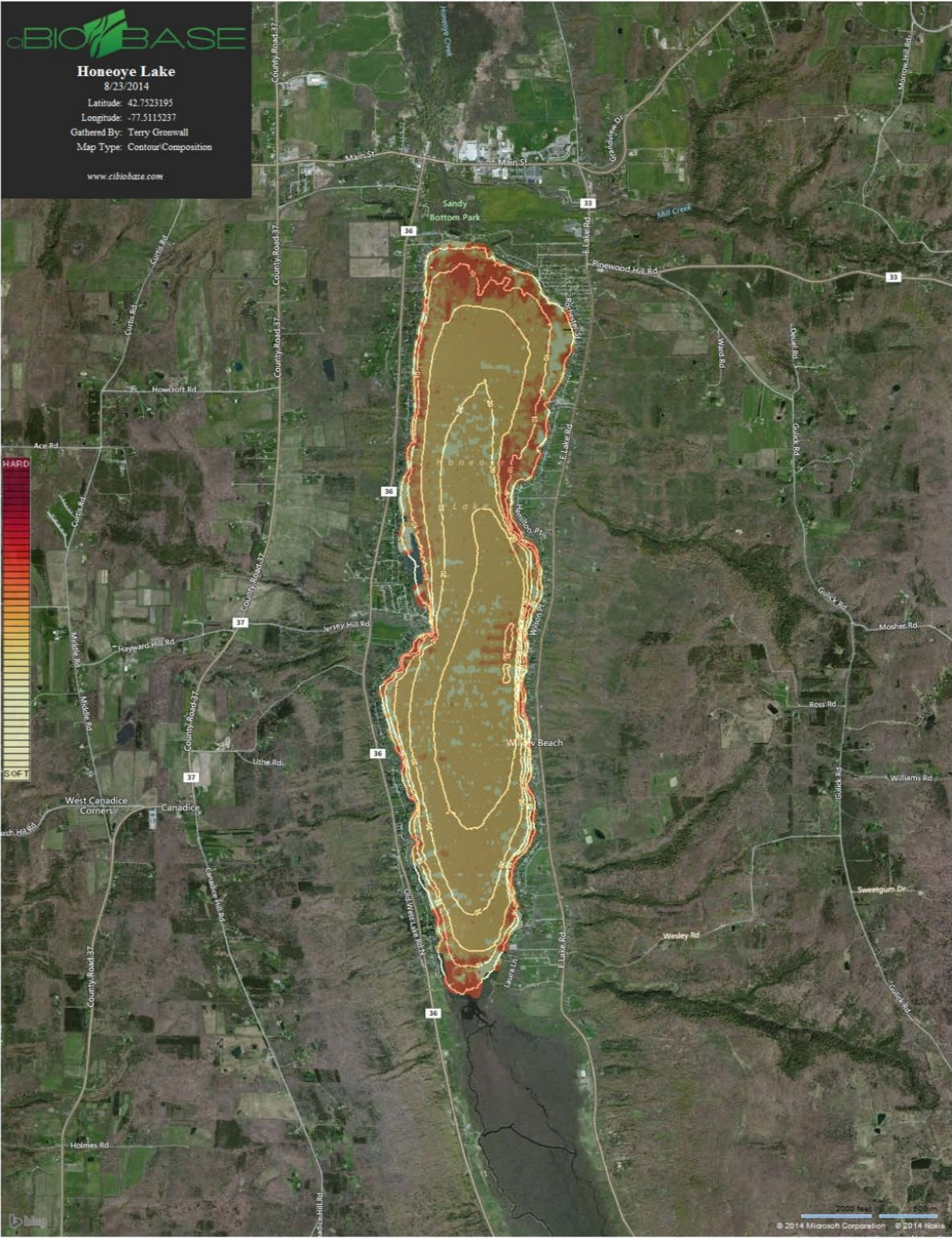
0 30'

0 30'

0 600'

© 2014 Microsoft Corporation © 2014 Nokia

Bottom Hardness Map of Honeoye Lake



Honeoye Lake Watershed Task Force was formed in 1998

**By
Town of Richmond
Town of Canadice
Town of Bristol
Town of Naples
Town of South Bristol
Honeoye Valley Association
To**

Protect and improve the water quality of Honeoye Lake.

Voting members include:

Steve Barnhoorn, Councilmember, Town of Richmond
Bill Hershey, Councilmember, Town of Canadice
Barbara Welch, Supervisor, Town of South Bristol
Al Favro, Councilmember, Town of Bristol
Mark Adams, Representative, Town of Naples
Terry Gronwall, Honeoye Valley Association (Chairman)

Permanent professional support is provided by:

P J Emerick, Bill Hershey, Edith Davey, Ontario County Soil and Water Conservation District
Dr. Bruce Gilman, Finger Lakes Community College
Tom Harvey and Betsy Landre, Ontario County Planning Department

Project Specific professional support is provided by:

NYS Department of Environmental Conservation The
Nature Conservancy
Finger Lakes Institute
Cornell Cooperative Extension of Ontario County
Ontario County Water Resources Council Princeton
Hydro Consulting Services

Further information may be obtained by contacting:

Chairman Terry Gronwall at (585) 367-3000

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or

P J Emerick, Ontario County SWCD at (585) 396-1450

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Photograph: Terry Gronwall