

OWASCO LAKE WATERSHED INSPECTION PROGRAM (OLWIP)

2014 ANNUAL REPORT

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About the OLWIP

PROGRAM MISSION

The Mission of the Owasco Lake Watershed Inspection Program is to make regular and thorough inspections of Owasco Lake, its watercourses, and its watershed to ascertain compliance with the Rules and Regulations of the Owasco Lake Watershed and to provide education outreach to the watershed community to foster lake stewardship.

The Inspection Program has and continues this important mission, providing folks residing and recreating throughout the watershed with the knowledge and tools necessary to maintain and improve the quality of water resources within the Owasco Lake watershed.

New Staff Join the Owasco Watershed Inspection Program

Full Time Staff

The Owasco Lake Watershed Inspection Program created a new Watershed Specialist position in 2014.

Andrew Snell came aboard as the new Specialist, equipped with a wealth of experience including many years with Soil and Water Conservation Districts throughout New York State, and previously as Program Coordinator for Lake Champlain's watershed of New York.

Andrew (Drew) is excited to join the efforts to protect Owasco Lake and looks forward to working with watershed residents to avoid violations, provide guidance, and discuss remedies.



Seasonal Staff

Two seasonal Watershed Inspectors, Nicole Pionteck and Eli Vitale, joined the Inspection Program during 2014.

Eli is a recent graduate from Hobart & William Smith Colleges in Geneva and Nicole graduated in December, 2014 from SUNY's College of Environmental Science and Forestry in Syracuse.

Both Eli and Nicole were fantastic additions to the program, assimilating quickly and integrating their knowledge and skills into the program's seasonal objectives.

Together, their efforts resulted in a significant quantity of field work completed in 2014, including watershed data reconnaissance, monitoring, and sampling. With their assistance, the Inspection Program was able to routinely canvas the watershed and identify ongoing issues.



Drew plans to focus on and address the numerous issues and concerns negatively impacting the integrity of the water throughout the Owasco basin.

Please contact him at any time with concerns or for assistance (see contact info on last page).

Watershed inspectors conducted boat and trailer inspections, checking for aquatic invasive species on the boats participating in the 2014 Governor's **Bassmasters Challenge on Owasco Lake.** The photo shows the professional fishermen departing from the Outlet Launch at Emerson Park.

<u> 2014 - A Super Saturated Year</u>

The extraordinarily wet conditions and weather patterns of 2014 kept the Inspection Program staff feverishly monitoring and addressing a variety of issues extending from southern tip of the watershed in the town of Freeville to the northern shores of the lake in the town of Owasco. From early spring through fall, localized and widespread heavy precipitation events were occurring frequently, with high water velocities taking a toll on every corner of the watershed. Large areas of severe erosion and stream turbidity were widespread.

This report highlights many of the issues identified during the course of 2014 and illustrates the need for better protective practices and planning in terms of land use and sustainability for the future.





Monitoring and Assessing Watershed Concerns

Throughout 2014, the Inspection Program staff conducted numerous site inspections, monitored algae blooms, provided technical assistance and conducted assessments throughout the watershed. Utilizing new GPS technologies, the staff was able to track the efforts throughout the year and plot the many of the "Areas of Concern" on GIS maps.

The abnormally wet year allowed the Inspection Program to identify and document a significant number of areas (map to the right). These areas included drainage problems in residential areas, land & shoreline construction, nutrient applications (ag/non-ag), septic issues, and most prevalent during 2014 - tributary streambank/soil erosion!

Cumulatively, these areas of concern contribute huge amounts of sediments and nutrients to the lake and undoubtedly contribute to the algae, widely present throughout the lake during 2014.

Inspection Program Totals for 2014:

Watershed Site Visits / Inspections:	112
Water Samples Taken:	131



Crop fields around the watershed were

also susceptible to the forces of water in

2014. Steep slopes, similar to this field near Rockefeller Road, were subject to

agencies are working to remediate and protect this and other similar cropland

situations around the watershed from

erosion and substantial soil losses.

The Inspection Program and local

Owasco Lake experienced a large bluegreen algae bloom in mid-August of 2014. The photo above shows the bloom in the mouth of Sucker Brook in the northeast corner of the Lake.

Inspection Program staff, NYS DEC, and Town of Owasco Fire Department were on site at the bridge over NY State Route 38A to identify, contain, and sample the algae.



future damage.

Owasco Lake Watershed 2014 Areas of Concern





Several streambanks of watershed tributaries experienced strong erosive forces from high water flows during 2014.



Over time, the Inlet stream velocities have carved into the bottom of this slope near the Tompkins County line, resulting in very



Torrential rain events were frequent during the summer months of 2014. Events during June and July produced flooding on flat, poorly drained areas, typically within close proximity to the lakeshore.

The above photo was taken during a 2" rainfall event at the end of July 2014 on the west shore of Owasco Lake near Mobbs Road in Fleming.

High velocity flows chiseled away at unprotected /unvegetated segments where steep slopes and adjacent structures became vulnerable to collapse.

The Inspection Program provided technical consultation to numerous residents, aiding with repairs and stabilization.



unstable slope conditions.

The Inspection Program removed a problematic tree snag, which was directing energy into the toe of this slope, and applied a special grass mix in an attempt to stabilize the site. Repairs to this site will be ongoing into 2015.

Seasonal intern, Tim Schneider, assesses the massive gully erosion caused by spring runoff and saturated soils in early 2014. This site was disturbed during fall of 2013 and never fully re-vegetated until after the damage had occurred. This location, uphill of the Owasco Inlet, Locke, experienced massive soil loss, creating huge gullies, moving tons of soil. Inspection Program and Soil and Water Conservation District staff assisted with rapid soil-stabilizing corrective actions to stabilize the site and minimize water quality impacts. 2



Owasco Lake Watershed Ditch Remediation Sites

Combined Length of Ditches: 26,850 linear ft



Created by Eli Vitale Owasco Lake Watershed Inspection Program Data Collected in Fall 2014



An unstable ditch segment, located in



0 0.5 1 2 Miles

LILLI

Long stretches of newly cleaned ditch

The OLWIP is looking to expand road ditch inventory and assessments in 2015 with the goal of reducing soil erosion and capturing sediments moving throughout road ditch networks.

This project will be ongoing throughout the next few years and will be completed through continuous canvassing of the landscape and assessing the condition of ditches in every jurisdiction.

The initial assessment, completed by Inspection Staff during the fall of 2014, identified 20 stretches or lengths of ditch within the watershed in need of varying levels of remediation.

The ditch assessment includes a set of site parameters, including:

- Slope percentage
- Percentage of vegetative cover •
- soil type

These select parameters will provide essential information to assist with site prioritization and determinations for corrective actions necessary to reduce erosion.

This information will be provided to each highway department to plan for implementation of best practices where the need is greatest.



In many locations throughout the Owasco Lake Watershed, it is not uncommon to find road ditches flowing with water, even when the weather is dry.

When ditches act as intermittent streams, it is especially difficult for vegetative 'armor' to establish and stabilize the ditch soils.



Ditch segments are commonly left unvegetated after cleanout and continuously erode, eventually washing away soils and exposing bedrock or hardpan soils. This process can create a widening of the ditches and often will increase velocities over smooth, exposed rock surfaces.

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Road Ditch Corrective Actions





the southern part of the watershed, encroaches on the newly paved road shoulder during spring 2014. The impacts of ditch erosion can be hazardous for travel and have adverse effects on both environmental and economic levels.

networks are common throughout the watershed during summer and fall seasons.

Without adequate vegetation and velocity controls, exposed soils can quickly erode and be transported to nearby tributaries during rain events.

Overall, 20 ditch sites were inventoried in 2014, resulting in over 5 linear miles of unstable ditch lengths identified.

The results from this initial assessment clearly demonstrate a significant need for corrective actions throughout the roadside watershed conduits.

The Inspection Program will continue efforts, working closely with the Soil and Water Conservation District and the municipal and county highway departments throughout the watershed to educate and implement ditch practices.

Collectively, ditch networks can be transformed and serve as a form of water filtration and sediment retention, protecting Owasco Lake for the future.

Utilizing funds provided by the Emerson Foundation, the Inspection Program and the Cayuga County Soil and Water Conservation District staff constructed a set of concrete sediment traps during the winter months.

By design, these concrete traps will essentially capture nutrient-transporting soil particles and allow for quick, simple cleanout by road crews.

The sediment traps shown above will be deployed and installed at selected locations in the watershed during the spring of 2015.

These traps will be the "pilot" structures to demonstrate the effectiveness of capturing sediments moving through disturbed ditches, showcasing the positive impact they can have on water quality.

This project aims to encourage participation and generate momentum for highway maintenance crews to treat the ditch networks not only for transporting water, but filtering water as well!



INVASIVE SPECIES MONITORING

ASIAN CLAM



Inspection Program staff continues to be vigilant with identifying and monitoring for aquatic threats, including invasive species that have been verified and are now occupying the waters of Owasco Lake. The current invasive threats to the lake include the Asian Clam and Curly Leaf Pondweed.

< A handful of Asian Clams can easily be pulled from sandy, shallow shore areas especially in the northern bays of Owasco Lake.

A decrease in Asian Clam numbers were discovered during the survey in 2014

The Asian Clam *Corbicula fluminea* (Müller) is native to the fresh waters of eastern and southern Asia and evidently was brought to North America in the 1920's by Asian immigrants who used the clams as a food source.

The clams can self-fertilize, and release up to 2,000 juveniles per day and can affect aquatic ecosystem processes in negative ways, particularly when in dense populations. The clams will excrete significant amounts of inorganic nutrients, particularly nitrogen that, in turn, can stimulate the growth of algae and macrophytes (Lauritsen and Mozley 1989, Sousa et al. 2008).

Additionally, Asian clam mass mortality events that occur in the summer followed by the release of nutrients via decomposition may also have negative effects on water quality.



CURLY-LEAF PONDWEED BACKGROUND



[^]The curly-leaf pondweed is an aquatic invasive species that has seen substantial growth in Owasco Lake. Seasonal Inspectors were able to locate this nvasive plant on the East Shores of Owasco Lake in 2014

This aggressive pondweed is considered an invasive species in North America and has been found in Owasco Lake and other Finger Lakes.

This aquatic plant typically germinates early in the season and competes with native plant life and often eradicates native species by blocking sunlight and smothering shallow areas.

Curly-leaf pondweed is commonly known to choke waterways, inhibit aquatic recreation, and certainly is considered a nuisance that can be uprooted and fragmented, easily spread throughout waterbodies by boats and water currents.

Throughout the summer months, inspection staff was on the lake conducting aquatic invasive species surveys in coves and along the shoreline.

A "mat" of curly-leaf pondweed was identified in an area along the southeastern shore of the lake.

The mechanical weed harvesting efforts conducted by Soil and Water Conservation staff helps reduce the impact of pondweed growth on lake recreation, but does not completely rid the lake of the plant.

Watershed Inspection staff participated in the annual Owasco Lake Asian Clam survey completed in August, in cooperation with diving volunteers and staff from the Cayuga County Planning Department. Inspectors assisted with spacial data, measurements, and tracking mortality numbers within the northern bays of the lake.

The 2014 survey data indicated promising news with results showing a decrease in adult clam populations in the bay sediments, possibly linking freezing of clam habitat to population control.

< The green dots (~50) identify the locations points of the Asian Clam survey conducted in 2014.



BACTERIA MITIGATION



Seasonal Inspectors assist the Cayuga County Soil and Water Conservation District with the reconstruction of stormwater filtration ponds at Emerson Park on the northern edge of Owasco Lake.

The reconfiguration of the ponds for bacteria abatement was funded by the Finger Lakes-Lake Ontario Watershed Protection Alliance (FLLOWPA)



Emerson Park Settling /





< What's This??

A new trial project, utilizing natural methods to treat water with historically high bacteria levels, primarily from stormwater runoff, was incorporated at Emerson Park during the summer of 2014.

Initiated by Jean Siracusa, the Inspection Program,



Cayuga County Soil and Water Conservation District staff, and small group of mycologists, developed this exciting trial apparatus with expectations of seeing significant reduction in bacteria.

^How does it function??

Special bacteria-consuming fungus, known as *Mycelium*, was incorporated into a water conveyance and treatment area at the Park to determine the effectiveness of "Mycofiltration".

Mycofiltration is a natural water filtration process utilizing bark chips and mushroom mats as biological consumers of bacteria.

Mycelium have the ability to grow from and live off sources of bacteria and nutrients, making them the perfect candidate for this specific location at Emerson Park.

Once established, the mushroom mat will grow and thrive off of the bacteria within this drainage area, lessening the bacteria count entering the northeastern bay.

Coincidentally, the installation of the Mycofiltration bed was completed at the same time upstream stormwater settling ponds were redesigned and reconstructed for better filtration functionality at the Park (see photos above).

The initial results from 2014 indicate a reduction in bacteria levels, however a full growing season, and perhaps a drier season will be needed to fully realize the effectiveness of the system.



Fecal Coliform Results 2014 Tributary Sampling



Sampling Location



The 2014 sampling program included weekly (represented by each vertical bar) testing for total fecal coliform at these locations. Generally, if the results are less than **200 (bold line)** fecal coliform per 100/ml over the course of the summer, the bacterial level means water quality would be considered good and suitable for bathing.



http://www.owascoinspection.org/

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Coliform is a group of bacteria present in every corner of our environment, most of which are not dangerous to human health. These bacteria are used as indicators in drinking water – if coliform bacteria are present, the chances of more harmful organisms increases. Fecal coliform is a subgroup within the total coliform group which comes primarily from the feces of warm blooded animals, and E. coli is a subgroup of fecal coliform. These levels of fecal coliform (and E. coli) are used as indicator criteria for potential risk to human health. The 'spikes' or high levels in bacteria levels indicated on the graphs for 2014 were typical after heavy precipitation events during the summer months. Additional 2014 sampling information and data can be found on the Inspection Program's website:



Animals with free access to clean surface water is a violation of the watershed Rules and Regulations.

Large concentrations of animals with access to streams can contaminate surface waters and graze the banks of the streams exposing soils and creating erosion—shown in photo above. To avoid violation, the landowner here worked to fence out the herd, provide a new watering trough and new laneway to pasture, away from the stream.

The Inspection Program continues to assist landowners with correcting these violations, working with landowners and the Soil and Water Conservation District staff on protective measures.

What can you do to protect the watershed and the sensitive waters of Owasco Lake??

- Keep ditches and water conveyances clean of yard waste and adequately armored with vegetation
- **√** Reduce water consumption and phosphorus-laden products
- Dispose of hazardous waste and household garbage appropriately, at designated facilities
- V Plant trees along shorelines and tributaries
- V Plant native plant species when landscaping
- V Use pervious pavement when possible
- ✓ Keep animals out of watercourses
- ✓ Update and/or inspect your septic system regularly (3-5 yrs)
- ✓ Do not feed water fowl bread or "human" foods
- Maintain lawns with minimal water and chemicals (is an over manicured lawn more important than clean water?)
- Maintain proper setbacks from surface waters when stockpiling or applying soil nutrients, including animal manure
- Be aware of your land and what might be contributing to water quality impairments



WATERSHED VIOLATIONS

Inspection Program staff observed landowners throughout the watershed utilizing best management practices both for Ag and non-Ag land uses in 2014.

However, unacceptable practices and actions continue to occur, violating the rules and regulations created to protect the drinking water for nearly 45,000 people.

Issues and concerns include substandard septic systems, animal access to streams, careless nutrient application, discarding of animal carcasses into tributaries, and disturbing ground without proper erosion and sediment controls on site.

Better efforts are needed and can be made by folks in all areas of the watershed. Simple actions and efforts can be made to avoid violations and prevent water pollution.

The Inspection Program will continue enforcement of the Rules and Regulations of the Owasco Lake Watershed to affirm land uses and actions are conforming to the defined parameters of the rules and regulations.

If violations occur, a maximum fine of \$2,000 will be levied by the Inspection Program for each violation of the watershed Rules and Regulations, as well as a fine of \$37,500 per violation per day by NYS DEC.



The shoreline construction, occurring adjacent to Owasco Lake during the summer of 2014, resulted in a plume of sediments into the Lake and a water quality violation of NY State water quality standards.

The Inspection Program works directly with the New York State Department of Environmental Conservation to resolve water quality violation on construction sites where an obvious (where there is a contrast in water color) plume or discharge is occurring.

A 'stop work' order <u>and</u> fine (up to \$37,500/day) will be levied on construction sites found to be degrading nearby water quality.



A water quality contravention occurred on the Inlet south of Locke during the early spring of 2014. A visual contrast in water clarity is evident in the above photo where a small tributary enters the Owasco Inlet.

The source of the sediment-laden water was easily traced upstream to a recently cleared hillside field. This situation resulted in a DEC fine due to the severity of the violation of both NY State and the Owasco watershed's drinking water quality standards. Depending on the circumstances and remediation efforts, fines to the landowner can be substantial if this type of violation is observed at any time of year.

Animal carcasses were found disposed of in a small roadside plunge pool in 2014. The carcasses did not have any traceable tags, therefore ownership is difficult to determine. Inspection staff removed the carcasses from the stream and notified the landowner of the incident. Disposal of animal carcasses into watershed streams contributes to high bacteria and pathogen levels, endangering downstream residents utilizing the water for drinking and/or recreation.

The Inspection Program will continue to monitor the tributaries of the watershed for illegal disposals creating a potential health hazard.





Watershed Facts and Figures

Drainage Area:	208 square miles		
Counties:	Cayuga, Onondaga, Tompki	ns	
NY Townships (14) :	Owasco, Fleming, Skaneateles, Sempronius, Locke, Moravia, Venice, Groton, Lansing, Scipio, Summerhill, Niles, Genoa, Dryden		
Lake Depth:	~ 177 ft		
Lake Length:	11 Miles		
Finger Lakes Rank:	6th Larges	t	
Number of residents	drinking Owasco Lake waters:	~45,000	

Number of gallons of water in the Lake: **212**,000,000



- - aquatic invasive species snag removal
- identification and monitoring
- tributary assessments
- education and outreach

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Visit our Website: www.owascoinspection.org



