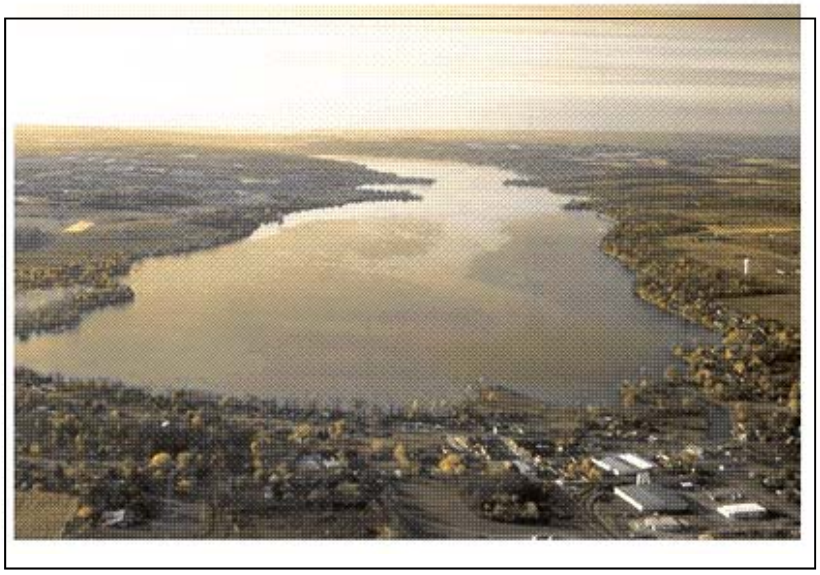

Conesus Lake and Watershed Report Card

Assessment of the Conesus Lake Watershed Management Plan in 2007

Conesus Lake Watershed Council

May 2008

EcoLogic

PURPOSE OF THIS DOCUMENT

One of the recommendations of the Conesus Lake Watershed Management Plan (CLWMP) is to prepare an annual update summarizing the status of activities in the watershed designed to reduce nonpoint source pollution. In addition, the annual summary provides a forum for tracking conditions in Conesus Lake and highlighting new information.

MAJOR ACCOMPLISHMENTS

The Conesus Lake Watershed Council was created in December 2003 when nine watershed partners signed an Intermunicipal Agreement to implement the recommendations of the Conesus Lake Watershed Management Plan (CLWMP). The Watershed Council has met quarterly since its founding and is effective in coordinating projects and reporting on overall progress. Restoring the lake and its watershed requires a sustained effort to address multiple issues. As summarized below, progress is continuing on many fronts.

Objective: Reduce inputs of nutrients, sediments, microorganisms, and other substances that can degrade the quality of Conesus Lake.

- Continue to advance whole farm planning and prepare for CAFO implementation.
- Implement Best Management Practices (BMPs) on watershed farms.
- Install sanitary sewers in the Hamlet of Conesus.
- Request NYS Department of Health approval of watershed rules and regulations.
- Survey streambanks and find effective measures to reduce erosion.
- Continue to implement improvements to watershed roadside ditches.

Objective: Modify in-lake processes in ways that will improve recreational quality.

- Pilot test a solar-powered mixing device (SolarBee®) and assess its effectiveness.
- Supplement population of weevils in an effort to control Eurasian watermilfoil.
- Continue stocking with walleye fingerlings reared at the Finger Lakes Community College.
- Presentation by the Ontario County Planning Department on the Honeoye Lake alum treatment program.
- Addition of the Fish Kill Contingency Plan to the Livingstone County Emergency Management Plan

Objective: Track conditions and evaluate the effectiveness of control measures.

- Monitor nutrient and sediment export from subwatersheds as improved agricultural practices are implemented.
- Measure near-shore growth of weeds and algae in experimental and control areas.
- Continue watershed inspection, watershed manager, and monitoring activities.

Objective: Informing the public of watershed management activities.

- Continue public education through distribution of educational material at public functions, and through written newspaper articles in the CLA newsletter on CLWMP initiatives.

Completion of the USDA-funded monitoring of tributary subwatersheds

In late 2007, the final water quality samples and flow measurements were collected in the tributary subwatersheds included in the USDA-funded research program. This highly-regarded research effort was led by Professor Joseph Makarewicz of SUNY Brockport and brought together a consortium of researchers from local academic institutions and agricultural support agencies. The program was designed to quantify the effectiveness of best management practices in reducing the loss of nutrients and other chemicals, sediment, and bacteria from the agricultural landscape. Related research initiatives examined how reductions in loading from the subwatersheds affect nearshore water quality and habitat conditions. The proliferation of macrophytes and macroalgae and the abundance of Eurasian watermilfoil were a focus of the in-lake work.

The researchers are now completing their data analysis and preparing technical articles for publication in a special Conesus Lake issue of the Journal of Great Lakes Research. A forum to present the results to the Conesus Lake community is being discussed for summer of 2008.

Lake-wide Phosphorus and Algae Levels

One element of the CLWMP is a monitoring framework to enable managers to assess long-term changes in the lake's health while responding to new issues.

Tracking total phosphorus concentrations and algal abundance over time is an important component of lake management. Phosphorus is the limiting nutrient for algal growth in the Finger Lakes, and the summer average concentration of this nutrient in the open waters of the lake helps managers evaluate effectiveness of control actions. 2007 results indicate improved water quality conditions.

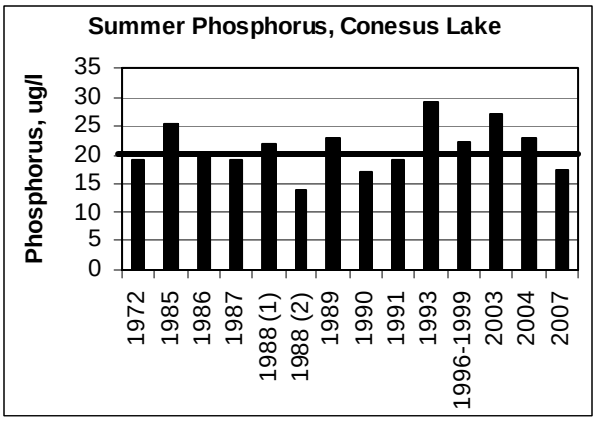

Figure 1. Average total phosphorus measured in summer (June-August) in the upper waters of Conesus Lake. NYSDEC uses 20 µg/l (summer average, upper waters) as the threshold for impaired waters. When phosphorus concentrations exceed this level there is a risk of algal blooms. Concentrations in 2007 are below this threshold.

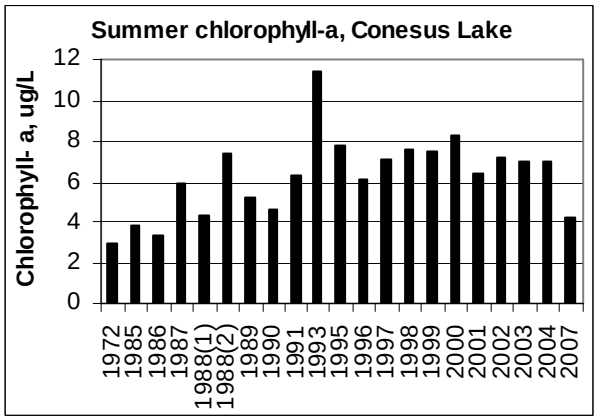

Figure 2. Average chlorophyll-*a* levels measured during summer (June-August) in surface waters of Conesus Lake. Summer average chlorophyll-*a* concentrations indicate the abundance of algae suspended in the open waters; these tiny plants make the water appear green. Chlorophyll-a concentrations have been relatively stable over the past decade. The decline in 2007 is consistent with the reduced TP levels.

2007 UPDATE: THE SOLARBEE PILOT STUDY

The Conesus Lake Watershed Council agreed to implement a pilot test of the SolarBee technology during the summers of 2006 and 2007. Funds for the pilot test and monitoring were contributed by Livingston County, using grant funds from the Finger Lakes—Lake Ontario Watershed Protection Alliance, the Conesus Lake Association, the Town of Geneseo, the Town of Livonia, the Town of Groveland and the Town of Conesus. Other volunteers and contractors supported this effort, notably Professor Sid Bosch of SUNY-Geneseo, and the Livingston County Sheriff's Office Marine Patrol.

Three SolarBee units were installed by Pump Systems International (PSI) in late April 2006 and kept in the lake over the winter and re-started in the spring of 2007. Water quality conditions were monitored throughout both summer seasons. Control areas, distant from the SolarBees, were used as a baseline for comparison.

Results of the first year (2006) monitoring program indicated that the solar-powered mixing devices did not result in significant improvements for the majority of parameters measured. However, some parameters did show improvement in regions of the lake adjacent to the solar-powered mixing devices; notably, water clarity increased and blue-green algae decreased in the northern basin of the lake as compared with reference areas. The measured improvement was supported by public perception of clearer water. The magnitude of improvement was small compared with the variability in these parameters typically measured in Conesus Lake. The conclusion of the 2006 effort was that the SolarBee units did not appear to be an effective alternative for consistent improvements to nearshore areas of Conesus Lake.

However, the localized improvements in water quality in 2006 were sufficient for the project partners to authorize a second year of deployment and monitoring. Most parameters measured in 2006 were measured in 2007, except bacteria.

Results of the 2007 program were very similar to 2006. Overall, there were no statistically significant differences between sites where SolarBees were deployed and reference locations. Consistent improvements in water clarity and filamentous algae were not achieved in 2007.

There were statistically significant differences in data collected along transects at one site (Sacketts Harbor) for one month (August). In addition, there were slight positive effects measured for a few variables, consistent with improved water quality. However, these effects were not statistically significant and could not be attributed to the SolarBee units. Water quality at the SolarBee sites were not distinguishable from natural daily and weekly changes in Conesus Lake.

Ultimately, the limited benefits of the SolarBees did not justify the costs and the program was terminated.

SolarBee deployed in Conesus Lake, Summer 2006

PART B: CLWMP RECOMMENDATIONS STATUS UPDATE

Recommendation	# in Plan	Priority	Completed	Underway	No Action
1. Creation of a Conesus Lake Watershed Council and contracting with a Watershed Manager		High	X		
2. Review and amend zoning regulation	A-1	High		X	
3. Secure funding to help mitigate the financial impacts of changes in agricultural practices on the producers.	B-1	High		X	
4. Implement practices that will reduce non-point source pollution from farms.	B-2	High		X	
5. Develop and implement programs and partnerships to facilitate removal of waste materials from farms.	B-3	High			X
6. Develop programs for public education and outreach for both the agricultural and the non-agricultural community.	B-4	High	X (Ongoing)		
7. Develop and implement program to restore and stabilize streambanks in the watershed.	C-1	High		X	
8. Provide training on erosion control practices for Municipal Highway Depts.	D-1	High	X (Ongoing)		
9. Revise Watershed Rules and Regulations	E-1, E-6	High		X	
10. Develop a public education campaign: • Effect of boat speed on weeds (creates weed-chop) • Precautions to follow when discarding unused bait or transporting bait from one water body to another (exotic species introduction). • Need to clean and inspect boat (body, bilge, coolant system, etc.) and trailer when transporting from one water body to another (exotic species introduction). • Existing boat and personal watercraft laws.	E-2	High	X (Ongoing)		
11. Continued enforcement of existing boat and personal watercraft laws.	E-3	High	X (Ongoing)		
12. NYSDEC should review and update its 1994 safe yield allocation calculation for Conesus Lake, and make any necessary revisions to water allocations for public supply and wastewater dilution.	F-1	High		X	
13. Investigate and implement effective methods to control the spread of non-native (exotic) organisms.	G-1	High		X	
14. Initiate effort to determine if increased stocking of walleye fingerlings, or other species, would be an effective biological control in Conesus Lake.	G-4	High		X	

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PART B: CLWMP RECOMMENDATIONS STATUS UPDATE

Recommendation	# in Plan	Priority	Completed	Underway	No Action
15. Develop and implement a program for cleaning accumulated aquatic plants and algae along the shoreline of Conesus Lake.	G-2	High		X	
16. Initiate effort to determine if alum treatment to control release of phosphorus from deep lake sediments would be effective in Conesus Lake. Proceed with plans for implementation if effectiveness is warranted and monitor for environmental impacts.	G-3	High		X	
17. Determine if new technologies would be effective in Conesus Lake to improve water quality or enhance the recreational use of the Lake. Proceed with plans for implementation if effectiveness is warranted and monitor for environmental impacts.	G-8	High		X	
18. Initiate effort to determine if water circulation devices, including, but not limited to, SolarBee, would be effective in Conesus Lake to decrease algae and nuisance aquatic plant concentrations. Proceed with plans for implementation if effectiveness is warranted and monitor for environmental impacts.	G-9	High	X		
19. Conduct an annual monitoring program of Conesus Lake and its watershed. An annual monitoring meeting should be held to coordinate the monitoring program.	H-1	High		X (Ongoing)	
20. Prepare and distribute an annual Conesus Lake and Watershed Report Card	H-2	High	X (Ongoing)		
21. Create an integrated aquatic plant management plan for Conesus Lake		High		X	
22. Adopt local sediment and erosion control laws based on the CLWMP Model Erosion and Sediment Control Law	A-2	Medium	X (Lakeshore towns)		
23. Develop public education campaigns • Encourage planting and protection of streamside vegetation • Discourage use of herbicides, pesticides, and fertilizers on shoreline properties • Erosion control and lake-friendly landscaping	A-3	Medium	X (Ongoing)		
24. Implement best management practices, such as hydroseeding or other approved methods, as soon as possible after road construction or maintenance activities occur in the watershed.	D-2	Medium		X (Ongoing)	
25. Municipal Highway Departments should develop a plan, subject to available funding, to remediate ditches in poor condition.	D-3	Medium		X	

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Recommendation	# in Plan	Priority	Completed	Underway	No Action
26. Amend Town dock laws to add the provision of 24-hour access to toilet facilities to the list of requirements for granting a Special Use Permit.	E-4	Medium		X	
27. Winterize facilities at the State Boat Launch on East Lake Road and at the Town of Geneseo's Long Point Park to permit year-round use of public toilets.*	E-5	Medium		X	
28. Extend sewer system	F-2	Medium		X	
29. Control sanitary sewer overflows within the collection system.	F-3	Medium		X	
30. Initiate an experimental program for control of aquatic weeds using the aquatic moth and/ or weevil.	G-5	Medium	X		
31. Identify and develop sites for regional storm-water treatment areas in cooperation with NYSDEC and other stakeholders.	C-2	Low		X	
32. Develop plan to phase-in computer-controlled spreaders on trucks used for winter deicing (includes training, funding, and use of the equipment). Promote sensible deicing practices: develop incentives and/or disincentives. *	D-4	Low			X
33. Develop public education campaigns: • Sensible winter driving • Why and when are road ditches cleaned • Need to keep yard debris and trash out of road ditches	D-5	Low	X (Ongoing)		
34. Develop protocol and timeline to inventory septic/sanitary systems within the watershed.	F-4	Low		X	
35. Develop program for suctioning aquatic weeds from designated public areas that are too shallow for harvester to maneuver.	G-6	Low		X	
36. Develop a weed harvesting program either by contracting with outside vendor or purchasing equipment.*	G-7	Low			X

*These recommendations were not targeted for implementation in 2007

Key to Acronyms

CLA—Conesus Lake Association
CLWMP—Conesus Lake Watershed Management Plan
FLCC—Finger Lakes Community College
FSA—Farm Services Agency
G/FLRPC—Genesee/Finger Lakes Regional Planning Council
NYSDEC—New York State Department of Environmental Conservation
NYSDOH—New York State Department of Health
SEQR—State Environmental Quality Review
SWCD—Soil and Water Conservation District
TMDL—Total Maximum Daily Load

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