

# A Management Strategy for Oneida Lake and Its Watershed: Interim Report

Produced by the Central New York Regional Planning and Development Board (CNY RPDB), Summer 2004

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Many people throughout the Oneida Lake watershed community have been working hard over the past several years to improve and protect Oneida Lake and its tributaries. This has involved extensive planning, creative program implementation, comprehensive data collection and analysis, and the development of professional partnerships leading to improved cost effectiveness and program efficiency.

Eight priority lake and watershed problem areas were initially identified as a grassroots effort through municipal surveys, stakeholder discussion groups, and input from County Water Quality Coordinating Committees. Under the guidance of the Watershed Advisory Council, a group of community leaders and agency representatives then met on a

regular basis during 2003 and 2004 to compile background information and identify short and long-term goals. Recommendations were later developed for the long-term protection and enhancement of Oneida Lake and its tributaries. The findings were endorsed by the Watershed Advisory Council and were then presented at six public meetings throughout the watershed during the spring of 2004.

This interim report contains a summary of the goals, background information, and recommendations for these top priority issues. A comprehensive report with additional maps, charts, and supporting material will be distributed in the fall of 2004.

## What Is a Lake and Watershed Management Plan?

The Oneida Lake and Watershed Management Plan is a process where municipalities, homeowners, citizens groups, and county, state and federal agencies are working together to develop a plan for the long-term protection and improvement of our surface water and groundwater resources. This project involves data collection and analysis, identification of high priority lake and watershed issues, pooled funding and

staff resources, and the selection of plans for improved water resources. The watershed management plan is an action-oriented, local-level initiative and all lake and watershed users are encouraged to participate. By pooling our resources, we boost our efficiency, reduce our project costs, and enhance our chances for success.

## Lake and Watershed Planning Provides Benefits to Local Communities

Comprehensive long-term planning for a healthy lake environment will attract business, tourism, and recreation dollars to strengthen the local economy. Maintaining regional partnerships and moving ahead with natural resource protection is a step in the right direction. The Oneida Lake and Watershed Management Plan is providing the following benefits:

- Cooperation among organizations, pooled services and financial resources, and enhanced communication across municipal borders – all leading to improved regional efficiency
- Ability to prioritize projects and to develop ecologically based, cost-effective solutions within the watershed as a regional effort

- Improved recreational opportunities and biological diversity in the lake and streams
- Uniformity, consistency and fairness in program implementation
- Expanded economic potential and improved quality of life for all watershed residents
- Improved opportunities to receive state and federal grant funding
- Reduction of nonpoint source pollution and protection of fisheries, wildlife habitats, and other critical areas
- Water resource goals established as a grassroots, locally based effort
- Involved and informed homeowners and lake users

## We're Making Progress

In addition to this set of recommendations, the management planning initiative has involved water quality monitoring, GIS mapping, data collection, report preparation, assistance to municipalities, development of a watershed web site, newsletters, conferences and workshops, brochures and fact sheets, grant funding for innovative watershed improvement projects, and the development of a four-county agricultural program. Check the Oneida Lake and Watershed Management Plan website for additional information: [www.cnyrpdb.org/oneidalake/](http://www.cnyrpdb.org/oneidalake/).



## Strengthening the Fish Community

### Goal

**MAINTAIN A HEALTHY, DIVERSE SPORT FISHERY IN ONEIDA LAKE AND ITS TRIBUTARIES.**

### Problem Identification and Impacts

- Throughout recorded history, fisheries have played a significant ecological and socio-economic role in Oneida Lake and its surrounding watershed. Oneida Lake has been identified as the most important inland fishery and the fourth most important sport fishery in New York State.
- Since 1957, recruitment has been highly variable for both yellow perch and walleye; peak recruitment years have produced nearly six million yellow perch and nearly one million walleye. Between 1992 and 2000, however, recruitment of both walleye and yellow perch was poor, and population densities through most of the 1990s were below the historic levels, which appear to be associated with high mortality in their early- and mid-life stages.
- In addition to the monetary loss that results from a declining fishery, the resulting ecological ramifications may be profound.
- A contributing cause for high mortality of walleye and yellow perch beyond age 1 is predation by double-crested cormorants.
- Vulnerability and predation of young fish have also increased due to clear water caused by zebra mussels. Other exotic species also present a potential threat.
- A strong walleye year class was produced in 2001 and the last 3 to 4 years have seen better survival of juvenile walleye and yellow perch.
- Population levels of other fish species in the Oneida Lake watershed are fluctuating.
- Changes in the fish composition are likely to continue because Oneida Lake is connected to both the Great Lakes and the Hudson River systems.



### Recommendations

- ✓ Promote management strategies that will strengthen populations including, but not limited to walleye, perch, and bass in the lake and salmonids in the tributaries.
- ✓ Encourage NYS DEC to review and implement regulation changes on an annual basis.
- ✓ Promote the restoration of historic native species in Oneida Lake and its tributaries.
- ✓ Acquire, develop and maintain additional public access sites.
- ✓ Continue cormorant and aquatic plant management strategies to reduce negative impacts on fish populations.
- ✓ Encourage greater enforcement of laws relating to watercraft use, and Articles 15 (Protection of Water Resources) and 24 (Freshwater Wetlands) of the Environmental Conservation Law to protect fish habitat.
- ✓ A water level strategy that uses the current "rule curve" (April 1 to December 1) is recommended as most beneficial to fisheries in Oneida Lake. During the period not controlled by the "rule curve" including the fall de-watering period, water levels are recommended that minimize loss of fish habitat and late-

season access to the fishery, and a spring refilling that allows access to spawning grounds for tributary and marsh-dependent fish species.

- ✓ Support full staffing of the hatchery system, the Environmental Conservation Officers, and the Division of Fish, Wildlife, and Marine Resources.
- ✓ Maintain a mean May through October total phosphorus level of 20 ppb ( $\mu\text{g/l}$ ) for the benefit of Oneida Lake fish populations and overall lake productivity.
- ✓ Develop a nutrient budget to determine the sources of phosphorus and the potential impacts from land use changes.
- ✓ Continue water quality monitoring in Oneida Lake tributaries in order to identify sources of phosphorus (based on land use activities throughout

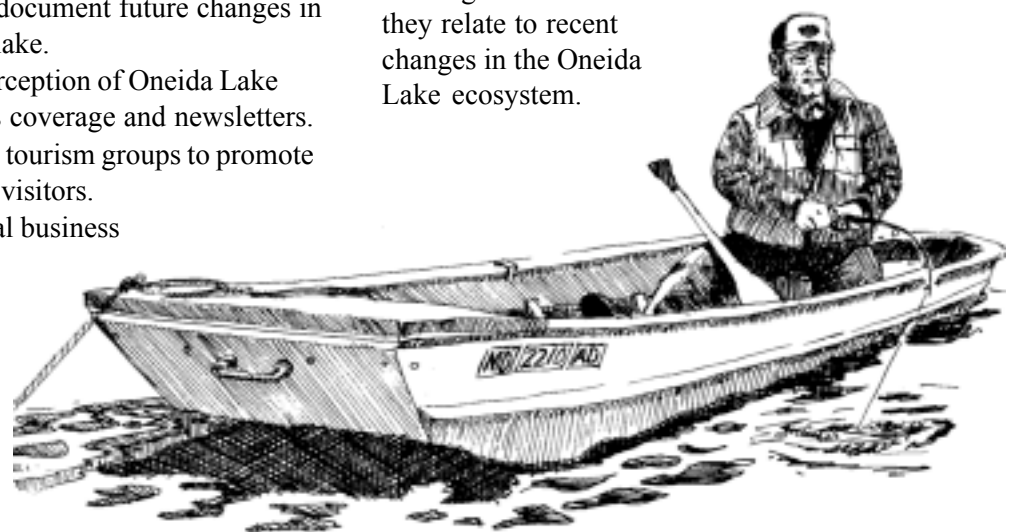
the watershed) and to document future changes in nutrient loading to the lake.

- ✓ Improve public perception of Oneida Lake fisheries through press coverage and newsletters.
- ✓ Encourage County tourism groups to promote tourism to out-of-town visitors.
- ✓ Encourage the local business community to promote Oneida Lake recreational opportunities, keep the lake shoreline clean, and improve vacation rental



properties and dining opportunities for out of town visitors.

- ✓ Promote education programs for adults and school students.
- ✓ Investigate the use and importance of tributaries for spawning of important fish populations in the lake, including walleye, gizzard shad, salmon and sturgeon. Identify important spawning areas and evaluate the need for habitat protection.
- ✓ Identify important spawning and nursery areas for bass and evaluate the need for habitat protection.
- ✓ Investigate the effects of prolonged clear-water conditions associated with zebra mussels and the subsequent increased vulnerability of young walleye to predation.
- ✓ Investigate the impacts of varying water levels on spawning habitat and other requirements of important fish species using a GIS-based approach.
- ✓ Determine if the bullhead population is declining and if so, determine the causes.
- ✓ Investigate the response of walleye and yellow perch populations to increased cormorant control.
- ✓ Investigate the relationship between fish production and nutrient reduction.
- ✓ Investigate factors affecting the survival of early life stages of fishes as they relate to recent changes in the Oneida Lake ecosystem.



### Program Goals for 2005 and Beyond

- **GRANT FUNDING SECURED**
- **WATERSHED ADVISORY COUNCIL RECOMMENDATIONS IMPLEMENTED**
- **EDUCATION PROGRAMMING AND PARTNERSHIPS ENHANCED**
- **AGRICULTURE PROGRAM CONTINUED**
- **LOCAL LEVEL PARTICIPATION ENCOURAGED**
- **MUNICIPAL OUTREACH AND ASSISTANCE PROVIDED**
- **WATERSHED ADVISORY COUNCIL MAINTAINED**
- **WATERSHED COORDINATOR HIRED**
- **IMPLEMENTATION PROJECTS REVIEWED ANNUALLY**

## Responsible Boating

### Goal

**PROMOTE THE RESPONSIBLE USE OF BOATS AND MOTORIZED CRAFT ON ONEIDA LAKE IN A MANNER THAT BALANCES ECONOMIC, ENVIRONMENTAL, RECREATIONAL AND RESIDENTIAL NEEDS, AS WELL AS PERSONAL SAFETY.**

### Problem Identification and Impacts

- Boating and the use of personal watercraft are popular pastimes on Oneida Lake that positively affects the economy of local municipalities and businesses.
- High speed and reckless driving are safety concerns for boaters and other user groups.
- Loud engines, buzzing jet skis, and noisy parties disturb other lake users and homeowners.
- Lack of boating courtesy and inconsiderate behavior amplifies conflicts between and among different user groups.



- Uprooted trees and aquatic weeds, low water levels, and misplaced buoys can cause navigational issues for boaters.
- Fuel spills, emissions, and boat waste can have negative effects on water quality and recreation.
- Boats degrade the lake bottom and undermine the ramp structure when they "power load" at ramp sites.
- Many residents and lake users do not know whom to notify with boating issues, problems, and concerns.

### Recommendations

- ✓ Develop and distribute brochures to educate residents about law enforcement agencies for boating concerns, the spill hotline number, and to call 911 for emergency and current non-emergency situations.
- ✓ Inform residents how to make use of directed patrols and law enforcement, and to report future boating events to appropriate agencies.
- ✓ Designate a volunteer group to determine which buoys are misplaced each spring, and send that information to the Marine and Vehicle Unit of NYS OPRHP.
- ✓ Establish a central agency responsible for receiving calls from lake users who wish to report a misplaced buoy.
- ✓ Distribute New York State Boaters Guide to marinas, parks, and boat dealers around the lake and in the watershed.
- ✓ Encourage lake groups, Chambers of Commerce, and civic groups to provide boating safety



- information and boating courses on their websites and to offer links to related sites.
- ✓ Encourage elected officials to support legislation that would require all boat operators to take a boating safety course and distribute course information.
- ✓ Develop a water quality monitoring program to determine if fuel pollution is a problem at marinas and provide those in need with absorbent fuel pads.
- ✓ Develop an appreciation and education program that includes courtesy rules and signs at marinas and parks, flyers for shoreline property owners, signs along major roads, placemats for restaurants, and public service announcements.
- ✓ Inform boaters of additional speed restrictions during periods of high water levels.
- ✓ Post signs at marinas warning against power loading, particularly at public and state launches.

## Controlling Exotic Species

### Goal

**CONTAIN OR REDUCE CURRENT POPULATIONS OF EXOTIC SPECIES AND PREVENT THE INTRODUCTION OF NEW EXOTICS INTO THE ONEIDA LAKE WATERSHED.**

### Problem Identification and Impacts

- There are several exotic species in Oneida Lake (e.g. zebra mussels, Eurasian water milfoil, water chestnut and purple loosestrife) that have caused significant impacts on the lake's ecology. There are also many additional exotic species that pose a potential threat to the Oneida Lake watershed.
- Many exotic plants and animals are purchased over the Internet for home water gardens and aquariums. The release of these organisms into the natural environment can result in negative impacts on food web interactions. Currently, there are very few laws that prohibit the sale, transport or transplanting of most of these organisms. Therefore homeowners are strongly encouraged to select only native plants and animals for use in their water gardens and aquariums.
- Exotic bivalves, fish, and invertebrates are transported to new areas via bait buckets, live wells, boating and fishing gear, water currents, and by the shipping practices. Inadvertent introductions can be detrimental to the fisheries and recreational value of Oneida Lake, as well as to native species present in the lake.
- When released into the environment, exotic aquatic plants and animals can be highly aggressive, form dense monotypic populations, and out-compete our native aquatic organisms for food and space.

- Some plants can form dense mats on water surfaces, shade native vegetation, hinder swimming, fishing and boating activities, and deplete oxygen levels that are needed by fish and other aquatic organisms. Dense floating plant beds provide optimal conditions for mosquito breeding grounds and marginal habitat for native fish and birds.
- The exotic organisms that have the greatest likelihood of invading Oneida Lake have the potential to cause detrimental impacts on the native fisheries. These organisms can cause a shift in trophic food web interactions, deplete food supplies for native fish, plankton and invertebrates, and out-compete our native fish for spawning areas.

### Recommendations

- ✓ Continue mechanical harvesting of water chestnut.
- ✓ Continue chemical application in DEC approved areas for control of water chestnut.
- ✓ Develop and continue educational programs to inform homeowners and lake users about the spread and characteristics of water chestnut.
- ✓ Continue educational programs to prevent the spread of other exotic species into non-infested waters.
- ✓ Display information on billboards and post bulletins in bait and tackle shops, sporting good stores, and pet stores.
- ✓ Conduct annual surveys to monitor the extent of water chestnut populations in Oneida Lake and other parts of the watershed.
- ✓ Continue to research the use of a biological control agent for water chestnut such as the water chestnut beetle.

- ✓ Pursue and support funding requests for research of biological control methods to decrease other invasive pest species, including zebra mussels.
- ✓ Create a map to document the extent of aquatic plant growth based on annual plant survey results and sightings from lake users.
- ✓ Propose and support state legislation to reduce the impacts of exotic species (e.g. ballast water, tank residue control, restriction on sale of exotics).
- ✓ Distribute literature and brochures on invasive species when registering boats and applying for fishing licenses.
- ✓ Continue the "Watch Card" program by creating and distributing cards focused on potential invaders to make people aware before infestations occur.
- ✓ Support and continue educational programs to encourage youth involvement in the prevention of additional exotic species in Oneida Lake.



## Managing Double-Crested Cormorants

### Goal

**MANAGE THE ONEIDA LAKE CORMORANT POPULATION IN ORDER TO ALLEVIATE AND PREVENT CONFLICTS WITH OTHER PUBLIC RESOURCES INCLUDING OTHER COLONIAL-NESTING WATER BIRD SPECIES AND ECONOMICALLY IMPORTANT RECREATIONAL FISHERIES.**

**NOTE:** In 2003 management of double-crested cormorants was identified as one of the eight primary issues of concern in the Oneida Lake watershed. In response to this, the Watershed Advisory Council formally voted to endorse the recommendations of the DEC Cormorant Task Force and the actions identified in a publication titled, "Management of Double-Crested Cormorants to Protect Public Resources in New York - Statement of Findings," (March 18, 2004, revised May 14, 2004).

### Problem Identification and Impacts

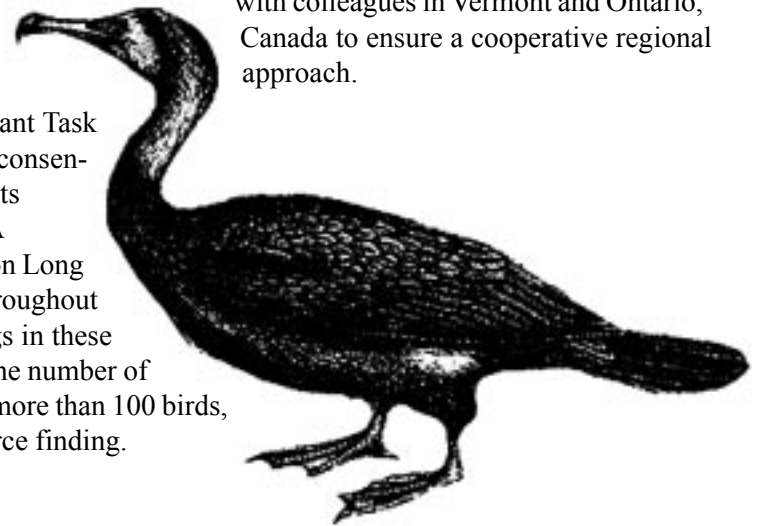
- The double-crested cormorant, *Phalacrocorax azurites*, is a large, fish-eating water bird native to North America that has been federally protected since 1972 by amendments to the Migratory Bird Treaty Act. Cormorants are colonial birds that nest in high densities in areas with abundant fish. These areas are often the same habitats used by other colonial-nesting bird species.
- Double-crested cormorants were first observed in significant numbers on Oneida Lake in 1984. Numbers have grown to a maximum of 365 documented breeding pairs in Oneida Lake in 2000. Resident cormorant populations are seasonally augmented by migrating flocks in the spring and especially fall.

- Populations have reached historic highs due to a combination of factors including water quality improvements, increased food availability in breeding and wintering areas, and federal and state protection.
- In 2001, cormorants on Oneida Lake consumed an estimated 2.8 million fish of which 2 million were sub adult yellow perch and 350,000 were sub adult walleye. Loss of highly valued recreational fish species including walleye and yellow perch negatively impact the economy of the Oneida Lake region.
- Other impacts of high cormorant populations include their denuding of vegetation on islands and their competition for food and habitat with other colonial nesting birds (particularly the common tern, a New York State-listed threatened species).
- In September 1998, fall hazing was initiated on Oneida Lake as a joint effort of NYS DEC and the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA/APHIS). This hazing has continued each year.
- In 2003 there were approximately 300 nesting pairs of cormorants on Long Island. Cormorants were kept off the other islands by exclusion devices (e.g. fencing, Mylar tape, pyrotechnics) and nest destruction.
- In 2003, NYS DEC convened a Cormorant Task Force for Oneida Lake. The group reached consensus that the breeding population of cormorants should be managed for the following goals: A minimum of 20 cormorant nests will be left on Long Island to maintain presence of some birds throughout the breeding season; at the present time, eggs in these nests will be oiled to prevent hatching; and the number of cormorants on the lake will be limited to no more than 100 birds, as recommended by the Cormorant Task Force finding.

- NYS DEC and USDA/APHIS began that management effort in spring 2004, and are continuing research on how hazing affects cormorants and other lake species.

### Planned Actions

- ✓ Continue spring (pre-nesting) hazing program, continue egg-oiling and nest destruction, and take a limited number of cormorants (no more than 150) to make hazing more effective and to prevent cormorants from pioneering new nesting areas on the lake.
- ✓ Continue fall hazing program to disperse cormorants from Oneida Lake during migration.
- ✓ Implement measures to prevent displaced birds from pioneering to new nesting locations on other lakes in the vicinity and to minimize potential impacts on public resources in other areas.
- ✓ Continue monitoring/research of cormorant ecology and response to management activities to evaluate success of efforts and determine plans for cormorant management in future years.
- ✓ Coordinate management and research efforts with colleagues in Vermont and Ontario, Canada to ensure a cooperative regional approach.



## Preventing Septic Waste Runoff

### Goal

**PROTECT PUBLIC HEALTH AND PREVENT ENVIRONMENTAL DEGRADATION BY REDUCING NON POINT SOURCE POLLUTION TO SURFACE WATER AND GROUNDWATER FROM SEPTIC WASTE THROUGHOUT THE ONEIDA LAKE WATERSHED.**

### Problem Identification and Impacts

- Failing septic systems release nutrients and pathogens to the environment, subsequently posing human health problems and degrading the aesthetic values and recreational potential for Oneida Lake and its tributaries.
- Close proximity of individual septic systems to waterbodies and drinking water wells pose a threat to human health.
- Pollutants from failing septic systems not only impact the health of humans, plants and animals, but can also impact the economy.
- US EPA estimates that from 10 to 25 percent of all on site systems fail annually.
- Environmental constraints to properly functioning systems include limited soil permeability, seasonally high groundwater levels, limited topographic relief, and poor drainage.
- Improper system installation and lack of proper maintenance can cause system failure.
- Some residential lot sizes are inadequate to support on site septic systems.
- Full-time or high use of vacation homes served by systems installed under outdated practices or

designed for part-time occupancy can cause water quality problems.

- Pump out and disposal of wastewater from boats and marinas pose a non point source pollution threat.
- Some residents are not aware or concerned about failing septic systems, and many homeowners with inadequate sewage disposal systems do not have the financial resources to make repairs and/or are not aware of state and federal funding assistance opportunities.
- The problem is exacerbated by a lack of regulatory enforcement due to limited staff and monetary resources.

### Recommendations

- ✓ Encourage the improvement of local enforcement of existing guidelines for design and siting.
- ✓ Research funding options for the construction of alternative wastewater systems.
- ✓ Encourage the creation of septic districts in high priority areas.
- ✓ Develop programs to ensure proper operation and maintenance of septic systems.
- ✓ Develop inspection guidelines for homeowners.
- ✓ Develop uniform guidelines for inspection of on site systems in high priority areas based on availability of local laws.
- ✓ Review what sanitary laws are currently available in watershed counties and conduct a gap analysis to identify deficiencies.
- ✓ Encourage counties to adopt sanitary regulations.
- ✓ Review EPA's *Guidelines for Management of On Site/Decentralized Wastewater Systems* and

evaluate the feasibility of implementing the guidelines.

- ✓ Conduct baseline water quality monitoring, including coliform analyses. Conduct follow-up water quality monitoring to determine the success of implemented remedial efforts.
- ✓ Support continued research efforts to differentiate between human and animal wastes.
- ✓ Support water quality testing conducted by high school students through Project Watershed.
- ✓ Consider development of a septic testing program along the shoreline and in high priority areas.
- ✓ Distribute existing guidelines for proper installation, operation, and maintenance of on site wastewater systems.
- ✓ Distribute educational literature and encourage regular maintenance of septic systems throughout the watershed through educational seminars and workshops.
- ✓ Offer training sessions for code enforcement and other personnel that work with homeowners in identifying problem areas.
- ✓ Explore and promote Federal and State legislation to fund assistance to replace and upgrade septic systems for rural and small communities and for families with limited income.
- ✓ Research the benefits and obstacles of creating an Oneida Lake district for septics, which could provide funding for improvement projects.
- ✓ Enhance coordination and communication among agencies that oversee land use planning, zoning, development, water resource protection, public health initiatives, and on site systems.

## Keeping Soil in its Place

### Goal

**MINIMIZE THE IMPACTS OF SOIL EROSION AND SEDIMENTATION IN THE ONEIDA LAKE WATERSHED WITHOUT SIGNIFICANTLY IMPACTING ECONOMIC CONDITIONS.**

### Problem Identification and Impacts

- Accelerated erosion and the delivery of sediment and sediment-absorbed pollutants are issues of concern in the Oneida Lake watershed. Sediment from erosion and overland runoff is a major pollutant that transports organic compounds including pesticides, nutrients from fertilizers or animal waste, heavy metals, and microbiological inputs.
- Erosion is of particular concern on agricultural land, in urban areas, on construction sites, along roadways, and along the lake shoreline and tributary streambanks.
- Water is the principle driving force of erosion in the Oneida Lake watershed, but land use, soil type, slope, land cover, and conservation practices also influence erosion rates. Shoreline and streambank erosion is particularly affected by wave action, exposure from draw down, lack of vegetation buffers, and a lack of bank stabilization.
- Results from the Oneida Lake Tributary Monitoring Program (2002-2003) indicate that Chittenango, Cowaselon, Oneida, Limestone, and Fish Creek subwatersheds consistently delivered greater amounts of suspended matter (a measure of soil erosion) compared to the other subwatersheds. Soil erosion was positively correlated with phosphorus and nitrogen loss in all of the tributaries sampled.
- Soil erosion and runoff affects water resources by delivering sediment, pollutants attached to sediment, and dissolved pollutants to downstream surface waters. Indirect effects occur through changes in stream channel dynamics and watershed functions. The impacts of erosion and sediment damages can occur both on and off site.
- Erosion degrades soil quality and reduces productivity, especially when fertile topsoil is lost.
- Sediment deposited on the land may smother crops and other vegetation and can fill in roadside drainage ditches and create hazardous driving conditions.
- Excess sediment loading in wetlands, at the mouth of tributaries, and in Oneida Lake can result in negative impacts on aquatic biota, fish, and fish habitat by covering fish eggs, filling in spawning beds and pools, and reducing food supplies.
- Sediment loading contributes to a decline in macro invertebrate populations and submergent aquatic vegetation by increasing turbidity and reducing light availability.
- When areas of the lake bottom become shallow as a result of heavy sedimentation, boating and other recreational activities are impaired.



- Sedimentation reduces the water storage capacity of wetlands and streams and can cause an increase in flooding.
- Nutrients (such as phosphorus), microbiological inputs, and toxicants adhere to sediments. Excessive nutrients promote the growth of aquatic vegetation, creating an oxygen demand for the other organisms in the stream or lake. Microbiological inputs and toxicants can affect wildlife and threaten human health.
- The clean up of sediment-damaged areas can result in a financial burden (e.g. dredging of waterways, removing sediment from public roads or culverts).

### Recommendations

- ✓ Prioritize farms in the watershed based upon pollution potential using the NYS AEM process.
- ✓ Develop Comprehensive Nutrient Management Plans and install Best Management Practices (BMPs) on farms identified as priorities by the Prioritization System.
- ✓ Seek funding to offset the high costs of farm planning and BMP implementation.
- ✓ Contribute articles to local media sources and recognize farms in the watershed for positive practices they have implemented and environmental benefits they have created.
- ✓ Promote the development of Forest Management Plans.
- ✓ Prioritize municipalities based upon pollution potential.
- ✓ Assist regulated municipalities with implementation of Stormwater Management Programs.
  - ✓ Provide education and training for local officials on erosion controls and stormwater management and the benefits and process of adopting and/or updating local stormwater and erosion control ordinances.
  - ✓ Assist municipalities with ordinance development for construction site runoff control.
  - ✓ Educate zoning inspectors and planning boards about the benefits of reviewing and how to review construction Stormwater Pollution Prevention Plans.

- ✓ Increase training for highway employees in erosion control and related maintenance practices.
- ✓ Promote and facilitate communities in purchasing and sharing equipment for street sweeping and hydro-seeding.
- ✓ Complete additional stream inventories and prioritize eroding stream segments.
- ✓ Use existing stream inventories to identify and restore priority segments using natural channel design.
- ✓ Restore landslide area of Limestone Creek using natural channel design.
- ✓ Characterize and stabilize reaches in the Oneida-Lenox-Furnace area of Cowaselon Creek using natural stream design methods.
- ✓ Stabilize severely eroding streambanks along Lower Oneida Creek.
- ✓ Encourage and assist with the maintenance and expansion of littoral vegetation in priority areas identified in the stream erosion surveys.
- ✓ Continue installing vegetated riparian buffers on farmland and encourage the maintenance of riparian buffer zones.
- ✓ Encourage the enforcement of near-shore boating speed limits to reduce shoreline erosion.
- ✓ Educate riparian and lakeshore property owners and other stakeholders about the implications of erosion and sedimentation and ways to control it.
- ✓ Locate areas that are impacted by log jams, beaver dams, and other stream obstructions, prioritize them according to their impacts on the stream ecology, and promote their removal.
- ✓ Promote educational programs that encourage students to plant vegetation along streambanks in order to stabilize the shoreline and reduce erosion.
- ✓ Continue sampling lake sediments to document historical input of pollutants and sediment rates.
- ✓ Review current research on sedimentation and explore viable approaches to sediment removal and alternative remediation efforts.
- ✓ Erect educational posters, displays, and kiosks at public parks along the lakeshore to highlight environmental conditions and current projects.
- ✓ Continue supporting tributary monitoring efforts to document success of implemented measures.
- ✓ Work with state and federal agencies to establish a funding program to address the smaller erosion problems that effect individual properties.
- ✓ Encourage/arrange aerial photography to document the problem of erosion and sedimentation.



## Sensible Road Deicing

### Goal

**MINIMIZE NEGATIVE ENVIRONMENTAL IMPACTS OF ROAD DEICERS ON WATER RESOURCES IN THE ONEIDA LAKE WATERSHED.**

### Problem Identification and Impacts

- Snow and ice on winter roads in the Oneida Lake watershed is a public safety issue. To remove this danger for drivers, municipalities rely on road salt (NaCl) because it is cost-effective and efficient.
- National research has shown that road salt can have negative long-term environmental impacts on waterways and potential implications to people that rely on groundwater resources for drinking water.
- Alternative products for road deicing have not been extensively studied to determine the environmental impacts. In addition, many of these products

are very expensive (\$500/ton in some cases vs. \$30/ton for road salt) and are not as efficient as road salt.

- Impacts from winter salt use are thought to be more significant in local tributaries than in Oneida Lake. Some of the potential environmental impacts could include groundwater contamination, damage to stream ecology, and secondary components of road salt (3-5%) include nitrogen, phosphorus, and metals in concentrations exceeding those in natural waters.
- A comprehensive tributary monitoring study was conducted on all of the major streams flowing into Oneida Lake during 2002 – 2003. Of the eleven subwatersheds studied, four were found to contribute the largest amount of chloride, a component of deicing salt, to downstream habitats during storm events. These include Butternut Creek (2,554 g/ha/day) Chittenango Creek (2,467 g/ha/day), Limestone (1,875 g/ha/day), and Big Bay (1,800 g/ha/day).

### Recommendations

- ✓ Identify uncovered deicing storage piles in the watershed and prioritize them according to proximity to ground and surface water resources.
- ✓ Seek grant funding for Highway Departments to cover priority storage facilities in order to reduce potential contamination of water resources.
- ✓ Place uncovered deicing storage piles on impermeable pads to prevent groundwater contamination. Provide positive drainage away from the stockpile or storage facility and provide a containment system for chemically contaminated liquid runoff.
- ✓ Evaluate the potential use of locally-produced stone dust as an alternative (or used in combination with) deicing agents, with consideration for efficiency, economics, and environmental impacts on aquatic ecosystems.

## Managing Flooding and Water Levels

### Goal

**PROVIDE WATER LEVEL MANAGEMENT RECOMMENDATIONS TO MINIMIZE FLOOD DAMAGE TO PROPERTIES ALONG THE ONEIDA LAKE SHORELINE WHILE MAINTAINING LEVELS THAT ARE BENEFICIAL AND NECESSARY FOR NAVIGATION, WATER-BASED RECREATION, FISH AND WILDLIFE HABITAT, AND LAKE ECOLOGY.**

### Objectives

- Protect human life, health, property, and public services such as water, sewer and gas systems.
- Minimize the intensity and duration of high water levels on Oneida Lake.
- Minimize flood damage to existing flood control structures such as dams, levees, break walls, riprap, and other channel improvements.
- Reduce flood damage to bridges, roads, and culverts.
- Protect aquatic resources from unnecessary impacts from flooding or dewatering.
- Manage water levels to encourage water-based recreation, maintenance of current fish and wildlife habitat, and the ecology of Oneida Lake.

### Problem

There is a general lack of information available to the public, as well as divergent opinions about information relating to flooding and water level management. This makes it difficult to separate fact from hearsay.

### Recommendations

- ✓ Develop an early warning forecast system for the Oneida Lake watershed to alert the public of daily water levels, precipitation, and inflows to Oneida Lake. This information will ultimately serve to provide public warning of high water levels, flood conditions, and low water levels on Oneida Lake on a real-time basis as they occur.
- ✓ Notify the public and water resource managers about flooding and water level benchmarks, the rule curve, and daily lake levels on a real-time basis via the Internet, television, and public radio advisories.
- ✓ Offer information and training sessions for realtors, code enforcement officers, and the general public, consistent with the National Flood Insurance Program (NFIP), to discourage development in flood prone areas.
- ✓ Inform the public on the difference between BCD and USGS datum.

- ✓ Encourage the Syracuse Newspaper to publish a daily water level and flood report, similar to the weather report, when hydrological data permits.
- ✓ Compile a bibliography of technical reports and other educational materials to post on the Internet.

### Problem

The watershed has flooded in the past and will continue to flood, especially as development in the watershed continues. Many upstream and downstream factors contribute to flooding. Land use changes in one part of the Oneida Lake watershed can exacerbate flooding in other parts of the watershed.

### Recommendations

- ✓ Develop publications, workshops, and other educational opportunities that emphasize the interrelationship between land use and flooding.
- ✓ Seek funding to review alternatives for decreasing flood contributions of upstream influences in tributary streams.
- ✓ Work with local communities to promote compliance with the Stormwater Phase II Construction Program in order to reduce sediment runoff from construction sites, to minimize sediment deposits in stream channels, and to reduce the resulting impacts on flooding.

### Problem

Geographic Information System (GIS) maps are not available to assist with lake level management decisions.

### Recommendations

- ✓ Create GIS watershed maps that will assist with lake level management decisions.
- ✓ Request that the NYS DEC and FEMA prioritize the Oneida Lake watershed at a higher ranking for FEMA mapping considerations.



### Problem

The population that lives on Oneida Lake or along the Oneida River has increased due, in part, to seasonal cabins changed to year-round homes and the general appeal of shoreline access for recreational usage. Consequently, many dwellings are now located in areas that are affected by river and lake-level changes. Also, development continues in floodplain areas around the lake and upland areas that affect the floodplain.

### Recommendations

- ✓ Identify flood plain and flood prone areas along the Oneida Lake shoreline and discourage municipalities, developers and landowners from inappropriate development within flood prone areas. Develop strategies to educate individuals and groups to the fact that Oneida Lake is a regulated natural body of water and not a man-made reservoir.
- ✓ Encourage shoreline and upland watershed municipalities to:
  1. Enforce local laws that prohibit new development in flood prone areas.
  2. Adopt ordinances that prevent new development within flood prone areas and along riparian corridors in an effort to protect flood prone areas and fisheries habitat.
  3. Follow shoreline protection guidelines (Article 15 NYS DEC regulations) when construction projects are planned.

4. Comply with regulations in order to take advantage of FEMA's flood mitigation grant program.
  5. Educate developers and the general public on the correct use of flood and elevation maps when development plans are considered.
  6. Educate realtors, builders, homeowners, architects, and code enforcement officers on building code requirements or techniques designed to protect structures in flood prone areas.
- ✓ Encourage municipal participation in FEMA's Flood Hazard Mitigation Program, specifically in terms of flood proofing and retrofitting existing structures. Distribute NFIP educational literature and hold workshops that describe methods to flood-proof structures in flood prone areas.

## **Problem**

There is a lack of understanding of the impacts of precipitation and snowmelt throughout the Oneida Lake watershed to Oneida Lake levels. There is inadequate data available, including real-time gauging of the streams tributary to Oneida Lake, real-time precipitation gauging and snow monitoring at adequate locations throughout the watershed. Further, a robust hydrologic model, linking these inputs with the fixed stage-storage relationships on Oneida Lake coupled with the variable discharge capacity of the Oneida River does not presently exist.

## **Recommendation**

Develop a hydrologic model of the Oneida Lake watershed to estimate the response of precipitation and snowmelt on Oneida Lake based on the variable discharge capacity of the Oneida River.

## **Problem**

There is a lack of stream and stage gauges in the Oswego River Basin. The absence of funding has led to the discontinuation of several gauges throughout the watershed and the lack of historical data poses a limitation to using models for predicting future flooding patterns.

## **Recommendation**

Encourage local, state, and/or federal governmental units in cooperation with the USGS to fund the repair of existing stream and stage gauges on Fish Creek, Limestone Creek, Chittenango Creek, and at Sylvan Beach, and to consider the potential for adding additional gauges in other areas.

## **Problem**

There is a lack of understanding among stakeholders regarding water level management control structures and the potential impact of technical reports compiled by groups such as the U.S. Army Corps of Engineers.

## **Recommendation**

Solicit the U.S. Army Corps of Engineers to restudy current Oneida Lake flooding characteristics in terms of alternative water level control options and anticipated cost benefit analyses.

## **Problem**

The NYS Canal Corporation regulates water levels during the navigation season, as required by law, and is responsible for the conditions of the canal navigation channel, not the depths of the entire width of the Canal or Oneida Lake. The majority of boats using the canal are recreational, but commercial vessels also use the canal system. Oneida Lake levels during the navigation season normally can be managed close to the regulation curves. However, high water levels are normally observed during the non-navigation season in the spring when the Caughdenoy Dam is fully open, or during unusual weather events.

## **Recommendation**

Explore the feasibility of extending the time period during which the New York State Canal Corporation is responsible for water level controls, as long as the extension does not impact current navigation law. Water level management might begin when the lake is declared ice-free by the Oneida Fish Cultural Station, or by March 20 in years when the ice is out early or there is no ice. Water level management might end when the lake is designated as ice covered

by Cornell University, or January 1st of the lake is not covered.

## **Problem**

Oneida Lake is part of the Oswego River Basin. Water level modifications to minimize flooding on Oneida Lake could have negative impacts on downstream communities. Also, recommendations relating to control structures and operations on the Oswego River (or in any area downstream from Oneida Lake) have minimal impact unless they are considered in relation to the flow of water from other areas within the Oswego River Basin. There are presently no formal programs that provide regional coordinated management of the water resources throughout the Oswego River Basin.

## **Recommendation**

Encourage the formation of a Regional Water Resources Council to provide central management and control throughout the Oswego River Basin. The Regional Water Resources Council would, among other duties, be responsible for coordinated lake level/flow regulation, flood plain management, and flood damage reduction programs throughout the Oswego River Basin. Promote the inclusion of Council representation from local, State, and Federal agencies and organizations, and lake communities in this regional partnership.



## **Thank You!**

The CNY RPDB thanks the NYS DEC and the U.S. EPA for financing Oneida Lake watershed protection efforts over the past several years. Our gratitude and appreciation also goes to the hundreds of stakeholders, including municipal representatives, agencies and non-profit organizations, homeowners, and lake users that have contributed time and resources to this project. A special thanks goes out to the hardworking members of the Oneida Lake Watershed Advisory Council Board of Directors who continue to provide guidance and lead the way in the protection of our valuable water resources.

The Oneida Lake Watershed Management Plan is a regional initiative coordinated by the CNY RPDB. It is jointly funded by the NYS Department of Environmental Conservation using dollars from the Environmental Protection Fund, and by the U.S. Environmental Protection Agency with funds secured by Congressmen James Walsh and Sherwood Boehlert.

# Where To Find Additional Information

- Information about the Oneida Lake watershed is found at the following web site: [www.cnyrpd.org/oneidalake/](http://www.cnyrpd.org/oneidalake/).
- For general program information, contact Anne Saltman, CNY Regional Planning and Development Board (315) 422-8276.
- For information about the Watershed Advisory Council, contact Dan Ramer, Board Chairman, (315) 363-4860 or Christine Gray, Vice Chair, (315) 349-8322.

Central New York Regional Planning & Development Board  
 100 Clinton Square, Suite 200, 126 N. Salina St., Syracuse, New York 13202  
 Phone: (315) 422-8276 ♦ Fax: (315) 422-9051 ♦ [www.cnyrpd.org](http://www.cnyrpd.org)

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## Do You Live in the Watershed?

If you live in the area outlined on this map, you are in the Oneida Lake watershed! A watershed is the total land area that drains into a stream, river, or lake. Spanning 872,722 acres (or 1,364 square miles), the Oneida Lake watershed encompasses six counties and 69 cities, towns, and villages. All the surface and ground water from precipitation and snowmelt within the entire region drains into Oneida Lake. Decisions regarding land use within the watershed have a direct influence on the water quality and aquatic biology in the lake and protection of Oneida Lake involves all land, lakes and streams throughout the entire region.

## What Is the Watershed Advisory Council?

The Oneida Lake Watershed Advisory Council Board of Directors is a group of dedicated county, municipal, and stakeholder representatives that guide the development and implementation of the Oneida Lake and Watershed Management Plan. The Council was formed to assist in the development of a plan that identifies the priority water resource issues of concern, summarizes recommendations, and provides opportunities for program implementation. The Advisory Council is committed to the protection and restoration of a multiple-use lake and watershed that sustains healthy ground and surface water, fisheries, aesthetic values, cultural resources, economic vitality, wildlife habitat, and water-based recreation. Several positions on the Board of Directors will be filled in 2005. Please let us know if you are interested in participating. The Board meetings are held once a month and are open to everyone. Call the CNY RPDB at 422-8276 for additional information.

### The Oneida Lake Watershed Advisory Council Board of Directors

#### County Representatives

- Brian Dam, Oneida County
- Alex Stepanski, Madison County
- Joe Mastriano, Onondaga County
- Ron Darrow, Oswego County

#### Local Government Representatives

- Dan Ramer, Southern Uplands Region
- Frank Valetta, Butternut/Limestone Creeks Region

#### Waterfront Community Representatives

- Pat Leone, Town of Cicero
- Richard Colesante, Town of Constantia/Village of Cleveland
- John Patane, Town of Lenox
- Joe Benedict, Village of Sylvan Beach
- Paul Baxter, Town of West Monroe

#### Stakeholder Representatives

- Ed Mills, Water Resources
- Craig Tryon, Recreation
- Bill Schriever, Fish and Wildlife
- Michael Asterino, Economic Development
- Maurice Kelsey, Agriculture
- Alfred Gerisch, Forests
- Christine Gray, Tourism

