

Gonesus Lake

Watershed Management Plan



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MARCH 2003

THIS REPORT WAS PREPARED FOR THE
NEW YORK STATE DEPARTMENT OF STATE
WITH FUNDS PROVIDED UNDER TITLE 11 OF THE
ENVIRONMENTAL PROTECTION FUND

Acknowledgments

The Conesus Lake Watershed Management Plan Project is greatly indebted to the many individuals and organizations who contributed their time, expertise, and resources during the development of this document. Their tireless efforts will benefit Conesus Lake for years to come. All of the members of the Policy Committee, Planning Committee, Agricultural Committee, Public Education Subcommittee, and the four Work Groups are thanked for sharing their experience and technical skills.

The Watershed Management Plan was funded by a grant to the Town of Livonia from Title 11 of the New York State Environmental Protection Fund through the New York State Department of State (NYSDOS) Local Revitalization Program, managed by the NYSDOS Division of Coastal Resources.

The Conesus Lake Watershed Management Plan Project would like to thank the following:

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Without the help and assistance of all of the participants, the Conesus Lake Watershed Management Plan would not have been possible.

This report was prepared for the New York State Department of State with funds provided under Title 11 of the Environmental Protection Fund

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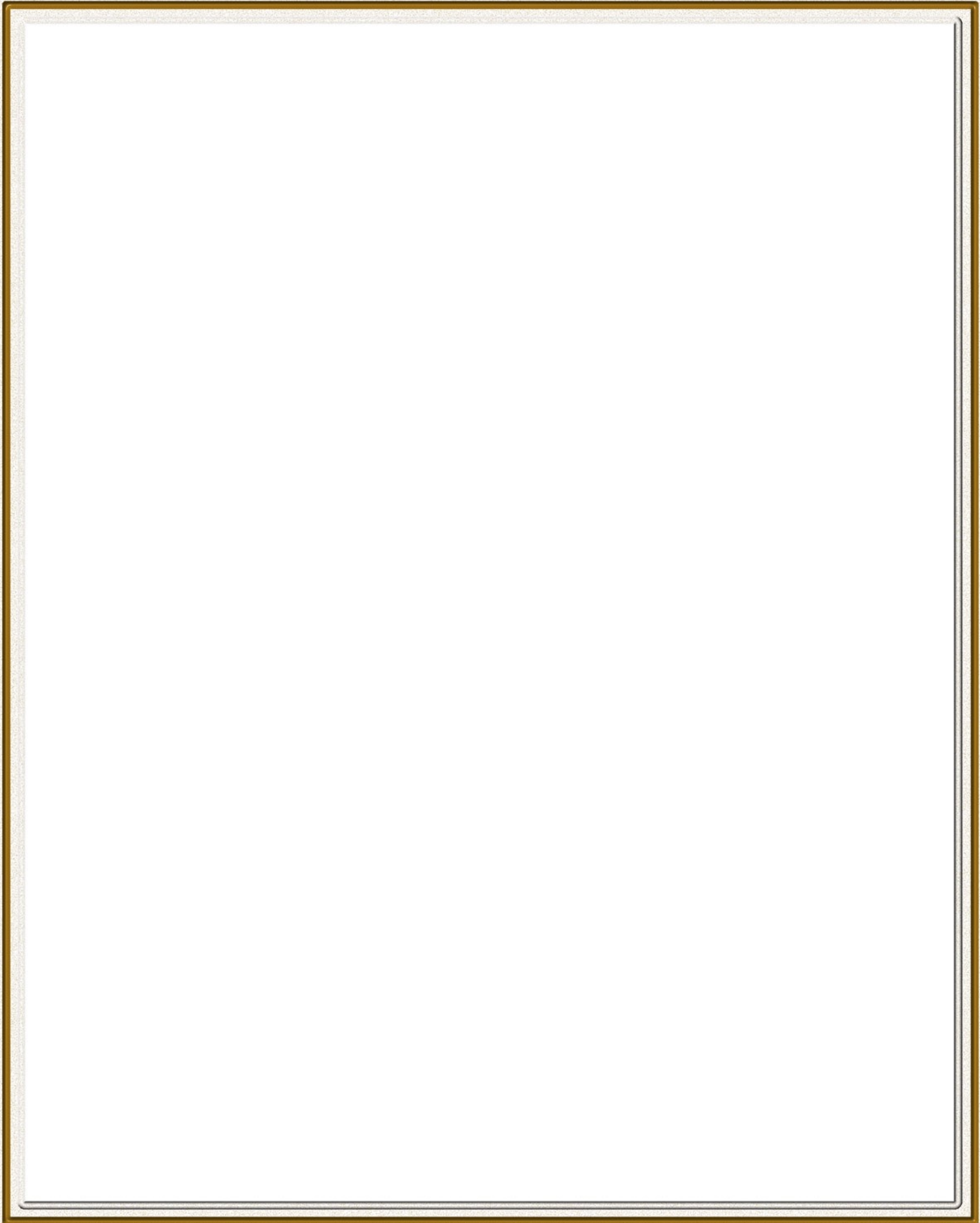
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CHAPTER 1 INTRODUCTION

1.1 Purpose of this Document

The Conesus Lake Watershed Management Plan (CLWMP) is the culmination of a process that began in the 1990s, when concerned citizens, academic researchers, and local government representatives rallied around the need to restore and protect Conesus Lake. Publication of the *State of Conesus Lake: Watershed Characterization Report* in May 2002 marked a significant milestone in the process of developing a management plan for the resource. This report benchmarked existing conditions of the lake and watershed, identified pollutants that threaten water resources, and identified specific land uses and geographical areas that contribute pollutants of concern. The Conesus Lake Watershed Management Plan builds on the investigations and outreach activities associated with the Characterization Report; the Management Plan outlines a series of aggressive measures designed to bring about improvements to the quality of Conesus Lake. These actions target the pollutants and sources that pose the greatest threat to the lake's use as a public water supply and recreational asset. The purpose of the Watershed Management Plan is to serve as a consensus among the Conesus Lake Watershed municipalities and the State of New York on future actions needed to protect Conesus Lake.

Implementation of these recommended actions will require commitment at many levels: federal, state and local government, natural resource and agricultural management agencies, and watershed landowners and residents. The problems in the lake are not caused by any single action or land use; they are the cumulative results of many activities and natural conditions within the watershed boundaries. Likewise, responsibility for improvements rests with the entire community.

The Conesus Lake Watershed Management Plan is a "living document" that can grow and change as old issues are resolved and new issues are encountered. It is not a mandate but will serve as a guide to effective actions to protect and enhance the quality of the lake and watershed.

1.2 Environmental Setting

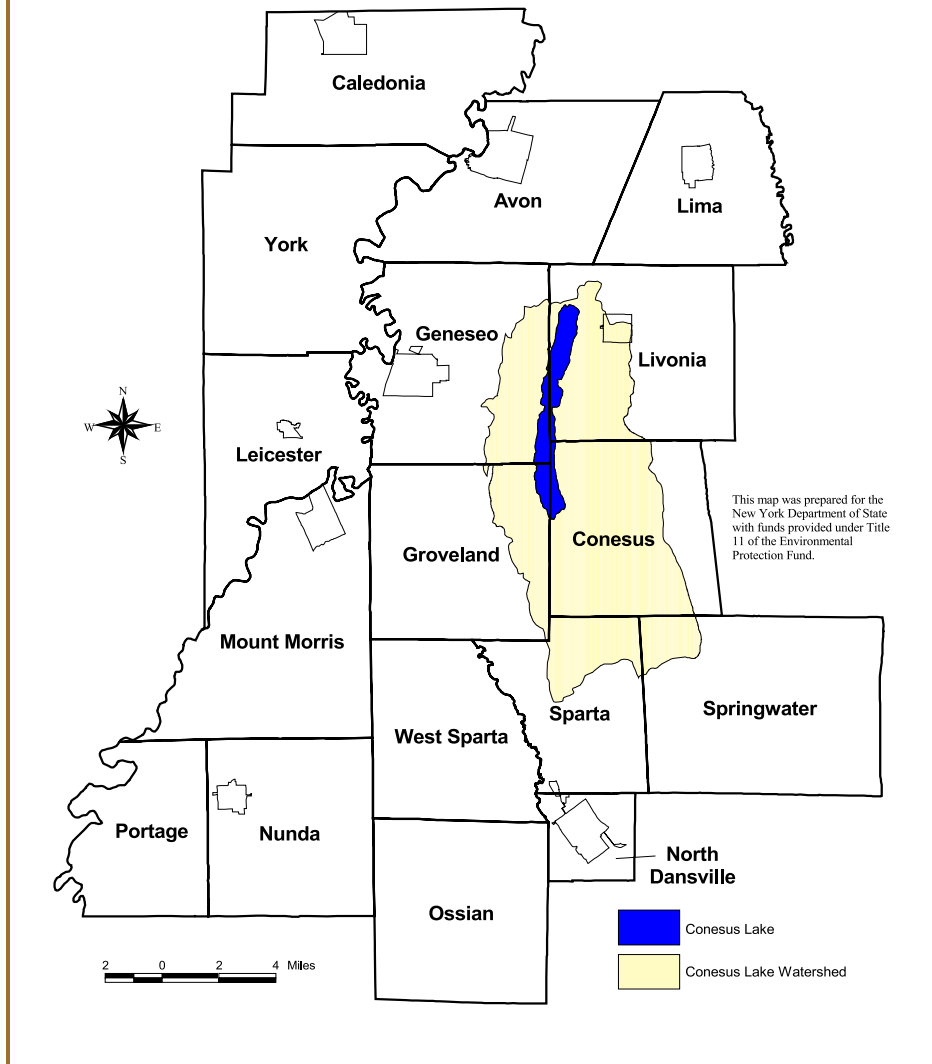
The Conesus Lake watershed encompasses 70 square miles (41,300 acres) within Livingston County. There are seven municipalities that are all or partially within the watershed: the Towns of Conesus, Geneseo, Groveland, Livonia, Springwater and Sparta, and the Village of Livonia. The watershed, which is home to approximately 10,000 people, forms part of the 2,500 square mile Genesee River Basin that drains north to Lake Ontario (Map 1-1).

A network of more than 18 streams flows into Conesus Lake. Because of the topography of the watershed, many of these streams are small and intermittent. Most of the water flowing into the lake enters from the south. The largest streams are North and South McMillan Creeks and the Conesus Inlet. Together, these three streams contribute as much as 70 % of the total gauged flow into the lake. Land use, soils, and topography in the watershed greatly influence the transport of sediment and other pollutants to Conesus Lake.

Conesus Lake is among the smallest of the New York Finger Lakes. This western-most Finger Lake is quite shallow and has an extensive region where light can penetrate to the sediment surface (termed the littoral zone). These basin features, coupled with the loading of nutrients and sediment from the watershed, affect the habitat available for rooted aquatic plants (macrophytes), algae, and the fish community. The lake's maximum depth is 66 feet. Mean depth is estimated at 38 feet. Conesus Lake holds a relatively small volume of deep water; less than six percent of the lake volume is deeper than 45 feet.

The lake is eutrophic (supporting high levels of plant and animal life) and serves as a public water supply and focal point

**Map 1-1
Location of the Conesus Lake Watershed in Livingston County**



for recreation. A diverse and productive warm-water fish community supports angling. Changes in the food web in recent decades have contributed to a loss of water clarity (Makarewicz 2000). The species composition of the macrophyte (rooted aquatic plants or “weeds”) community has shifted; more nuisance species are present in shallower waters. Eurasian watermilfoil, zebra mussels, and the alewife are some of the most visible and disruptive species introduced into Conesus Lake. These species, among others, have caused changes in the food web and general ecology of the lake that are very difficult to control or correct. These changes concern the community because of their impacts on water quality, recreation and aesthetics, and have helped galvanize support for a comprehensive watershed management planning effort.

1.3 Description of the Planning Process

The Watershed Management Plan was developed through a collaborative process that reflects local input on priority actions and the feasibility of solutions. The plan identifies priorities and recommendations based on the input and vision of those who live and work in the watershed and of those using Conesus Lake as a public drinking water supply.

Preparation of the plan was financed through three Environmental Protection Fund-Local Waterfront Revitalization Program grants awarded to the Town of Livonia on behalf of all the watershed municipalities. The grants were matched by an equal amount of local contributions and in-kind services. The Livingston County Planning Department managed the project on behalf of the Town of Livonia and the other watershed communities. The watershed management planning process incorporated several overlapping and interrelated phases: fact-finding, public outreach, and identification of cost-effective remedial measures.

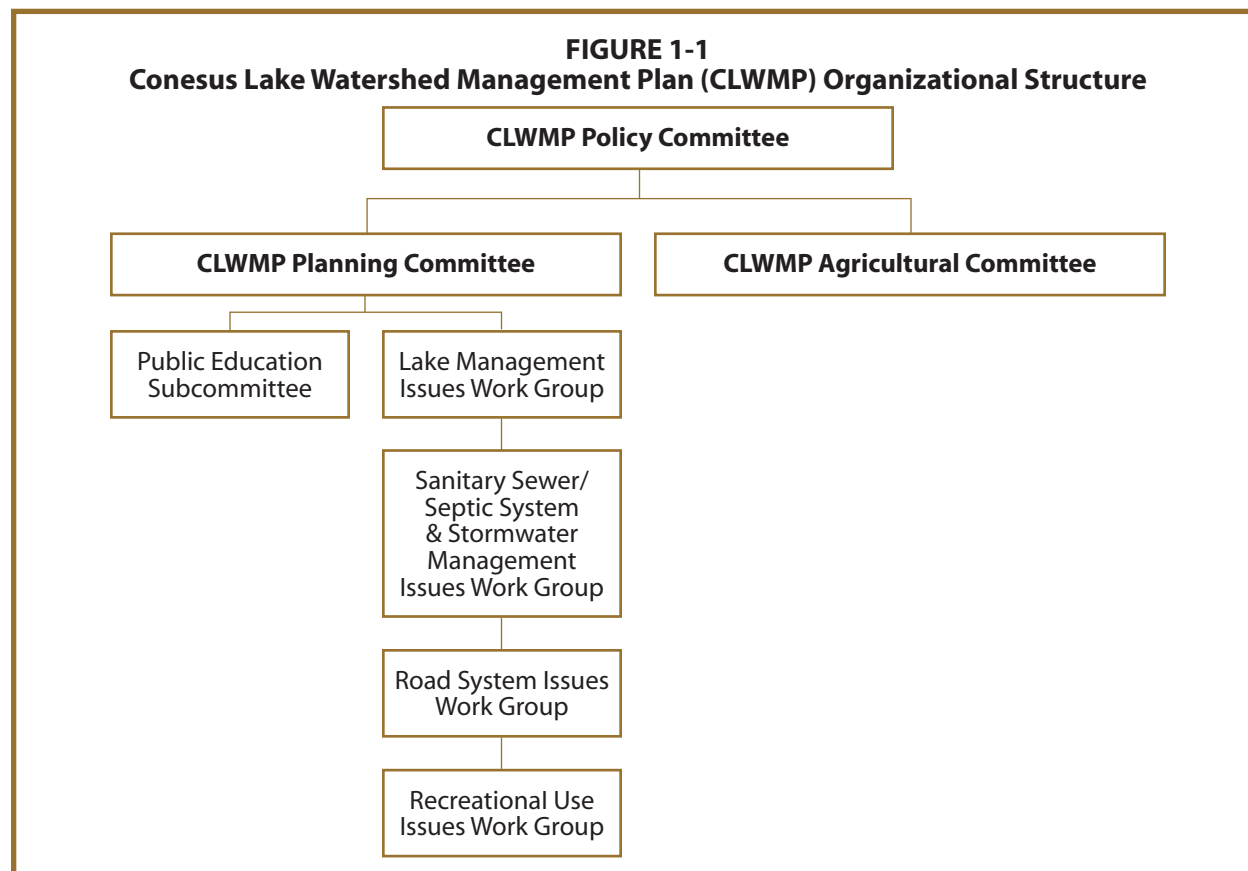
Three committees and a subcommittee guided the planning effort (Figure 1-1, Appendix 1). The Policy Committee

was the intermunicipal body responsible for major decisions. Voting members included representatives of each municipality in the watershed, the two municipalities that draw Conesus Lake water for public supply, and Livingston County. Representatives of the Livingston County Planning Department, Livingston County Department of Health, Conesus Lake Association, natural resources agencies and agricultural support agencies participated as non-voting advisory members.

The Planning Committee was responsible for the technical work and for advising on technical aspects of policy decisions. This Committee met on a monthly basis and included representatives of: Policy Committee, New York State Department of Environmental Conservation (NYSDEC), Livingston County Planning Department, Livingston County Soil and Water Conservation District, Livingston County Department of Health, Conesus Lake Association, Livingston County Water and Sewer Authority, EcoLogic LLC, Genesee/Finger Lakes Regional Planning Council, SUNY Brockport, and SUNY Geneseo. A subcommittee of the Planning Committee was formed to lead public education and outreach efforts.

The Agricultural Committee was formed following completion of the Characterization Report. Membership included active agricultural producers and county, state, and federal agricultural support agencies including the Soil and Water Conservation District, the Natural Resources Conservation Service, Cornell Cooperative Extension, Farm Services Agency and the Farm Bureau.

Four work groups (Road Systems Issues, Lake Management Issues, Sanitary Sewer/Septic Systems and Stormwater Management Issues, and Recreational Use Issues) were created to deal with specific topics (Appendix 2). These groups were charged with identifying issues of concern and possible solutions, evaluating solutions, and defining priority actions. The recommendations and priorities adopted by the work groups were presented to the Policy Committee for formal adoption as part of the Watershed Management Plan.



Conesus Lake

CHAPTER 2

SUMMARY OF VISIONS AND GOALS

In order to develop a management plan for a resource, it is necessary to build a vision of a desired future. The Watershed Management Plan provides a road map from current conditions towards an improved lake and watershed. Several common themes were brought forward during the many meetings and discussions held between 1999 and 2002. The vision of the desired future of the lake and watershed includes elements related to human uses of the resource, restoration of the lake ecosystem, continued viability of agricultural land use, and protection of the rural character of the watershed. The Policy Committee has adopted the following statement to express their vision of both the Watershed Management Plan and the watershed:

“TO DESIGN A MANAGEMENT PLAN THAT PRESERVES, RESTORES, AND ENHANCES THE HEALTH, NATURAL BEAUTY, AND RURAL CHARACTER OF CONESUS LAKE AND ITS WATERSHED.”

What is the objective of the Conesus Lake Watershed Management Plan?

To ensure the sustainability of designated uses for Conesus Lake and its continued role as a positive influence on the social and economic well being of watershed communities.

What are the goals regarding water quality of the lake?

To improve water quality conditions in Conesus Lake to ensure its continued use as a water supply and make it more attractive for water contact recreation.

How does the plan view ecosystem management?

The plan includes actions designed to restore Conesus Lake to a diverse ecosystem composed primarily of native species of plants and animals.

What part does the community play in the plan?

For the plan to succeed, it must promote cooperation of all stakeholders at the local level to develop a comprehensive approach that seeks to build collaboration and balance diverse concerns.

How does the plan address the specific concerns of agriculture?

The plan recognizes the value of high quality agricultural practices in meeting its goals. The plan seeks to promote the viability of agriculture and best management practices in land use.

How does the plan affect residents of the watershed?

The plan seeks to provide necessary services to all watershed residents while preserving the natural beauty and rural character of the countryside.

Conesus Lake

CHAPTER 3 THE NEED FOR RESTORATION AND PROTECTION

3.1 *The Nature of the Resource*

This section summarizes information contained in the May 2002 *State of Conesus Lake: Watershed Characterization Report*.

3.1.1 CURRENT USES: WATER SUPPLY, RECREATION, AQUATIC LIFE SUPPORT

Conesus Lake is truly a resource used by many people for many purposes. The lake is a source of water to approximately 15,000 Livingston County residents both within and beyond the watershed boundaries. As a recreational focus, the lake is used for swimming, boating, fishing, and aesthetic enjoyment. Residences ring the shoreline, and these properties must be protected from flooding. Constructed wetlands near the mouth of Conesus Inlet are managed to provide spawning habitat for northern pike and walleye. Water released from the lake serves to dilute the effluent from the Livingston County Water and Sewer Authority facility on the lake outlet, Conesus Creek, and to help prevent harmful effects on the downstream biological community.

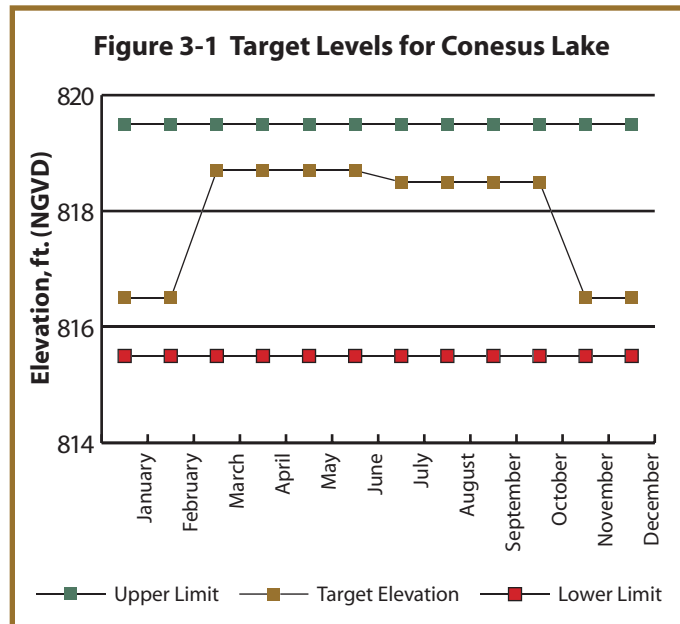
Current uses of Conesus Lake are threatened by a myriad of problems caused by a combination of natural conditions and human activities. Actions are needed in the watershed to reduce pollutant runoff to the tributary streams and ultimately to Conesus Lake. Actions are also needed within Conesus Lake itself to reduce internal nutrient loading from the sediments, reduce the proliferation of nuisance aquatic plants, and shift the community of plants and animals towards a sustainable assemblage composed primarily of native species.

3.1.2 WATER LEVEL MANAGEMENT AND SAFE YIELD

A rule curve developed by the Army Corps of Engineers is used to manage water levels within maximum and minimum acceptable levels to protect multiple uses of the lake for water supply, flood control, fish and wildlife habitat, recreation, and downstream riparian uses including diluting treated wastewater and meeting the legal requirement for flow maintenance in the outlet stream. Monthly target lake levels are displayed in Figure 3-1.

The Conesus Lake Compact of Towns (membership includes the Towns of Livonia, Conesus, Groveland, and Geneseo) operates the control structure at the lake outlet and maintains water levels at 818.7 feet from March through June. During summer, lake level is targeted at 818.5 feet. This water level management strategy, coupled with the enhanced capacity to draw down the lake quickly, has reduced flooding of lakeshore property. In recent years, water levels have fluctuated in response to precipitation. However, summer lake levels tend to fall below targets.

NYSDEC completed a safe yield evaluation of Conesus Lake (NYSDEC 1994). The objective of



Source: Rule Curve - Army Corps of Engineers, 1991.

a yield study is to examine long-term precipitation records and calculate the volume of water that can be withdrawn from a lake or reservoir while maintaining water levels and downstream requirements. The safe yield is the maximum quantity of water that can be guaranteed during a critical dry period, defined as the drought of record. There is always a chance that drier conditions will develop.

Based on the NYSDEC analysis, the safe yield of Conesus Lake is approximately 7.8 million gallons per day (mgd). Current water supply permits allocate more than this amount; however, the actual withdrawals for public water supply are below their permit allocation (Table 3-1). The water suppliers could not consistently draw water to the level of their current allocation without increasing the capacity of the infrastructure used to draw, filter, disinfect, and distribute potable water to their customers. Any increase in capacity would require a revision to the public water supply permit and trigger a reanalysis of the lake's safe yield. Defining a sustainable level for drinking water withdrawal is an important element of a long-term management strategy for Conesus Lake.

Allocated Use	Permitted Withdrawal (million gallons per day)	Average 1999-2001 Withdrawal (million gallons per day)
Water supply: Village of Avon	3.5	0.7
Water supply: Village of Geneseo	3.0	1.16
Lakeville Water District	0.040	0
Downstream release requirement for wastewater dilution	6.5	As required
Summed Allocation	13	
Safe yield at 3 feet drawdown	7.8	
Deficit/over allocation	5.2	

Sources: NYSDEC, 1994; Villages of Avon and Geneseo

3.1.3 TROPIC STATUS

Lake trophic status is a continuum from nutrient poor (*oligotrophic*) to nutrient rich (*eutrophic*), with *mesotrophic* as an intermediate stage. Lakes are assigned to one of the three categories along this continuum based on four typical indicators: total phosphorus (P) concentration, chlorophyll-*a* concentration, water clarity as measured by Secchi disk transparency, and deep water dissolved oxygen (DO) levels. Levels of these indicators associated with oligotrophic, mesotrophic, and eutrophic lakes are summarized in Table 3-2 and compared with recent measurements in Conesus Lake.

Indicator and units	Trophic Status			Conesus Lake 2000
	Oligotrophic	Mesotrophic	Eutrophic	
Total P (µg/l)	< 10	10 – 20	> 20	22
Chlorophyll- <i>a</i> (µg/l)	< 4	4 – 10	> 10	8.8
Secchi disk transparency (meters)	> 4	2 – 4	< 2	2.5
Deep water oxygen (percent saturation)	> 80	10 – 80	< 10	< 5

Source: U.S.EPA 1974; Conesus data 2000 (Makarewicz et al. 2001)

Both historical and recent data indicate that Conesus Lake is eutrophic. Eutrophic lakes are well supplied with nutrients and support an abundance of algae and rooted aquatic plants. The deepest waters of eutrophic lakes typically become devoid of dissolved oxygen by late summer, as microorganisms use up oxygen to break down the organic material such as algal cells that rain down from the upper sunlit layers.

Phosphorus is naturally present in all waters and is an essential nutrient for life. It is the limiting nutrient for algal growth in Conesus Lake. Consequently, the Watershed Management Plan is directed at controlling phosphorus sources to the lake, and phosphorus cycling within the lake.

Algae and aquatic plants become a nuisance when their abundance causes lake water to appear green and unattractive for swimming, boating, and other recreational uses. Plants and algae can cause localized problems when they die and begin to decompose. The decomposition process may deplete dissolved oxygen levels, limiting habitat for aquatic life. Decaying plants and algae wash up onto the shoreline of Conesus Lake and create unpleasant odors.

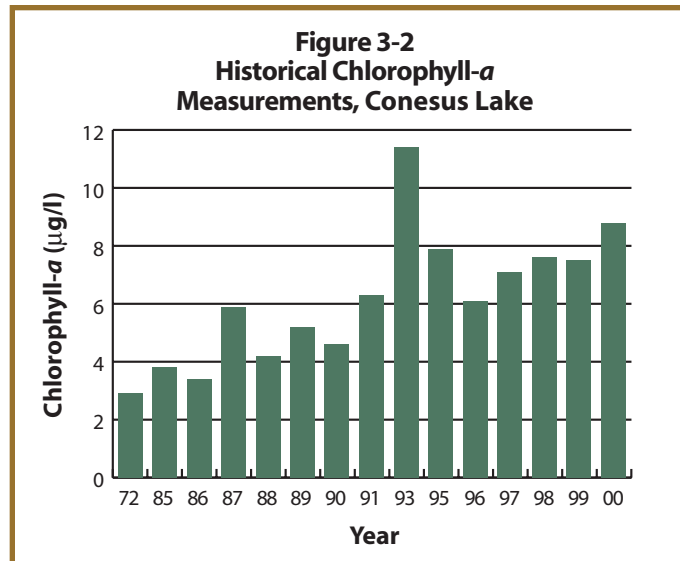
Water quality conditions in Conesus Lake have been tracked for decades, thanks to long-term monitoring by regional colleges and NYSDEC. As described in the Characterization Report, algal abundance is estimated by measurements of the plant pigment chlorophyll-*a*. When chlorophyll-*a* concentration exceeds about 6 µg/l, a lake appears less attractive for recreational use. Concentrations in excess of 13-15 µg/l are a definite impediment to recreational use. Historical and recent chlorophyll-*a* data (Figure 3-2) illustrate the increased algal abundance in recent years.

Excess algal growth in water supply reservoirs is also problematic; the efficiency of water treatment can be greatly reduced by algae that clog the filters. Certain algal species contribute to taste and odor problems in reservoirs. A high abundance of algae is associated with increased concentrations of organic compounds that, when chlorinated in the water treatment process, may create trihalomethanes (THMs). These are four chemicals formed along with other disinfection by-products when chlorine or other disinfectants used to control microbial contaminants react with naturally occurring organic and inorganic matter in water. The federal Environmental Protection Agency (EPA) and the New York State Department of Health (NYSDOH) regulate the maximum concentration of THM in drinking water to protect human health. Keeping algal abundance low is an important preventative measure. Currently, the Conesus Lake water supply is in compliance with maximum contaminant levels for THMs.

3.1.4 GEOLOGIC SETTING: VULNERABILITY DUE TO SOILS AND TOPOGRAPHY

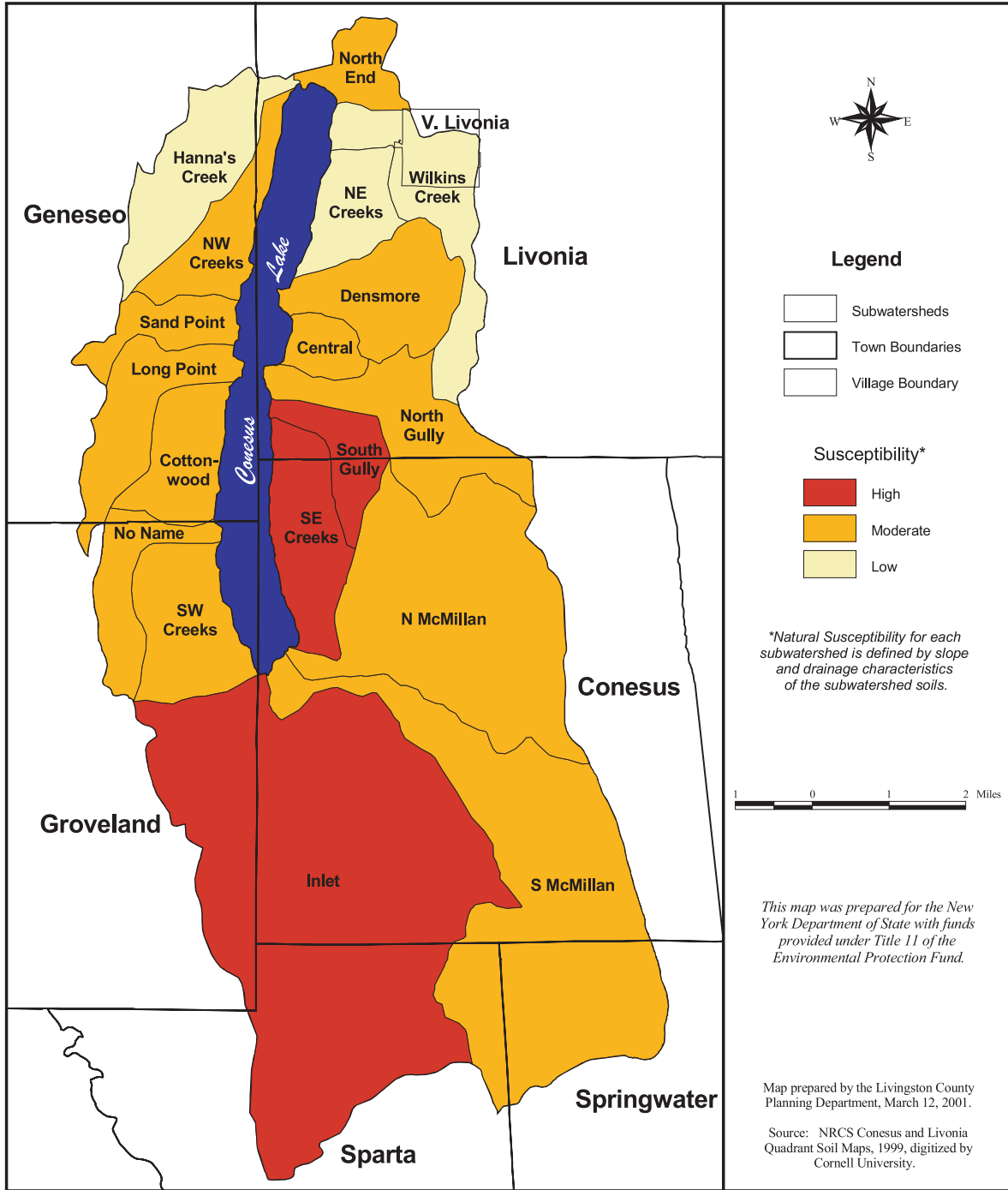
The Conesus Lake watershed is a mosaic of topographic features, soil types, and water courses. These natural characteristics combine to make certain areas more vulnerable than others to the effects of nonpoint source pollution, as illustrated in Map 3-1. Steep slopes along both the eastern and, especially, the western shorelines of the lake characterize the Conesus Lake watershed. The land to the south, except the Inlet region, is characterized by steep slopes as well.

Soils in much of the watershed are coarse and easily erodible. Other soils are shallow and exhibit different degrees of drainage limitations. These soil and topographic conditions give rise to situations where storm flow must move through short but steep gradients. The force of the water erodes the soil in the channel, making it deeper and steeper. Over time this process has created natural gullies along the eastern and western areas of the watershed. Human activities can accelerate the rate of erosion of these gullies by alterations in land use that disturb vegetation or increase runoff. Examples of these activities include paving and tilling that result in the transport of sediment and associated pollutants.



Sources: 1972 (Mills, 1975); 1985, 1988-1 and 1991-1993 (Crego, 1994); 1986-1988-2, 1989 & 1990 and 1995-1999 (NYSDEC); 2000 Makarewicz et al.

**Map 3-1
Conesus Lake Subwatersheds Natural Susceptibility
to Nonpoint Source Pollution**



3.1.5 RELATIONSHIP BETWEEN LAND USE TRENDS AND WATER QUALITY

The shoreline of Conesus Lake is densely developed, except for the area around the Inlet where the NYSDEC maintains a Fish and Wildlife Management Area. The area immediately surrounding the lake has a high percentage of impervious surfaces as a direct result of the preponderance of residential properties. Impervious surfaces do not allow water to infiltrate, thus forcing storm runoff to run directly over land into the lake, picking up pollutants along the way and increasing its erosive forces. The trend around the lake has been towards bigger homes with ever-increasing amounts of impervious surfaces, such as roofs and driveways.

Residential development is on the rise in more remote areas of the watershed. Development on steeper slopes is increasingly vulnerable to soil loss during construction and faces continued challenges for effective stormwater management. The surface area of roadways in the watershed has increased over time, leading to a steady increase in the concentration of sodium and chloride in lake water as a result of winter deicing practices.

Agriculture is a dominant land use in the Conesus Lake watershed and helps create the open vistas that provide much of the region's scenic beauty. Agricultural land uses have intensified in recent decades in response to national and regional economic forces. The trend in Livingston County agriculture is towards larger herd sizes and increased mechanization. Fields are cultivated closer to streams and drainage ways, and many hedgerows have disappeared. On the positive side, agricultural producers apply far less chemical pesticides than they did decades ago. Pesticide application is increasingly regulated, and there is a far greater focus on alternative methods such as integrated pest management.

3.2 Current Water Quality Conditions

Conesus Lake is a threatened water body. Water quality conditions in recent years have been characterized by an abundance of aquatic plants and algae, sporadic occurrences of bacteria indicating the potential presence of pathogens (disease causing microorganisms), increasing concentrations of salts, and detectable concentrations of pesticides. Changes in the food web in recent decades have contributed to a loss of water clarity. These conditions are of grave concern to the watershed community and have galvanized support for this comprehensive watershed management planning effort.

A network of streams makes its way to Conesus Lake. These streams drain subwatersheds, which are natural drainage divides in the landscape. The quality of water flowing into Conesus Lake from the stream network ultimately determines the quality of the lake itself. Both natural conditions and human activities in the subwatersheds affect water quality of the streams. Streams draining construction or agricultural areas, for example, have higher concentrations of sediment and nutrients. This central issue, that environmental conditions coupled with human activities in the watershed ultimately determine the lake water quality, forms the basis for the recommended actions that comprise the Watershed Management Plan. For this reason, the emphasis is on inputs to the lake rather than outputs. The quality of the water coming out of Conesus Lake is important for downstream uses and for developing nutrient budgets. However, the focus of the Watershed Management Plan is to improve the quality of lake water itself.

Because the largest tributaries to Conesus Lake (the Inlet and North and South McMillan creeks) enter into the south end of the lake, controlling inputs on the south end will have the greatest effect on water quality of the lake as a whole. However, the north end of the lake is affected by localized inputs from smaller streams and rivulets that can contribute high concentrations of pollutants during rainstorms and snowmelt. Many of the recommendations in this Watershed Management Plan are targeted at erosion and sedimentation, and are expected to have noticeable effects in the north end.

3.3 Use Impairment

New York State Department of Environmental Conservation (NYSDEC) is responsible for managing the State's surface water resources. Lakes and streams are classified according to their designated best use (for example, water supply, swimming, fish propagation, aesthetic enjoyment, and fish survival). Conesus Lake is classified by

NYSDEC as a Class A waterbody, with a designated best use for public water supply (after filtration).

There is an extensive program of monitoring and reporting to assess the extent to which the designated uses are met. Water bodies that may not consistently meet their designated best use, or for which changes in land use may threaten water quality, are placed on a Priority Waterbodies List (PWL) that is updated every two years.

A subset of the PWL list is the 303(d) list, named for the section of the federal Clean Water Act that requires states to report to EPA those waterbodies requiring a watershed approach to water quality protection or restoration. A watershed approach examines all point and nonpoint sources of nutrients and other contaminants and develops an integrated strategy for improvements. EPA recently expanded the scope of the 303(d) list to include waters affected by nonpoint source pollution as well as point source pollution.

In 2002, Conesus Lake was included on New York State's 303(d) list, which is a compilation of lakes, streams, and coastal areas where water quality conditions are not adequate to support a designated use. Water quality conditions are compared with criteria and standards defined in terms of the specific uses. The 303(d) list is a product of this assessment; water bodies are placed on the list when additional controls are needed to bring water quality into compliance with standards and criteria defined for designated uses.

Conesus Lake is listed as a "category 3" water body on the 303(d) list, meaning that additional data collection and analysis might be needed. The lists are revised every two years. Water bodies in need of more information are either de-listed (if conditions improve or an effective watershed management plan is implemented) or moved into a higher category requiring the development of a Total Maximum Daily Load (TMDL) allocation. A TMDL identifies all point and nonpoint sources of pollution into a given body of water and assigns maximum loads of pollutants to each source. The TMDL allocation is developed as a coordinated strategy to reduce pollutants in the receiving water.

Placement of Conesus Lake on the 2002 303(d) list highlights the importance of implementing effective strategies (both within the watershed and within the lake) to reduce nutrient and sediment loading and improve water quality conditions. The recommended actions presented in this document were developed through a collaborative process that fostered participation from the many stakeholders in the Conesus Lake watershed. In contrast, in the absence of implementation of an effective watershed management strategy, NYSDEC is required to develop total maximum daily loads (TMDLs) for pollutants in Conesus Lake, with oversight from the U.S. Environmental Protection Agency. This would constitute a mandatory program as opposed to a collaborative program, such as the one presented here. Implementation of the Watershed Management Plan recommendations is therefore essential for retaining local control over the future of the lake and watershed. However, there are no guarantees that voluntary actions will forestall or prevent TMDL development. The real determinant will be whether water quality conditions improve sufficiently to meet best usage.

3.4 Significant Issues Identified in the State of Conesus Lake: Watershed Characterization Report

This section summarizes the issues affecting the water quality and ecosystem of Conesus Lake. These issues include some symptoms of eutrophication (e.g., weeds and algae) and some causes (e.g., nutrients and sediments). The order in which the issues are presented reflects a combination of priorities assigned by scientific understanding and public sentiment. Additional detail may be found in the Characterization Report.

3.4.1 AQUATIC PLANTS AND ALGAE

Excessive growth of aquatic plants and algae creates problems for shoreline residents and recreational users of Conesus Lake. Aquatic plants interfere with access to the lake and become even more problematic as they die, accumulate on shore, and decay. Masses of decaying algae and aquatic plants give rise to unpleasant odors and create favorable habitat for bacteria and insects. As noted in section 3.1.2 (trophic status), excessive plant and algal growth are also of concern for the potential creation of THMs when water supplies containing high levels of organic matter are disinfected with chlorine.

3.4.2 NUTRIENTS

Nutrients such as phosphorus and nitrogen are naturally present in the environment. However, certain human activities (such as the use of fertilizers and failing septic tanks) can increase the background concentrations of these nutrients. Algal growth in Conesus Lake is limited by the availability of phosphorus. When human activities increase the level of available phosphorus, aquatic plants and algae may proliferate to nuisance levels. Controlling the amount of nutrients entering Conesus Lake is the most basic step in achieving long term control of aquatic plants and algae.

3.4.3 SEDIMENT

Sedimentation is a significant nonpoint source of pollution to Conesus Lake. Sediment loads in excess of natural levels are caused when the land in the watershed is disturbed without taking appropriate erosion control measures. Water resources management agencies, such as the EPA, NRCS, and NYSDEC, consider sediment to be the most significant nonpoint source of pollution throughout New York and the Nation.

A dominant visual feature of Conesus Lake is the sediment plumes at the mouths of tributaries after rainstorms and during spring snowmelt. This sediment directly affects the clarity of Conesus Lake and its aesthetic appeal for recreational uses. There are indirect effects as well; sediment deposition near tributary mouths will expand the habitat for aquatic plants by increasing the shallow littoral zone.

Excessive sediment concentrations in the water column can be harmful to aquatic life and will exacerbate the toxic effects of other pollutants by acting as an additional source of stress. Suspended sediment in the water column can increase temperature. Sediment deposits degrade habitat for macroinvertebrates and fish.

In addition to these effects on water clarity and habitat for the aquatic biota, sediment carries other types of contaminants into the aquatic system. This is an important aspect of watershed management, as many of the contaminants of greatest concern such as phosphorus and pesticides are carried into the streams and lake in association with sediment particles.

3.4.4 NON-NATIVE SPECIES

Non-native (exotic) species of plants and animals have caused problems in Conesus Lake that have no easy solutions. The alewife (*Alosa pseudoharengus*), a small non-native fish, has altered the food web and water clarity of Conesus Lake by its voracious predation of larger zooplankton. Larger zooplankton are more effective in grazing algal cells in the water column. Prior to the proliferation of the alewife, Conesus Lake had exceptionally clear water, thanks to the community of large zooplankton keeping algae in check (Forest et al. 1978). The clarity of Conesus Lake began to decline with the invasion of the alewife until a new invader, the zebra mussel, took hold. Zebra mussels (*Dreissena polymorpha*) are invasive freshwater mollusks native to the Caspian and Black Sea regions of Eurasia. They act as living filters increasing the clarity of the water and thus allowing light to penetrate deeper into the lake, which in turn allows aquatic plants to colonize new areas. Another invasive non-native species, Eurasian watermilfoil (*Myriophyllum spicatum*) has taken full advantage of this situation. This is a rapidly growing aquatic plant that tends to create floating mats that interfere with recreation. It spreads rapidly and is very difficult to control because it can root from small pieces that might be left behind during clean-up efforts.

Other exotic species such as the spiny waterflea (*Bythotrephes cederstroemi*), a tiny crustacean, the ruffe (*Gymnocephalus cernuus*), a fish, and water chestnut (*Trapa natans*), an aquatic plant, have been introduced to the Great Lakes. Ultimately, these non-native species can make their way into inland waters in the Finger Lakes region through interconnected waterways, bait introductions, and boat travel.

3.4.5 PESTICIDES

Pesticide concentrations in Conesus Lake have been monitored using analytical methods that achieve a low limit of detection. Measurable concentrations of herbicides and their breakdown products (metabolites) have been detected in the lake water (USGS & NYSDEC Pesticide Monitoring Program, 2000). No single concentration in Conesus Lake exceeds its associated water quality standard designed to protect human health and the environ-

ment. However, toxicological data on the effects of pesticide metabolites and mixtures of chemicals are limited. The chemicals detected in Conesus Lake at highest concentrations are herbicides used to control weeds in corn and soybean production. Some of these chemicals can persist for decades in lake sediments and may not reflect current inputs into the lake. Residential land uses may also be a source of pesticides in the lake water.

3.4.6 PATHOGENS

Indicators of the potential presence of disease-causing microorganisms (pathogens) have been found in tributary streams and, to a much lesser extent, in the nearshore areas of Conesus Lake. Data from the Livingston County Department of Health's Watershed Inspection Program indicate that some streams within the watershed exhibit elevated concentrations of two classes of indicator bacteria: total coliform bacteria and *E. coli*. The abundance of indicator organisms in a sample can serve as a warning of the likely presence of other, more dangerous, microorganisms.

Coliform bacteria are normally found in the intestinal tract of warm-blooded animals. Although the specific sources have not been identified, potential sources include waterfowl and wildlife, manure, and septic effluent.

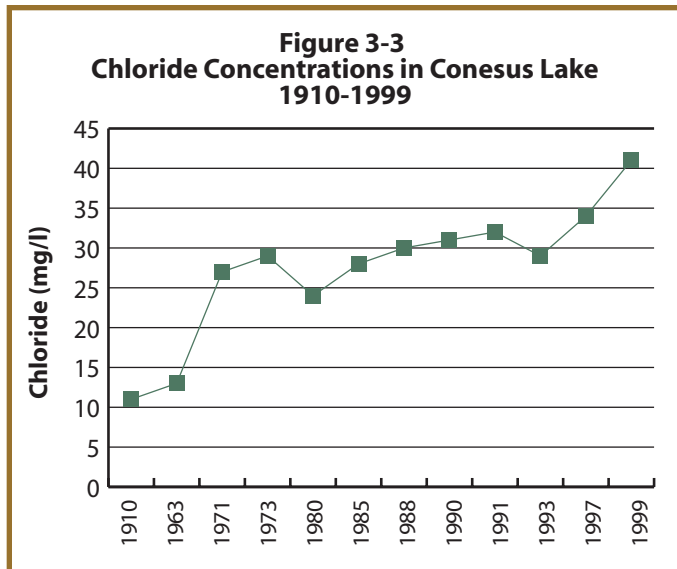
3.4.7 SALTS

Comparison of historical and recent data confirms that concentrations of sodium and chloride have increased over time. Sodium concentrations in Conesus Lake waters currently average close to 20 mg/l. According to the New York State Sanitary Code Part 5, Subpart 5-1 "Public Water Systems", sodium does not have a designated Maximum Contaminant Level (MCL). However, water supplies have health-related advisories for consumers. Water containing sodium at concentrations above 20 mg/l should not be used as a source of drinking supply for people on severely restricted sodium diets. Water containing more than 270 mg/l of sodium should not be used for drinking by people on moderately restricted sodium diets. Chloride concentrations have increased from about 10 mg/l in 1910 to over 40 mg/l in 1999 (Figure 3-3). Presumptive sources of sodium and chloride in Conesus Lake include salt dispersed along roadways.

3.5 *The Dual Approach to Protection and Restoration: Watershed and In-Lake Measures*

The core of the Conesus Lake Watershed Management Plan is a series of specific actions within the watershed and lake designed to bring about improvements to the quality of Conesus Lake. Ultimately, the quality of the lake is affected by the quality of water entering through the tributary streams. Environmental conditions and human activities in the subwatersheds affect the quality of the streams and thus the lake. Permanent reductions in the inflow of sediments, nutrients, pesticides, salts, and pathogens are needed. Protection from additional introductions of exotic species is needed. These imperatives are reflected in a series of watershed measures designed to reduce pollutant loading.

These watershed measures are complemented by in-lake measures designed to improve existing water quality conditions. The in-lake measures will help mitigate some of the symptoms of eutrophication, such as prolific weed growth. Some of the recommended in-lake measures are designed to alter the food web or internal phosphorus loading.



Sources: 1910 (Birge and Juday, 1914), 1963 (Berg, 1996, reported in Forest et al., 1978), 1971 (Godfrey, reported in Forest et al., 1978), 1973 (Mills, 1975), 1980 (Stewart, personal communication), 1985 (Stewart, personal communication, and Makarewicz and students), 1988 (Makarewicz and students), 1990 (Stewart, personal communication), 1991 and 1993 (Makarewicz and students), 1997 (Callinan, 2001), 1999 (Village of Geneseo Public Water Supply).

Conesus Lake

CHAPTER 4 SUBWATERSHED ANALYSIS

4.1 *Priority Areas*

The hydrologic budget of Conesus Lake is typical of the New York Finger Lakes; most of the water flowing into the lake each year enters through the southern end. Conesus Inlet is the largest tributary, with the subwatersheds becoming generally smaller and narrower towards the outlet at the north end of the lake. A total of 18 subwatersheds (12 major, 6 minor) were delineated as part of the watershed planning process.

The subwatershed is a useful unit of investigation, because a stream's concentration and loading of chemicals, sediment, and bacteria reflect the land use, geology, and hydrology of its drainage area. Assessing the relative contribution of substances from individual subwatersheds can help investigators and watershed managers identify priority areas within the larger watershed. Resources can be targeted where they will provide the greatest overall benefit to the lake.

4.2 *Methodology to Define Priority Areas*

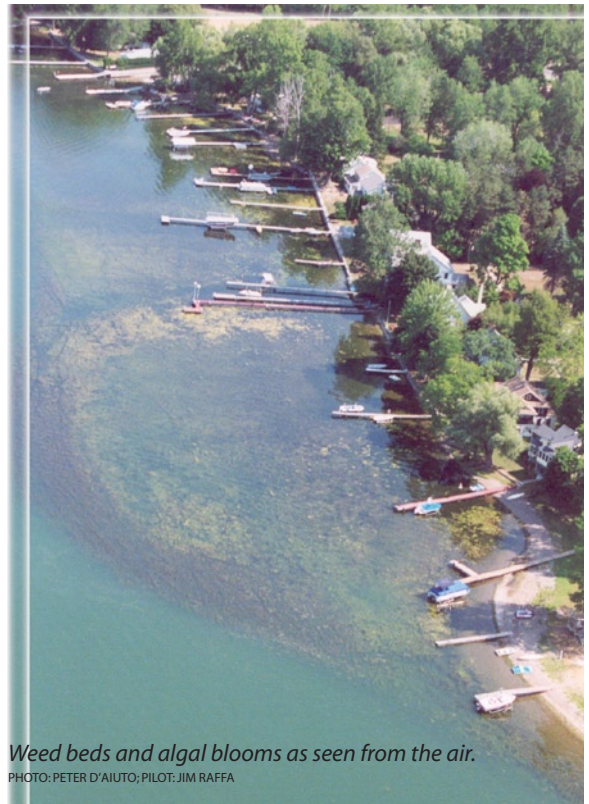
The nature of nonpoint source pollution is highly episodic; flows and loading vary in response to weather and specific land use conditions such as construction activities or crop rotation. An average year does not exist. Information from more than a single year and different sampling programs helps overcome this natural variability.

Multiple lines of evidence were used to identify priority areas in the Conesus Lake watershed. Water quality monitoring programs (synoptic surveys) were conducted on 12 major subwatersheds during two intensive field investigations completed in 1991 and 2001. The two investigations, designed to sample the major tributaries during dry weather and wet weather conditions, were completed by Dr. Makarewicz and his associates on behalf of the Livingston County Planning Department. Data from the synoptic surveys support a comparison of the tributaries with regard to concentration, loading, and unit loss of materials such as sediment and nutrients.

Focused sampling efforts (stressed stream analyses) have been completed on several of the tributaries to pinpoint specific sources of sediment, animal waste, or nutrients to the surface water network.

Environmental scientists from EcoLogic, LLC completed biological sampling and the Natural Resources Conservation Service (NRCS) standard visual stream assessment protocol at multiple stations along the watershed's tributary streams. The visual assessment and its associated biological sampling assess habitat quality and long-term water quality conditions affecting the biota; these data can complement the snapshots of conditions provided by synoptic surveys and stressed stream analyses.

Since 1999, the Conesus Lake Watershed Inspector has been



Weed beds and algal blooms as seen from the air.

PHOTO: PETER D'AIUTO; PILOT: JIM RAFFA

collecting samples from tributary streams in response to complaints or observations of poor land management practices. These data provide important snapshots of problem areas, and have been used to assign relative priority of subwatersheds.

Finally, the 2000 – 2001 monitoring effort also examined the relationship between tributary loadings and the abundance of aquatic plants and macroalgae at the mouths of several tributaries. This work was carried out through a cooperative agreement between SUNY Brockport (Dr. J. Makarewicz, stream analyses), SUNY Geneseo (Dr. I. Bosch, in-lake analyses) and Livingston County (Mr. R. Davin, sampling support). Additional details of this analysis are included in Appendix 5.

4.3 Findings

The investigations have resulted in a complex picture of the relative contribution of the subwatersheds to water quality impairment of Conesus Lake. Maps 4-1 and 4-2 display subwatersheds with elevated unit loadings of two important pollutants: total phosphorus and suspended solids based on the most recent synoptic survey results (2000 – 2001). It is clear from the maps that subwatersheds with the highest unit losses tend to be located in the central portions of the watershed, areas of steep slopes and active agricultural land use.

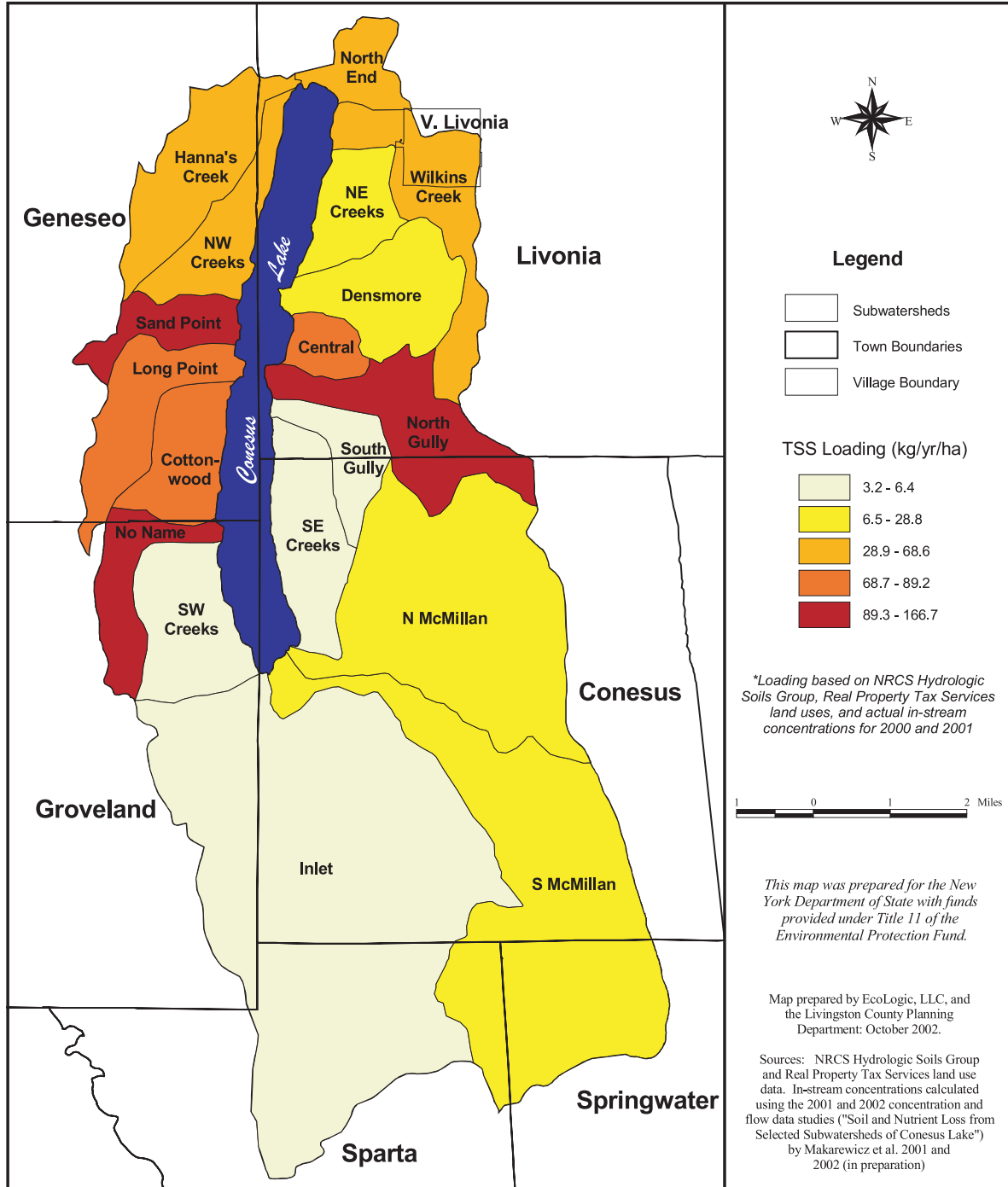
One subwatershed merits additional explanation. Hanna’s Creek drains a relatively small (2.8 square mile) area in the northwestern section of the Conesus Lake watershed. The stream flows into the lake outlet, not into the main body of the lake. Under most circumstances, materials loading from Hanna’s Creek will not be a significant factor affecting lakewide water quality. However, under low flow conditions when little water is released through the outlet dam, this tributary can affect water quality conditions in the lake’s northern basin. Based on these factors and guidance from the NYSDEC Regional Water Engineer, Hanna’s Creek is considered part of the Conesus Lake watershed and is therefore included in this management plan.

A summary of the findings of the investigations and designation of priority subwatersheds is included as Table 4-1. Note that several small gullies and streams - Northwest Creeks, North Gully, Long Point Gully, Sand Point, No Name Creek, Cottonwood, and Central - are included as priority areas. While these streams are small, their unit losses of phosphorus and sediment are high. There is documented potential for localized adverse water quality impacts in nearshore areas where these small streams flow into the lake.

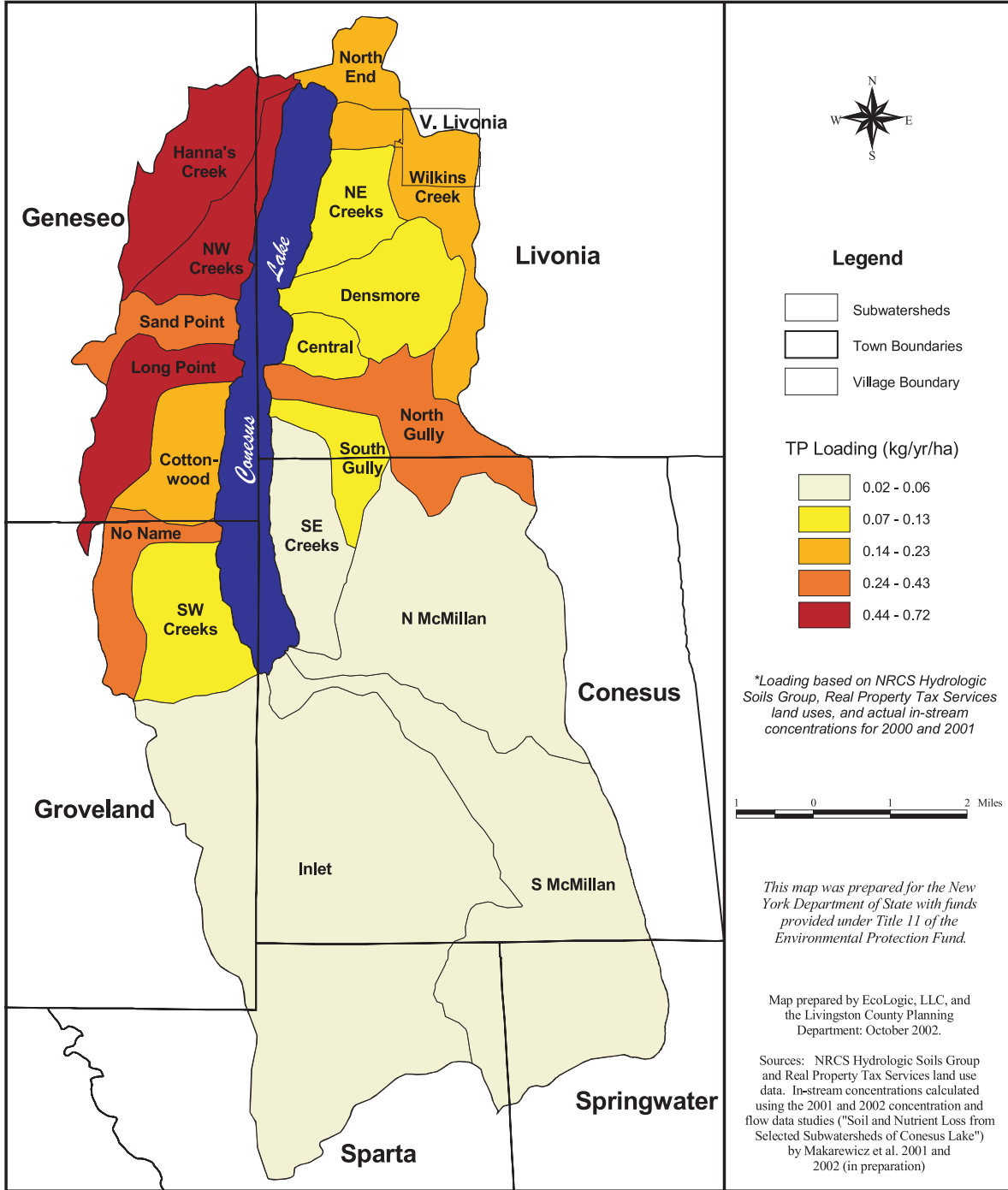
Table 4-1
Summary Of Subwatershed Priorities

Condition and Priority	Subwatersheds
High Priority Elevated unit loading of phosphorus and suspended sediments; localized effect on Conesus Lake	Northwest Creeks, North Gully, Long Point Gully, Sand Point, No Name Creek, Cottonwood, and Central
Moderate Priority Low to moderate unit loading, but large flow volume contributes substantial percent of total annual loading to Conesus Lake	Inlet, North McMillan, South McMillan
Moderate Priority High unit loading, but enters Conesus Lake outlet. Limited impact on lake-wide water quality conditions.	Hanna’s Creek
Low Priority Moderate unit loading, low potential for localized or lakewide impact	Densmore, Northwest Creeks, Wilkins, Northeast Creeks, North End, South Gully
Low Priority No documented problems, low potential for localized or lakewide water quality impacts	Southeast Creeks

**Map 4-1
Conesus Lake Subwatersheds Annual TSS Loading per Hectare**



**Map 4-2
Conesus Lake Subwatersheds Annual TP Loading per Hectare**



Conesus Lake

CHAPTER 5 RECOMMENDED ACTIONS

5.1 *Introduction*

The Conesus Lake Watershed Management Plan includes recommendations for actions by a myriad of private and public interests, including landowners, local government, agricultural producers, highway departments, educators, and others. Just as the lake's problems are not the result of a single action or entity, solutions must be embraced by the entire community. Specific actions are presented in this chapter.

The plan includes structural solutions such as constructing sewer lines in areas that are not presently served with this utility. Other solutions are regulatory in nature, such as the recommendation that watershed municipalities adopt an erosion and sediment control law for new construction. Many of the recommended measures are voluntary. The category of whole farm planning is an example of voluntary measures; each producer identifies cost-effective improvements targeted for their individual farm. Public education is a non-regulatory approach that threads through many of the recommended actions.

During the characterization phase, existing data were compiled and reviewed to assess the major types of pollutants entering the lake, and to determine the primary sources. Findings of this analysis formed the basis for the recommendations that comprise this management plan. For example, sediment was identified as a primary pollutant of Conesus Lake. Multiple sources of sediment to the lake were identified through land use analysis, stream sampling, inventory of roadbanks and streambanks, and public input.

Taken together, the recommended actions address the sources of pollution to the lake. Clearly, each source has its own unique strategy for control. An important consideration in controlling nonpoint sources of pollution is the need to select or design solutions based on the nature of specific sites. For example, sediment loss during construction can be minimized through a regulatory process that requires implementation of well-designed, site-specific erosion and sedimentation control measures. In a similar manner, the appropriate remediation of a section of eroding streambank depends to a significant extent on geology and soils coupled with the physical nature of the stream channel.

Measures to reduce sediment loss from agricultural land uses are also site-specific, as they depend on land availability, cropping rotation, and other practices. Two different strategies can be used. The first, and most desirable, approach is to implement practices on the agricultural field to prevent erosion and sediment transport. The second approach is to route runoff from fields through vegetated areas or engineered structures designed to slow the velocity of the runoff and allow sediment to settle. Similar to the other sources of sediment, site conditions in agricultural areas ultimately dictate the appropriate combination of practices for any given situation.

There are a number of in-lake measures that have the potential to help restore and enhance recreational usage of Conesus Lake. Harvesting aquatic weeds and alum treatment are examples of in-lake measures that have been used in other lakes to reduce the proliferation of algae and nuisance aquatic plants. These measures are considered a complement to the primary focus on controlling the sources of pollution within the watershed. They are not a replacement of the watershed measures; rather, the in-lake measures are viewed as a means of addressing aesthetic and recreational issues and accelerating the recovery of Conesus Lake.

One category of in-lake measures is biomanipulation, or using biological organisms to alter the lake's food web. Food web manipulation may be used to enhance grazing on algae, or reduce nutrient recycling. These are typically experimental approaches, with short history of success or failure. In Conesus Lake, proliferation of the alewife is a

contributing factor to the water quality degradation observed in recent decades (Makarewicz 2000). Efforts to reduce the alewife population in other regional lakes have focused on augmenting the population of walleye, a native species that will be a predator of alewife once it progresses through its early life stages.

One of the most important ways of gathering public support and cooperation is by educating watershed residents and keeping them informed of the steps being taken to protect and restore Conesus Lake. There are many instances in which public education is the primary tool to lead to changes in public attitudes and behavior that will ultimately protect the lake and the watershed. One example is preventing the introduction of exotic species into the lake; regulatory controls cannot be effective without full cooperation of the public. Public education must be carried out through every phase of the Plan and its implementation.

The Conesus Lake Watershed Management Plan is a “living document” that can grow and change as old issues are resolved and new issues are perceived. It is not a mandate but will serve as a guide to effective actions to protect and enhance the quality of the lake and watershed.

As the Plan is implemented, monitoring will continue to be an important means to track progress, refine understanding of priority areas, and assess the need for additional action or changes.

Recommended Actions

Specific recommendations are grouped into four categories:

1. CONTROLS ON LOADING FROM EXTERNAL (NONPOINT) SOURCES OF POLLUTION	19
A: Development	19
B: Agriculture	21
C: Stormwater management	26
D: Roadway maintenance	29
E: Recreational issue	34
2. WATER SUPPLY AND WASTEWATER IMPROVEMENTS	39
F: Water supply and wastewater permits and infrastructure	39
3. IN-LAKE MEASURES TO IMPROVE WATER QUALITY, RECREATIONAL USE, AESTHETIC QUALITY, AND ECOSYSTEM FUNCTIONING	42
G: In-lake measures to control weeds and algae	42
4. MONITORING AND ASSESSMENT	49
H: Coordinated monitoring efforts and annual reporting	49

5.2 Recommended Actions

These specific recommendations were developed through an iterative process that identified problems and potential solutions. The solutions range from regulatory changes (e.g. revisions to local zoning laws), to structural solutions (e.g. extending public sewers into new areas), institutional controls (e.g. changes in how agencies interact), to public education and outreach measures to enhance understanding of the impacts of land use on water quality. Recommendations are grouped by category and assigned a priority. Priorities were originally assigned by the four CLWMP workgroups and the Agricultural Committee, and later modified by the Planning and Policy Committees. They are based on the perceived effectiveness of the action recommended, its cost, feasibility, and anticipated public acceptance.

CATEGORY 1: CONTROLS ON LOADING FROM EXTERNAL (NONPOINT) SOURCES OF POLLUTION

A. DEVELOPMENT ISSUES

Recommendation A-1. Review and amend zoning regulations to improve consistency in near-lake areas and address specific water quality related concerns in the watershed. Specific changes are needed in four areas:

- Limit impervious cover
- Establish riparian setbacks or buffer strips for non-agricultural parcels
- Protect critical environmental areas
- Establish cluster development regulations with strict stormwater management requirements

Priority: High

Summary

This recommendation focuses on local land use laws as a tool to guide development in ways that protect water resources and critical environmental areas. It calls for municipal boards to review existing laws and amend as needed for the protection of the lake and its watershed. Changes to existing laws and proposed new laws would have to be adopted by the affected municipalities. Watershed municipalities should work together to achieve some consistency in zoning laws. State funds have been allocated towards this task.

Benefits to Conesus Lake

Reduction in sediment loss from the landscape and from eroding streambanks. Reduces direct runoff from impervious surfaces and development activities.



Conesus Lake is ringed by residential development.

PHOTO: PETER D'AIUTO; PILOT: JIM RAFFA

Implementation Strategy

In 2002, the New York State Department of State awarded a project directed at improving local land use laws related to nonpoint source pollution. Three watershed areas: Cayuga, Canandaigua and Conesus Lakes, are included in the program. The Genesee/Finger Lakes Regional Planning Council will manage the project. With professional assistance provided through the grant funding, watershed municipalities will undertake a detailed review of existing land use laws, including guidelines for impervious cover in riparian areas, and make

changes as needed. The G/FLRPC will work in partnership with the Livingston County Planning Department and local municipalities to strengthen local laws to help control nonpoint source pollution.

Decision makers and involved agencies

Decision makers: Municipalities (Town and Village Boards)

Involved: Livingston County Planning Department, New York Department of State, Genesee/Finger Lakes Regional Planning Council

Measures and Targets

All watershed municipalities review and modify land use laws by December 2004.

Cost

With professional assistance, this task could cost the watershed municipalities a combined estimate of \$80,000 - \$100,000. Resources are available for this task through a grant from the New York State Department of State.

Recommendation A-2. Adopt local sediment and erosion control laws based on the CLWMP Model Erosion and Sediment Control Law

Priority: Medium

Summary

Sediment has been identified as one of the major pollutants of Conesus Lake. Sediment is both a direct pollutant and a vector for delivering other pollutants to waterways. Construction activities are an important potential source of sediment, as vegetation is removed and topography is altered. The CLWMP Policy Committee has endorsed a model Erosion and Sediment Control Law (Appendix 4) designed to limit soil loss and protect area lakes and streams.

Benefits to Conesus Lake

Reduction in sediment input will improve water clarity, reduce the transport of other pollutants (including phosphorus) into the lake, and help limit the habitat for aquatic weeds in nearshore areas.

Implementation Strategy

Watershed municipalities are the focus of this recommendation, as local laws need to be amended to include the model law, or a modified version that reflects local issues. The Planning Department will make presentations to Municipal Boards and provide technical assistance with code revisions upon request. The Planning Department will provide training to municipal Boards and Code Enforcement Officers.

Lead agency and involved agencies

Lead: Municipalities (Town and Village Boards)

Involved: Livingston County Planning Department, Conesus Lake Watershed Inspector

Measures and Targets

All watershed municipalities to have adopted an Erosion and Sediment Control Law by December 2003.

Cost

Costs associated with additional erosion control would accrue primarily to developers and builders. Some additional workload for municipal Code Enforcement Officers and the Conesus Lake Watershed Inspector is anticipated, which will affect municipal budgets.

Recommendation A-3. Develop public education campaigns (or promote if existing) to include, but not be limited to, the following:

- Encourage planting and protection of streamside vegetation
- Discourage use of herbicides, pesticides, and fertilizers on shoreline properties
- Erosion control and lake-friendly landscaping

Priority: Medium

Summary

Public education is an important tool for promoting land use practices by individual landowners that are protective of the environment. Many agencies and groups have produced materials of exceptional quality that may be tailored to describe actions needed to protect Conesus Lake and its watershed.

Benefits to Conesus Lake

Reduction in the impacts of residential activities on water resources.

Implementation Strategy

Include in work plan of Public Education and Outreach Committee (committee of Watershed Council).

Lead agency and involved agencies

Lead: Public Education and Outreach Committee

Involved: Conesus Lake Association, Cornell Cooperative Extension, Conesus Lake Watershed Inspector

Measures and Targets

Two public education and outreach events or products each year.

Cost

Estimated \$1,500 per year. State, federal, or private grants may be available for this task.

B. AGRICULTURE

(See Appendix 7 for additional information regarding technical support and regulatory programs related to agriculture)

As stated in Chapter 2, the Conesus Lake Watershed Management Plan recognizes the value of high quality agricultural practices in meeting its goals. The Plan seeks to promote the viability of agriculture and best management practices in land use. Agriculture is a dominant land use in the Conesus Lake watershed. Approximately 42% of the direct drainage is in active agricultural usage. Most of the active agricultural lands in the watershed are dedicated to field crop production. Dairy is the predominant livestock operation.

The primary agricultural nonpoint source pollutants are nutrients, sediment, animal wastes, and pesticides. Agricultural activities also have the potential to directly impact the habitat of aquatic species through physical disturbances caused by livestock or equipment, or through the management of water. A major focus of the Watershed Management Plan is to identify effective measures for reducing the adverse impacts of agriculture on the environment while preserving the viability of agriculture.

Effective measures to reduce the potential for water pollution from agriculture are highly site-specific; they depend on a farm's size, location, topography, number and type of livestock, cropping practices, and a host of other factors that make each farm unique. Because there is not a single blueprint that works for each farm, effective measures are cumulatively referred to as "Best Management Practices" (BMPs). These measures may be operational, vegetative, or structural.

Operational practices are those involving changes in farm management, for example, managing fertilizer application or manure disposal. Vegetative practices increase the amount of woody and/or herbaceous vegetation on a field or site subject to erosion. Examples of vegetative practices include permanent vegetative cover and filter strips. Finally, structural practices typically require some level of engineering design. Structural solutions are most often used to control surface runoff, the primary transporter of most agricultural pollutants. These BMPs may be installed on the landscape (for example, terracing) or in the barnyard to reduce the potential for surface runoff to transport pollutants off-site. Some practices have elements of both structural and vegetative solutions, for example using a constructed wetland to impound surface runoff and reduce sediment and nutrient levels.

There is a well-developed network of technical assistance and financial support available to help farmers select and implement site-specific BMPs. Agricultural Environmental Management (AEM) is a federal government program to assist farmers in identifying environmental issues on their farms and implementing measures to maintain their economic viability while simultaneously protecting natural resources. Farmers voluntarily enter into these partnerships and remain the primary decision-maker throughout the AEM process. The AEM program focuses on helping farmers comply with federal, state and local regulations relating to water quality and other environmental concerns. The NRCS and County Soil and Water Conservation Districts coordinate the program.

Participants in the AEM program progress through a series of assessment and planning activities called tiers. Producers complete a survey as part of Tier 1; the survey includes questions regarding current farm activities, future activities or plans, and areas of possible environmental concerns. If warranted, Tier 2 details these areas of possible environmental concerns through completion of a worksheet. Local agricultural agencies typically provide technical assistance with the worksheet, which is used to assess the need for a management plan to address the environmental concerns. Tier 3 is the actual development of a site-specific management plan. The plan considers economic as well as environmental challenges facing the producer. Waste management, nutrient management, and conservation plans are typical components of the Tier 3 whole farm plans. Tier 4 is the implementation of the plan; best management practices are put in place to reduce nonpoint source pollution. Agricultural agency staff provides technical, educational, and financial support to farmers in their efforts to implement the management plans. Tier 5 is an on-going evaluation of the AEM program at the farm, watershed, county, and state level to assess the impacts of farming on the environment and the impacts of the AEM program on the economic viability of agriculture.

The AEM program also addresses Animal Feeding Operations (AFOs). AFOs are agricultural operations where animals are raised and maintained in confined areas for 45 days or more in any 12-month period and where crops, vegetation, or other forage growths are not sustained over any portion of the lot or facility in a normal growing season. AFOs contribute to pollution through the transport of nutrients, pathogens, sediment, feed additives and other harmful substances to water bodies.

AFOs are considered Concentrated Animal Feeding Operations (CAFOs) if the number of animal units exceeds certain thresholds, and/or the facility directly discharges into a waterbody or through the confinement area via a manufactured conveyance. CAFOs are considered point sources of pollution and are regulated under the federal Clean Water Act through a permit process administered by NYSDEC. There is a phased reduction in the size of operation subject to the CAFO regulations; by 2008 livestock operations of any size will be required to obtain a permit. Key to the permit is a Comprehensive Nutrient Management Plan that meets state and federal standards.



Agriculture is an important use of land in the Conesus Lake watershed.
PHOTO: ADRIAN "BUD" PRINCE

The Environmental Quality Incentives Program (EQIP) is a USDA-NRCS initiative authorized by the 1996 Farm Bill that provides farmers with technical, financial, and educational assistance to address soil, water, and natural resource concerns in an environmentally beneficial and cost-effective manner. A conservation plan is required to receive EQIP funding. EQIP addresses natural resource concerns through the implementation of structural, vegetative, and land use practices such as manure management facilities, abandoned well capping, tree planting, filter strips, nutrient, pest, and grazing management, and wildlife habitat protection and enhancement. Agricultural producers enter into five- to ten-year contracts with federal funding limited to \$10,000 per year with a maximum of \$50,000 for the total contract.

Regulations affecting agricultural practices are the jurisdiction of the USDA and NYSDEC. The recommendations in this plan are meant to help agricultural producers comply with existing regulations and make it possible for them to implement voluntary practices that would otherwise not be economically feasible.

Recommendation B-1. Secure funding to help mitigate the financial impacts of changes in agricultural practices on the producers.

Priority: High

Summary

Soil conservation and land stewardship are important values of the agricultural community. Financial limitations, however, can prevent producers from implementing effective Best Management Practices (BMPs) designed to reduce pollution. This recommendation focuses on removing the financial barriers.

Benefits to Conesus Lake

Helping farmers locate funding sources may improve the cost-benefit analysis for their individual situation. These practices will collectively benefit Conesus Lake by reducing active and potential sources of pollution to the lake and its tributaries, and by helping to preserve farming as a way of life in its watershed.

Implementation Strategy

- Potential funding sources include federal, state, and local programs. Private foundations are also a potential source of funds. Some specific programs are noted below; however, this list is not all-inclusive. Other programs exist and should be actively pursued.
- Actively investigate and promote applications for cost-sharing through Farm Service Agency's Continuous Conservation Reserve Program for installation of riparian buffers, filter strips, grassed waterways, contour grass-strips and living snow fences. Also, consider applications to this program to install fencing, and to provide crossings and watering facilities, including pipelines.
- Utilize the resources of Seneca Trails Resource Conservation & Development Council to identify potential sources of funds from private and public entities and to assist with preparing applications.
- Investigate funding sources to create a zero-interest revolving loan fund for producers to help offset the farmer's share of the costs for implementing best management practices.
- Support research and/or demonstration activities in the watershed that provide cost sharing or direct funding to producers to implement best management practices. An example is the 2002 USDA grant awarded to Professor Joseph Makarewicz of SUNY Brockport and others for implementing agricultural BMPs in target subwatersheds and documenting their effectiveness.
- The NYS Department of Agriculture and Markets administers funds through the NYS Agricultural Nonpoint Source Abatement and Control Program (section 319 funds). Conesus Lake may rank among the top priorities statewide for these funds, given the lake's placement on the 303(d) list.
- The Finger Lakes-Lake Ontario Watershed Protection Alliance, through the Livingston County CLAWS Program, has historically provided funds to support some SWCD activities (e.g. hydroseeding and upland agricultural programs). If this program continues, there may be an opportunity to direct some funds to implementing specific agricultural activities, particularly public outreach efforts that benefit multiple producers.

Lead agency and involved agencies

Lead: Livingston County Soil and Water Conservation District, Natural Resources Conservation Service, Agricultural Committee to Watershed Council

Involved: Farm Service Agency, Cornell Cooperative Extension, Seneca Trails Resource Conservation & Development Council, USDA, Livingston County Planning Department

Measures and Targets

Goal is to bring in enough funding to achieve the following levels of participation by 2005, for sources of nonpoint source pollutants from agricultural operations:

- 70 % will complete AEM Tier 1 (self-assessment survey)
- 40 % will complete AEM Tier 2 (technical worksheet)

- 20% will complete AEM Tier 3 (develop management plans)
- 20% will complete AEM Tier 4 (implementation of BMPs)

An assessment survey (AEM Tier 5) will be used to reevaluate these goals for 2010.

Agricultural agencies (SWCD, FSA, CCE and others) working with farmers on the implementation of the AEM program must target significant sources of pollution first. This is part of the requirements of the program, and funding is contingent upon this.

Cost

Variable, depending on participation and specific practices. Possible sources of funding are listed as part of this recommendation.

Recommendation B-2. Implement practices that will reduce nonpoint source pollution from farms. Agricultural practices designed to reduce the input of sediment, nutrients, pathogens, pesticides, and other potential pollutants to Conesus Lake should be selected and implemented through the Agricultural Environmental Management (AEM) framework of whole farm planning.

Priority: High

Summary

The whole farm planning approach is a voluntary effort of individual producers to identify practical, cost-effective, and environmentally sound practices for their farms. The planning is done with technical input and support of agricultural agencies and/or certified planners.

Some examples of Best Management Practices that could reduce the input of pollutants to Conesus Lake, the tributary streams, and local groundwater include, but are not limited to, the following:

- Create and maintain riparian buffers on agricultural land bordering streams and rivulets. Ownership of buffer areas could either remain with the agricultural producer or be acquired by another party by easement or by fee simple.
- Prepare a Comprehensive Nutrient Management Plan in accordance with NRCS Standard 312 to properly manage wastes. {Note that these plans will eventually be required for all livestock producers under the CAFO regulations regardless of herd size.}
- Install vegetated filter strips (edge of field solutions) where appropriate.
- Implement contour strip cropping, conservation tillage, terracing, living snow fences, and/or critical area planting (on-field solutions) where appropriate.
- Promote the practice of managed intensive grazing (rotational grazing) where practical.
- Install fencing to keep livestock out of streams. Provide alternate water supplies when needed.
- Restore streambank (including rivulet) segments with severe erosion.

Benefits to Conesus Lake

Agricultural activities have the potential to contribute sediment and other pollutants to surface waters and groundwater. By supporting the implementation of programs designed to control agricultural sources of pollution, the load of pollutants into Conesus Lake will be reduced without the need for additional local regulations.

Implementation Strategy

Because the AEM program and whole farm planning are voluntary programs with incentives, the implementation strategy focuses on encouraging enrollment and identifying funding sources to mitigate the financial impacts.

Lead agency and involved agencies

Lead: Livingston County Soil and Water Conservation District, Natural Resources Conservation Service

Involved: Farm Service Agency, Cornell Cooperative Extension

Measures and Targets

Goal is 70 % of watershed farm participation in the AEM program (Tiers 1-5) by 2005.

Cost

Variable, depending on individual producers and which BMPs are appropriate. Possible funding sources are outlined as part of Recommendation B-1.

Recommendation B-3. Develop and implement programs and partnerships to facilitate removal of waste materials from farms.

Priority: High

Summary

Accumulated waste materials pose a risk of eventual loss to the environment. The members of the Agricultural Committee identified a gap in existing programs designed to facilitate waste removal. Specific needs include obsolete/canceled use pesticides, waste oil, and plastic.

Benefits to Conesus Lake

Waste material from farms can range from harmless to hazardous. Actively promoting hazardous waste collection programs for agricultural waste is a way to control potential sources of pollution to the lake and its tributaries.

Implementation Strategy

- Publicize hazardous waste collection days and encourage agricultural producers to discard obsolete/canceled use pesticides using the "Agricultural Clean Sweep" model. Note – Farm Pesticide Collection is organized by the GLOW (Genesee-Livingston-Orleans-Wyoming) Region Solid Waste Management Committee every few years. Most distributors of agricultural chemicals will collect unused products that have been retired from the market.
- Promote a program for collection of waste oils from farms.
- Promote a program for collection of agricultural plastic from farms.

Lead agency and involved agencies

Lead: GLOW (Genesee, Livingston, Orleans, Wyoming region solid waste committee)

Involved: Agricultural Committee to Watershed Council, Cornell Cooperative Extension

Measures and Targets

Programs underway by 2005.

Cost

Expected to be low, assuming that distributors will collect pesticide products. Operation Clean Sweep has received EPA funding.

Recommendation B-4. Develop programs for public education and outreach for both the agricultural and the non-agricultural community.

Priority: High

Summary

The agricultural community in the Conesus Lake watershed plays an important role in the area's economic and social fabric. However, there is a need to improve communication between the agricultural and non-agricultural sectors of the watershed. This recommendation is an effort to bridge the communication gap and promote cooperation between all watershed residents.

Benefits to Conesus Lake

A successful watershed management plan depends heavily on the involvement of all watershed residents and visitors, alike. The management plan is more likely to succeed by promoting communication and cooperation.

Implementation Strategy

- Develop educational materials (brochure, fact sheet, video) describing the environmental actions in place and/or underway by farmers in the watershed.
- Recognize lake-friendly farming practices and give credit to producers who show exceptional stewardship of natural resources.
- Incorporate agricultural environmental protection modules into regional Conservation Field Days, Career Awareness Day, and Envirothon activities.
- Repeat the successful bus tour of agricultural operations in collaboration with the Chamber of Commerce.

Lead agency and involved agencies

Lead: Cornell Cooperative Extension

Involved: Public Education and Outreach Committee, Agricultural Committee, Livingston County Chamber of Commerce, Conesus Lake Watershed Inspector

Measures and Targets

Two new outreach efforts each year from 2003 – 2008.

Cost

Estimated annual cost: \$2,000. State, federal, or private grants may be available for this task.

Recommendation B-5. Recruit additional agricultural producers to serve on an advisory committee during the implementation phase of the Conesus Lake Watershed Management Plan.

Priority: High

Summary

Agriculture is a major industry in the Conesus Lake watershed. It is important that agricultural producers are represented during the implementation phase of the management plan. Their needs, worries, and problems can only be conveyed accurately by other farmers.

Benefits to Conesus Lake

Having farmers in an advisory role will help during the plan implementation by promoting good communication and encouraging active participation of agricultural producers.

Implementation Strategy

Create an agricultural advisory committee to report to the Watershed Council.

Lead agency and involved agencies

Lead: Watershed Council

Involved: Livingston County Planning Department

Measures and Targets

Creation of the Committee within 2 months of creation of the Watershed Council, first meeting within 4 months. Goal is to have representation by one active agricultural producer from each municipality in the watershed on the committee.

Cost

Staff time of agencies, volunteer time of producers.

C. STORMWATER MANAGEMENT**Recommendation C-1. Develop and implement program to restore and stabilize streambanks in the watershed.**

Priority: High

Summary

Streambank erosion is a major source of sediment to the lake. Banks that are unstable or denuded of vegetation must be stabilized and re-vegetated to prevent further erosion. Vegetation planted along waterways (riparian buffers) serves both to stabilize the bank and to capture any sediment carried with storm runoff.

Benefits to Conesus Lake

Streambank erosion is a significant source of sediment to Conesus Lake and its tributary streams. Sediment is both a pollutant of concern and a means of transporting other contaminants, such as phosphorus, metals, and pesticides, to water resources. This recommendation is meant to reduce one source of sediment into Conesus Lake.

Implementation Strategy

Streambanks throughout the watershed have been surveyed as part of this effort to develop a management plan. Priority areas have been designated and are described in Appendix 5. Next steps include:

- Identifying affected landowners, discussing alternatives, and asking for their participation.
- Developing detailed plans and cost estimates for target areas.
- Identifying and securing funding.

Lead agency and involved agencies

Lead: Soil and Water Conservation District, County and Town highway departments.

Involved: Conesus Lake Watershed Inspector, Livingston County Planning Department, NYSDEC, US Forest Service, USDA.

Measures and Targets

Restoration of at least one mile of stream segment per year, until 2013. (Note: Restoration is a costly effort, and all sources of funding assistance should be investigated. Many grants have a long application process that can take up to one year to complete. Therefore, the timing for this recommendation will change depending on the availability of funds.)

Cost

Estimates range from \$30 to \$100 or more per linear foot. Cost is dependent on type and extent of restoration needed, ease of access, property owner participation, and other factors. Funding for this recommendation would depend on outside grants and local cost-sharing options.

Priority Stream Segments (Map 5-1)

As displayed on Map 5-1, there are 17 stream segments classified as exhibiting a high potential for erosion. Six of these are in the subwatershed of North McMillan Creek, three in South McMillan, and two are within the North Gully subwatershed. Six other subwatersheds each had one site with high streambank erosion: Wilkins Creek, Southwest Creeks, Inlet, No Name Creek, South Gully, and Northwest Creek.

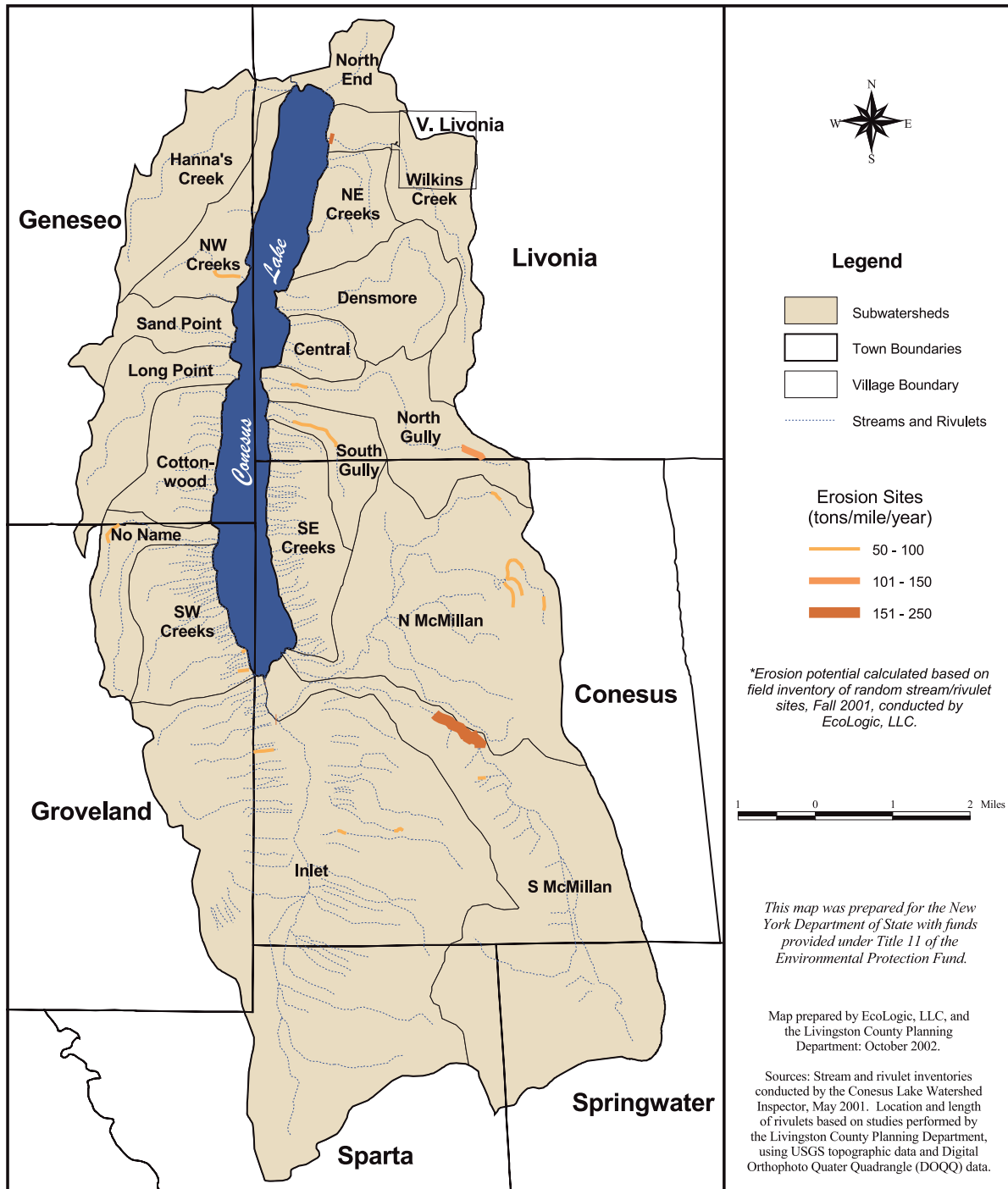
Recommendation C-2. Identify and develop sites for regional stormwater treatment areas in cooperation with NYSDEC and other stakeholders.

Priority: Low

Summary

Regional stormwater treatment areas are designed to capture a target volume of runoff from storms; for example, facilities may be sized to capture the first inch of runoff from a storm of a given intensity and return frequency. Treatment areas can be created wetlands, settling basins, or other structures. The velocity of stormwater runoff is reduced, thus allowing sediments to settle out before stormwater water reaches the surface water network leading to Conesus Lake. These facilities require periodic maintenance to maintain their effectiveness. Regional storm-

Map 5-1: Conesus Lake Watershed Stream and Rivulet Erosion Potential



water treatment areas require a large area of fairly flat land, which limits the feasibility of this alternative in many of the subwatersheds due to their small size and steep topography.

Benefits to Conesus Lake

A regional stormwater retention facility would reduce transport of sediments and associated pollutants, such as nutrients and pesticides, into the streams and lake.

Implementation Strategy

- Monitoring to identify subwatersheds contributing excessive sediment (completed).
- Field reconnaissance to identify candidate locations and feasible solutions.
- Preliminary design and cost estimate.
- Identify partners and funding source.
- Construction, followed by long-term maintenance.

Lead agency and involved agencies

Lead: NYSDEC Region 8

Involved: Livingston County Planning Department, US Army Corps of Engineers, Municipalities

Measures and Targets

One facility site identified by December 2004; facility completed by December 2006.

Cost

Depends on required size, type, and location. Funding for this recommendation would depend on outside grants and local cost-sharing options.

D. ROADWAY MAINTENANCE

Recommendation D-1. Provide training on erosion control practices for Municipal highway departments to support compliance with state and federal Phase II Storm Water Regulations.

Priority: High

Summary

State and federal Phase II Storm Water Regulations became effective in March, 2003. These regulations reduce the minimum size of a disturbed area to be regulated (from 5 to 1 acres), and remove the municipal exemption. Consequently, activities of highway departments will require compliance with more stringent erosion controls. Municipal highway department personnel will need additional training in order to comply.

Benefits to Conesus Lake

Reduced sediment loads from road ditch cleaning and maintenance work.

Implementation Strategy

Several existing programs could provide technical support and training:

- New York State Department of Transportation (DOT)
- The Finger Lakes-Lake Ontario Watershed Protection Alliance (FL-LOWPA) has developed a training manual.
- Genesee Finger / Lakes Regional Planning Council (G/FLRPC) hosts a biannual Local Government Workshop that includes stormwater management issues.
- Cornell University Local Roads program

Lead agency and involved agencies

Lead: New York State Department of Transportation

Involved: Municipalities, Livingston County Highway Department, Livingston County Planning Department, G/FLRPC, NYSDEC, Conesus Lake Watershed Inspector

Measures and Targets

Manual provided to each municipality by February 2003. 25 % of municipal roadway personnel attend a workshop each year.

Cost

Costs include printing of manuals, workshop registration, and travel. Livingston County Planning Department is using CLAWS funds to purchase and distribute the manuals.

Recommendation D-2. 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. The goal is to have all road construction and maintenance activities subject to hydroseeding or other appropriate BMPs within three days.

Priority: Medium

Summary

Because of the short season for hydroseeding, the limited staff of the Soil and Water Conservation District (who currently do most of the hydroseeding in the watershed), and communication issues, ditches may remain bare for weeks. This can lead to sediment loss to surface drainage network and ultimately to Conesus Lake. Reseeding road ditches could be improved by careful scheduling, which would require improved communication, and by providing additional personnel to make the hydroseeding process more efficient. When reseeded is not practical due to weather constraints, other remediation practices should be implemented.

Benefits to Conesus Lake

Remediating ditches within the time frame specified in this recommendation will minimize the possibility of sediment loss from bare ditches, thus reducing the inflow of sediment to the lake.

Implementation Strategy

- Train road ditch crews in recommended methods for remediating ditches when hydroseeding is not practical.
- Develop communication protocol for use between highway departments and SWCD to improve communication/scheduling of ditch work & seeding.
- Prepare simple brochure summarizing communication protocol.
- Require the jurisdiction (Town, County, State) requesting hydroseeding to provide a driver. This will increase efficiency of the hydroseeding operation.
- Encourage use of any available hydroseeder for road work

Lead agency and involved agencies

Lead: New York State Department of Transportation, Livingston County Highway Department, municipal highway departments

Involved: Livingston County Soil and Water Conservation District, Conesus Lake Watershed Inspector

Measures and Targets

Goal is to implement appropriate BMPs (hydroseeding and others as appropriate) within 3 days of roadway construction or maintenance activities.

Cost

Municipal budgets and grants.

Recommendation D-3. Municipal highway departments should develop a plan, subject to available funding, to remediate ditches in poor condition.

Priority: Medium

Summary

As described in Appendix 5, an inventory of road ditches in the Conesus Lake watershed was conducted in May 2001 by volunteers trained by the Livingston County Planning Department. Staff from EcoLogic, LLC later surveyed a 20% random sample of those ditches to take measurements and calculate potential annual erosion. Ditches were ranked based on the potential erosion calculated. Those ditches found to have the greatest erosion potential should be given priority when scheduling ditch repair work in the affected municipalities.

Benefits to Conesus Lake

Road ditch erosion can be a significant source of sediment into Conesus Lake. Repairing ditches that are in poor condition and re-seeding immediately afterwards can reduce the amount of sediment loss.

Implementation Strategy

- Field visits to confirm target areas and define priorities for each jurisdiction.
- Detailed engineering assessment of potential solutions.
- Identify funding and partners.
- Negotiate right-of-way issues, as needed.

Lead agency and involved agencies

Lead: New York State Department of Transportation, Livingston County Highway Department, municipal highway departments

Involved: Livingston County Soil and Water Conservation District, Conesus Lake Watershed Inspector

Measures and Targets

Remediation of at least 1 mile per year from 2004 to 2008. (Note: Because of the high cost of this effort, remediation work will likely require outside funding. Most grants have a long application process that can take up to one year to complete. Therefore, the schedule for this recommendation may change depending on the availability of funds.)

Cost

Average cost for repairs, including labor, equipment, and materials, is about \$3,600 per 100 linear feet (based on estimates submitted by Livingston County Highway Department, 2002). Final costs depend on site-specific conditions. Funding sources include state, county and municipal highway budgets, supplemented with outside funds as available.

Priority Roadway Segments (Map 5-2)

As described in Appendix 5 and displayed on Map 5-2, roadway surveys have been completed in the watershed to pinpoint specific areas in need of restoration and protection. The ten sites with the highest potential erosion are identified below. The type of road and its municipality are identified in brackets.

1. Conesus-Sparta Townline Road [Town Road, Sparta] west of Stagecoach intersection, south side of road.
2. Logan Road [Town Road, Sparta] west side of road, just before reaching top of first hill from Scottsburg Road.
3. Bulldog Blvd [Private Road, Livonia] all around. (Road was under construction when surveyed and might have been seeded already.)
4. Sparta-Springwater Townline Road [Town/seasonal Road, Sparta] west side just south of intersection with Kelleman Road/ Conesus-Sparta Townline Road.
5. Logan Road [Town Road, Sparta] just south of intersection with Scottsburg Road, on east side of road.
6. Lakeville-Groveland Road [County Highway, Geneseo] between Gray and Reservoir Roads, west side of road.
7. Sheppard Road [Town Road, Sparta] straight section between 1st and 2nd curves as per Map 5-2, both sides of road.
8. Dugway Road [Town Road, Conesus] just before Partridge Corners Road, south side of road.
9. Reeds Corners Road [Town Road, Sparta] north of intersection with Liberty Pole Road, west side of road.
10. Pennemite Road [Town Road, Livonia] just south of intersection with Cleary Road, west side of road.

Recommendation D-4. 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.

Priority: Low

Summary

Chloride and sodium concentrations in Conesus Lake have been increasing for decades as the watershed developed. Winter deicing practices are a major factor contributing to the increased concentrations of chloride and sodium. Computer controlled materials spreaders ensure a uniform application of deicing materials on the roads and can reduce the amount of chemicals and sand used during the winter as compares to manually-controlled application.

Benefits to Conesus Lake

Control and ultimately reduce the input of sodium and chloride into the lake.

Implementation Strategy

This recommendation is targeted to County and municipal highway departments; the State already employs this technology.

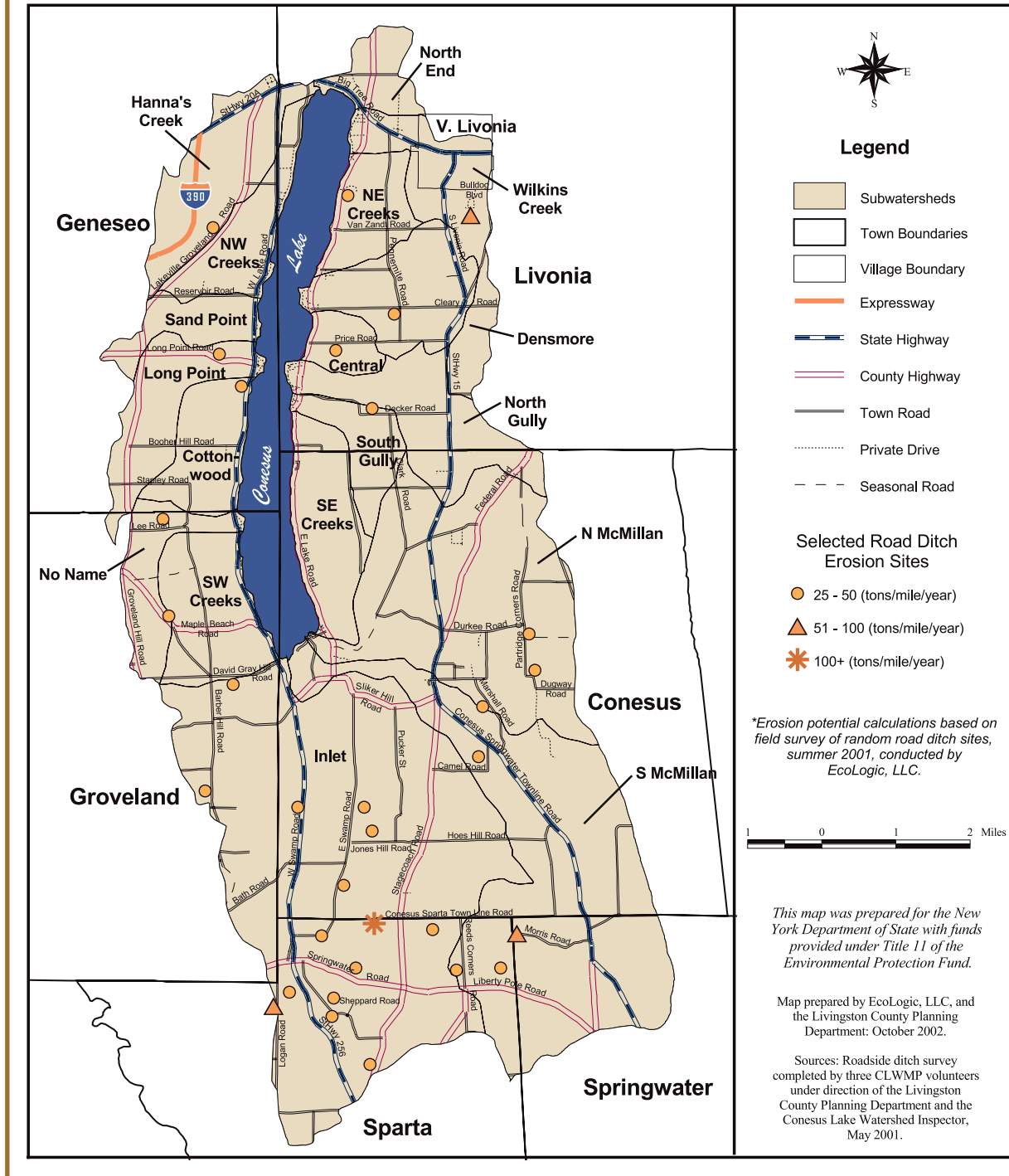
- Inventory equipment types
- As existing equipment is upgraded or replaced, install new technology
- Train staff

Lead agency and involved agencies

Lead: Livingston County Highway Department, municipal highway departments

Involved: New York State Department of Transportation

Map 5-2: Conesus Lake Watershed Road Ditch Erosion Potential



Measures and Targets

- Reduce total salt loading by 10 % from 2001-2002 baseline conditions.
- 50 % of fleet to be equipped with these devices by winter 2005.

Cost

Municipal budgets and possible grants. The computer-based spreading devices cost approximately \$1,200 per truck. The capital cost of the equipment may be recovered by Towns that contract with DOT to maintain state roads (training and maintenance costs are not included).

Recommendation D-5. Develop and promote public education campaigns for the following:

- Sensible winter driving
- Why and when are road ditches cleaned
- Need to keep yard debris and trash out of road ditches

Priority: Low

Summary

Watershed residents and the driving public will be affected by changes in salting practices, as reductions may affect safe winter driving practices. There is a need to improve public awareness of the relationship between keeping ditches clear and the safe flow of water from road surfaces.

Benefits to Conesus Lake

Cooperation with the proposed recommendations is crucial for the success of this management plan. People in the watershed need to be aware of and understand the reasons for (and possible consequences of) changing deicing practices, ditch maintenance, and other road related recommendations.

Implementation Strategy

The Public Education and Outreach Committee of the Watershed Council should develop or adapt appropriate public information materials. For example, Monroe County has a brochure on winter driving.

Lead agency and involved agencies

Lead: Public Education and Outreach Committee of the Watershed Council

Involved: Livingston County Highway Department, municipal highway departments, Livingston County Planning Department, Conesus Lake Watershed Inspector

Measures and Targets

One new public information or education product per year.

Cost

Estimated at \$1,500 per year. State, federal, or private grants may be available for this task.

E. RECREATIONAL ISSUES

Recommendation E-1. Three interrelated recommendations concerning toilet facilities on boats:

- Allow boats with permanently fixed, self-contained toilets with no overboard discharge mechanisms to operate on Conesus Lake.
- Install pumpout facilities for boats in areas with easy access.
- Allow marine sanitation devices, i.e. porta-potties. on boats.

Priority: High

Summary

To ensure the purity of Conesus Lake as a water supply, watershed rules regulate the types of toilets that can be used on boats. The current watershed rules and regulations prohibit sinks and toilets of any type on boats on Conesus Lake; the 1997 proposed revision to the watershed rules and regulations includes the following modification: "all vessel toilet facilities, other than permanently fixed self-contained toilet facilities are prohibited."

The Management Plan recommends allowing boats equipped with self-contained toilets with no overboard discharge to operate on Conesus Lake. This represents an environmentally sound, practical alternative for boaters who want to spend long hours on the lake without coming back to shore. Allowing porta-potties will encourage small boat users to dispose of the waste properly. Both options will require a strong public education campaign.

Benefits to Conesus Lake

If used properly, these two options would help prevent the introduction of human waste into Conesus Lake and the associated risk of exposure to pathogens.

Implementation Strategy

- Redraft watershed rules and regulations to reflect this change.
- Submit to New York State Department of Health (Albany) for approval.
- Following approval, publicize change in regulations through CLA newsletter, newspaper articles, and other means.
- For the pumpout facility, complete preliminary engineering, siting, and cost estimate.
- Identify funding for pumpout facility.
- Establish informational signs.

Lead agency and involved agencies

Lead: Livingston County Department of Health (watershed rules), Livingston County Water and Sewer Authority, New York State Office of Parks, Recreation and Historic Preservation, Town of Geneseo, Town of Livonia (pumpout station)

Involved: Livingston County Planning Department, Public Education and Outreach Committee, Conesus Lake Association, Towns of Conesus, Geneseo, Groveland, Sparta, Livonia; Villages of Avon and Geneseo.

Measures and Targets

- Draft revisions to watershed rules and regulations by June 2003
- Local endorsement of the revisions by December 2003 and forward to NYSDOH
- NYSDOH review and approve by December 2004
- Siting and design work, grant applications for pumpout facility by December 2004
- Pumpout facility operational by June 2005

Cost

Revising the watershed rules and regulations will require a commitment of staff time from the lead and involved agencies. A cost estimate will be developed for pumpout facility (estimated range less than \$20,000). Grants for construction of a pumpout facility are available through the Clean Vessel Act.

Recommendation E-2. Develop a public education campaign (or promote existing campaign, where applicable) including, but not limited to, the following issues:

- Effect of boat speed on weeds (creates weed-chop)
- Precautions to follow when discarding unused bait or transporting bait from one waterbody to another (exotic species introduction).

- Need to clean and inspect boat (body, bilge, coolant system, etc.) and trailer when transporting from one waterbody to another (exotic species introduction).
- Existing boat and personal watercraft laws.

Priority: High

Summary

Public education and outreach can be an effective means of guiding behavior. When residents and lake users understand the potential consequences of their actions, they are more likely to

behave in a manner that protects the environment. Public education is a tool to promote compliance with existing regulations and to encourage behaviors that will protect the lake and its watershed. (For more information on control of exotic species, see Recommendation G-1.)

Benefits to Conesus Lake

Reduced risk of introductions of invasive species, and reduced risk of disseminating plant fragments within the lake.

Implementation Strategy

Public Education and Outreach Committee of the Watershed Council to lead this effort.

Lead agency and involved agencies

Lead: Public Education and Outreach Committee of Watershed Council

Involved: Conesus Lake Association, FL-LOWPA, Livingston County Sheriff's Office, Navigation Patrol, Conesus Lake Watershed Inspector, US Coast Guard Auxiliary

Measures and Targets

Produce or adapt one type of information outreach annually.

Cost

Estimated at \$1,500 per year. State, federal, or private grants may be available for this task.



Boat trails through the weeds are clearly visible from above.

PHOTO: PETER D'AIUTO; PILOT: JIM RAFFA

Recommendation E-3. Continued enforcement of existing boat and personal watercraft laws.

Priority: High

Summary

Conesus Lake is often cited as the Finger Lake with the best enforcement of boating laws. It is important that this high level of enforcement continues. This strategy supports the work being done by the Livingston County Sheriff's Office Marine Patrol.

Benefits to Conesus Lake

Enforcement of boating and personal watercraft laws makes the lake safer and more attractive for recreational use. It also ensures that the resource is protected against illegal discharges and misuse.

Implementation Strategy

Continue to support the actions of the Sheriff's Office, Navigation Patrol.

Lead agency and involved agencies

Lead: Livingston County Sheriff's Office Navigation Patrol

Involved: Municipalities, Conesus Lake Association

Measures and Targets

Track number of complaints and enforcement actions each year.

Cost

No additional cost is associated with this recommendation.

Recommendation E-4. 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.

Priority: Medium

Summary

Lakeshore residents who wish to have more boat slips on their dock than is permitted by right in the Town dock laws (triggering the need for a Special Use Permit) would be required to provide 24-hour access to toilet facilities as a condition of the permit.

Benefits to Conesus Lake

It is the intent of this recommendation to minimize the risk of human waste entering the lake by providing alternatives to boaters. Untreated human waste is a source of pathogens and nutrients, and is aesthetically unacceptable for recreational users of the lake.

Implementation Strategy

Each of the four shoreline municipalities should review their dock laws and requirements for granting Special Use Permits. Modifications to the procedures and requirements may be needed.

Lead agency and involved agencies

Lead: Town of Geneseo, Town of Livonia, Town of Groveland, Town of Conesus

Involved: Livingston County Planning Department, Livingston County Department of Health

Measures and Targets

Review and modification to local land use laws, as appropriate, by December 2003.

Cost

Will accrue to affected homeowners whose docks require a Special Use Permit.

Recommendation E-5. 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.

Priority: Medium

Summary

This recommendation, together with the proposal to allow portable ice fishing shelters, will make the lake more attractive for ice fishing. It will also give winter users of the lake and watershed more options for disposing properly of human waste.

Benefits to Conesus Lake

Increasing the availability of restroom facilities during winter, especially during ice-fishing season, is expected to encourage lake users to properly dispose of human waste, which would help improve the microbiological purity of the lake.

Implementation Strategy

- Engineering evaluation and cost estimate
- Identify funding and potential partners
- Publicize availability of improved facilities.

Lead agency and involved agencies

Lead: New York State Office of Parks, Recreation, and Historic Preservation, Town of Geneseo

Involved: Livingston County Planning Department, Livingston County Water and Sewer Authority

Measures and Targets

Facilities winterized by winter 2004-2005.

Cost

To be determined, estimated at less than \$20,000. State, federal, or private grants may be available for this task

Recommendation E-6. Allow portable ice-fishing shelters (with one open side) for daily use on Conesus Lake

Priority: Low

Summary

Ice fishing used to be a popular sport in Conesus Lake. The decline in winter angling is related to the decline in the yellow perch population as well as a series of warm winters. This recommendation is targeted to making the lake more attractive for ice fishing while, at the same time, preventing the misuse of structures (for illegal waste discharge) and having abandoned structures on the lake during ice-off.

Benefits to Conesus Lake

This strategy is expected to slightly increase the number of winter anglers using Conesus Lake.

Implementation Strategy

This recommendation is not consistent with the proposed modifications to the watershed rules and regulations endorsed by Livingston County in 1997 that await review and approval by New York State Department of Health. Consequently, the implementation strategy reflects the approach and timetable outlined in Recommendation E-1, which also requires revision to the watershed rules and regulations.

Lead agency and involved agencies

Lead: Livingston County Department of Health

Involved: Livingston County Planning Department, Public Education and Outreach Committee, Conesus Lake Association, Towns of Conesus, Geneseo, Groveland, Sparta, Livonia; Villages of Avon and Geneseo.

Measures and Targets

- Draft revisions to watershed rules and regulations by June 2003
- Local endorsement of the revisions by December 2003 and forward to NYSDOH
- NYSDOH review and approve by December 2004
- Ice-fishing structures allowable by winter of 2004-2005

Cost

Revising the watershed rules and regulations will require a commitment of staff time.

CATEGORY 2: WATER SUPPLY AND WASTEWATER IMPROVEMENTS

F. WATER SUPPLY, WASTEWATER PERMITS AND INFRASTRUCTURE

Recommendation F-1. NYS Department of Conservation should review and update their 1994 safe yield allocation calculation for Conesus Lake, and make any necessary revisions to water allocations for public supply and wastewater dilution.

Priority: High

Summary

Based on a 1994 safe yield analysis, the water supply from Conesus Lake is over-allocated. This is currently not of immediate concern, because public water suppliers draw significantly below their permit limits and their ability to consistently draw at or near the permit limits is constrained by their physical facilities. However, future lake level management and economic development decisions should be made in context of a technically-sound yield analysis and appropriate permit limits. The 1994 safe yield analysis should be reviewed to ensure that the science behind this analysis is sound and in-line with the latest available information and technologies.

Benefits to Conesus Lake

Improved basis for managing multiple uses of the lake.

Implementation Strategy

- NYSDEC to review and modify (if needed) the safe yield analysis accounting for all uses (extractive, riparian, and others).
- The Army Corps of Engineers to review calculation and determine impacts (if any) on the rule curve governing lake level management.
- NYSDEC to revise water supply permits (if analysis demonstrates that this action is warranted)

Lead agency and involved agencies

Lead: New York State Department of Environmental Conservation

Involved: Army Corps of Engineers, Villages of Avon and Geneseo

Measures and Targets

- Revised analysis by December 2004
- Modified water supply permits (as needed) by December 2005

Cost

Staff cost of affected agencies.

Recommendation F-2. Extend sewer system to areas shown on Map 5-3: Current and Proposed Sanitary Sewer Service Area. Area of expansion to include: Dacula Shores, Conesus Hamlet, Scottsburg Hamlet, cove areas between Conesus Lake and West/East Lake Roads, along West Lake Road, and along East Lake Road

Priority: Medium

Summary

Development over the past 30 years has increased the density of housing and the risk that inadequately treated effluent from individual on-site systems may ultimately end up in the Lake. Contamination concerns from failing septic systems include nutrients (nitrogen and phosphorus), as well as bacteria and other pathogens. In October 2002, the Town of Conesus received

one million dollars from New York's Clean Water/Clean Air Bond Act to construct a sewer collection system to convey wastewater from the Hamlet of Conesus to the existing wastewater treatment plant.

Benefits to Conesus Lake

Extending the sewer system will decrease the risk that inadequately treated sewage could contribute nutrients and microorganisms to Conesus Lake.

Implementation Strategy

Extension of the sewer district by district formation. Affected municipalities or the Livingston County Water and Sewer Authority would lead the effort to extend the sewer district into these new areas. Some areas remote from the wastewater treatment facility might be most effectively served through a package plant.

Lead agency and involved agencies

Lead: Livingston County Water and Sewer Authority, Municipalities

Involved: Livingston County Department of Health, Livingston County Planning Department, NYSDEC

Measures and Targets

- Engineering design and cost estimates by December 2003
- Referendum by August 2004
- Construction complete, new areas on-line by 2006.

Cost

Accrues to affected residents.

Recommendation F-3. Control sanitary sewer overflows within the collection system.

Priority: Medium

Summary

This recommendation represents an ongoing commitment to maintaining and improving the aging wastewater collection and treatment infrastructure surrounding Conesus Lake. The Livingston County Water and Sewer Authority was successful in obtaining funds from the Clean Water/Clean Air Bond Act to correct a sanitary sewer overflow problem at Camp Run in Lakeville.

Benefits to Conesus Lake

Sanitary sewer overflows contribute untreated sewage to the lake. By eliminating this type of discharge, this source of microorganisms and nutrients would be eliminated.

Implementation Strategy

Livingston County Water and Sewer Authority, NYSDEC, and Livingston County Department of Health will continue to monitor performance of wastewater collection system and identify areas in need of infrastructure improvement.

Lead agency and involved agencies

Lead: Livingston County Water and Sewer Authority

Involved: Livingston County Department of Health, Livingston County Planning Department, NYSDEC

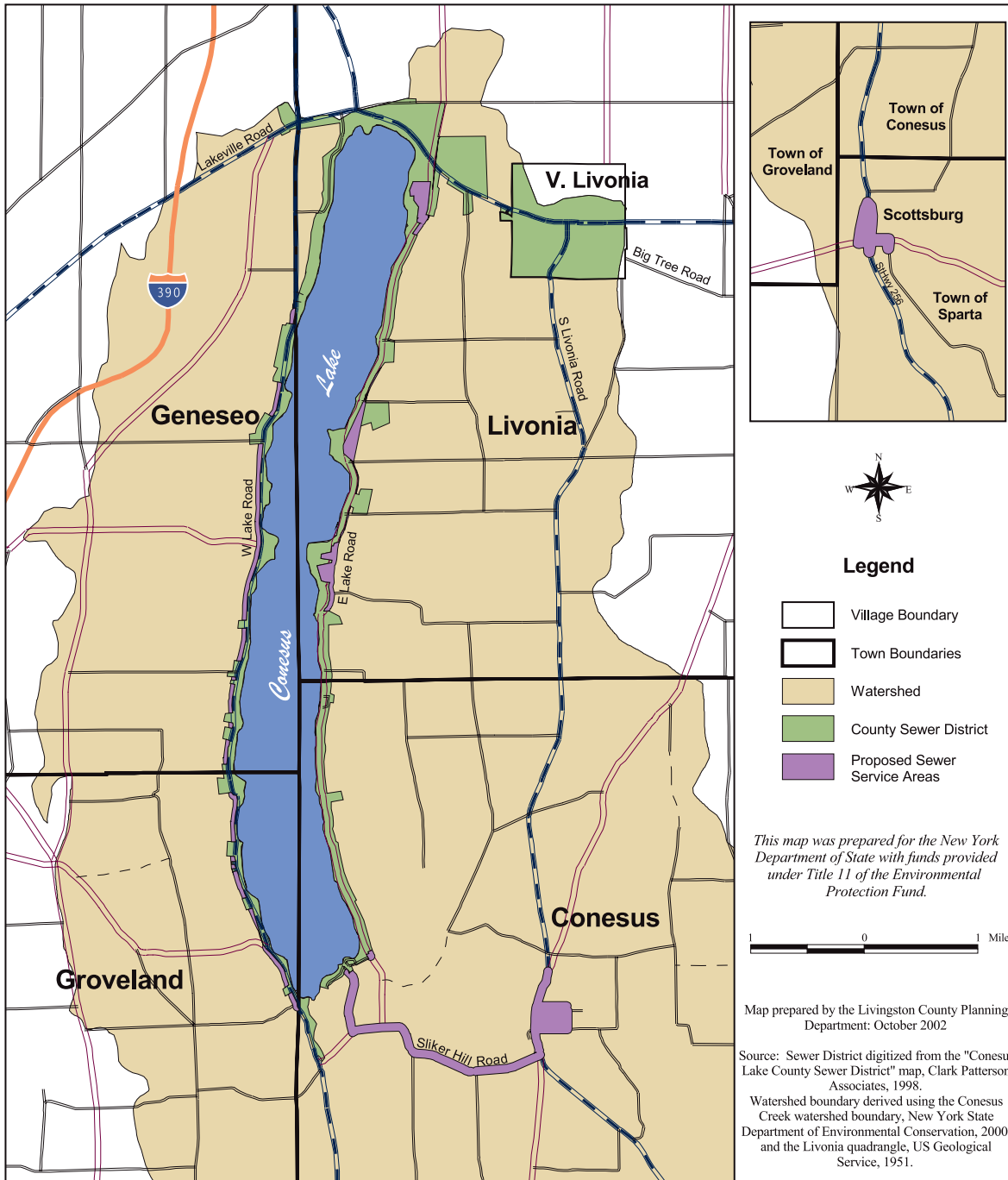
Measures and Targets

Ongoing

Cost

Vary with project, grants and subsidized loans are available for wastewater collection and treatment system improvements.

Map 5-3: Conesus Lake Watershed Current and Proposed Sanitary Sewer Service Areas



Recommendation F-4. Develop protocol and timeline to inventory septic/sanitary systems within the watershed.

Priority: Low

Summary

Failing individual on-site wastewater disposal systems (septic systems) have the potential to contaminate surface and groundwater, and can pose a threat to the health of nearby residents. Currently, the Livingston County Department of Health responds to complaints of malfunctioning septic systems and can order immediate action to correct problems that endanger public health and environmental quality. (Some areas, including the Hamlets of Conesus and Scottsburg, have already been identified as problem areas.) In addition, most banks require inspection or testing when properties are transferred. This recommendation is an attempt to create baseline data tracking the age, condition, location, and number of individual on-site wastewater disposal systems within the Conesus Lake watershed.

Benefits to Conesus Lake

Currently, the number, age, location, and condition of on-site wastewater disposal systems in the watershed are unknown. By inventorying systems in the watershed, the Department of Health can take action to remediate or prevent problems that might go unreported.

Implementation Strategy

The Livingston County Department of Health will develop a protocol for this inventory. Additional staff resources, such as student interns or summer assistants, will be needed to carry out this recommendation.

Lead agency and involved agencies

Lead: Livingston County Department of Health

Involved: Livingston County Planning Department, local colleges (SUNY Geneseo) for student interns

Measures and Targets

- Develop methodology and design database by June 2004.
- Complete inventory by September 2007

Cost

Grant or County budget. The estimated cost of this recommendation is equivalent to ¼ of a full-time staff person during the period of 2004 – 2007. Student interns are recommended for completing these tasks.

CATEGORY 3: IN-LAKE MEASURES TO IMPROVE WATER QUALITY, RECREATIONAL USE, AESTHETIC QUALITY, AND ECOSYSTEM FUNCTIONING

G. IN-LAKE MEASURES

Recommendation G-1 Investigate and implement effective methods to control the spread of non-native (exotic) organisms.

Priority: High

Summary

Non-native organisms can disrupt an ecosystem in ways that are difficult to control or manage. Conesus Lake has experienced the disruptive effects of the alewife, zebra mussel, and Eurasian

watermilfoil. To date there are no fail-safe ways of preventing the introduction of non-native organisms through boats, bait, and other means. Boat washing was investigated as a possible control measure and found to have mixed results. The NYS Office of Parks, Recreation, and Historic Preservation, which operates the boat launch on East Lake Road, did not support the installation of a boat washing station in Conesus Lake as a method for controlling the introduction of non-native aquatic organisms at this time. However, as technology develops and knowledge of ecosystem management increases, new ways to control the spread of non-native organisms could become available. Public education is a large component of this effort.

Benefits to Conesus Lake

Prevention is usually less costly than remediation; therefore, it makes sense to do everything possible to keep non-native organisms away from Conesus Lake before they become a problem. However, effective prevention methods are not widely available. This recommendation is a way to keep this problem in the forefront and actively promote research in this area.

Implementation Strategy

- Lobby New York State elected officials to pass effective laws aimed at preventing the introduction of exotic species to inland waterways.
- Coordinate with FL-LOWPA, Sea Grant, and other regional agencies to track ongoing efforts in the Finger Lakes, Great Lakes, and other waterways.
- Develop an integrated aquatic plant management plan.
- Prepare public education and outreach materials aimed at the boating public to help prevent the accidental spread of exotic species through bait, boats, and trailers.
- Continue to track and report on efforts to control exotic species.

Lead agency and involved agencies

Lead: Watershed Council and committees (Technical and Public Education and Outreach)

Involved: FL-LOWPA, NYSDEC, New York State Office of Parks, Recreation and Historic Preservation, Conesus Lake Association, academic institutions

Measures and Targets

Staff or committee member of the Watershed Council to participate in one forum annually regarding exotic invasive species. Prepare annual summary of emerging issues and progress towards controls as part of the annual reporting (Recommendation H-2).

Cost

Municipal budgets and grants, donated in-kind services. Estimate \$400 per year.

Recommendation G-2. Develop and implement a program for cleaning accumulated aquatic plants and algae along the shoreline of Conesus Lake.

This is one of a series of recommendations to address aquatic plant management. It would be a part of an integrated aquatic plant management plan, which would specify the combination of measures, their timetable, and funding sources for implementation.

Priority: High

Summary

Lakeside residents have expressed the need to clean the shoreline of accumulated aquatic plant fragments and algae. These masses of decaying plant material degrade the aesthetic quality of the lake and are a source of unpleasant odors. Suctioning equipment has been used previously, with limited success. Success factors include identifying a tool or process to remove the material and a disposal site for the plant material. The shoreline should be cleaned at regular intervals to

maintain acceptable conditions for recreational users.

Benefits to Conesus Lake

Cleaning the shoreline of decaying aquatic vegetation would make the lake more attractive for recreation. As an additional (though minor) benefit, removal of plant material will also remove a source of nutrients and oxygen demanding material.

Implementation Strategy

- Develop an integrated aquatic plant management plan for Conesus Lake
- Contact possible vendors
- Establish county or watershed composting site for weed/algae deposit.
- Solicit cooperation of shoreline property owners.

Lead agency and involved agencies

Lead: Livingston County Water and Sewer Authority, shoreline municipalities

Involved: Conesus Lake Association, GLOW (composting sites), Livingston County Planning Department

Measures and Targets

Identify vendors, develop Special Benefit District or other funding source, identify disposal sites, and design program during 2003. Full-scale program in place by summer 2004.

Cost

To be determined. Cost could be assumed by participating shoreline owners.

Recommendation G-3. 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.

Priority: High

Summary

The June 2002 placement of Conesus Lake on the NYSDEC 303(d) list cites phosphorus release from lake sediments as a source of phosphorus that contributes to the poor water quality conditions. This recommendation is to investigate and implement a lake restoration technique directed at the phosphorus flux from sediments deep in the lake.

Release of phosphorus from Conesus Lake sediments is closely coupled to the lake's annual patterns of water temperature and dissolved oxygen levels. Under current conditions, phosphorus release occurs during late summer from sediments in the deepest portion of the lake; water overlying these sediments becomes oxygen depleted and the sediment chemistry changes so that phosphorus becomes soluble. The recommended action is to treat these deep sediments with aluminum sulfate (alum) to block the lake's internal phosphorus source. Additional investigations are needed to quantify the importance of sediment phosphorus to the lake's water quality.

Alum (aluminum sulfate) forms a gelatinous floc when added to water. This floc is effective at trapping particles and increasing their settling rate through the water column. Alum is a safe chemical that is widely used in the water treatment industry to enhance the efficiency of filtration of public water supplies. Conesus Lake waters are alkaline and well-buffered, due to the presence of limestone deposits in soils in the northern sections of the watershed. In alkaline waters the aluminum compounds in the alum remain in a non-toxic form. Once the alum floc settles to the lake sediments, it forms a physical barrier that would prevent phosphorus released from the sediments from reaching the overlying water. This technique has been successfully applied to a number of regional water bodies, including Irondequoit Bay.

Benefits to Conesus Lake

If results indicate that this restoration technique would be effective in Conesus Lake, the applied alum would cause deposition of phosphorus over the area treated and would seal the sediments against further phosphorus release for several years. Lower phosphorus concentrations in the water would mean less abundant algal growth.

Implementation Strategy

A detailed accounting of phosphorus released from deep sediments is warranted to quantify the magnitude and importance of this source. Jar testing is needed to quantify the dose and ensure that the lake water provides adequate buffering of the alum.

- As part of 2003 lake monitoring program, obtain detailed profiles of phosphorus and associated water quality parameters (temperature, dissolved oxygen, pH, redox) at deepest point in the lake to evaluate sediment phosphorus flux.
- Perform jar testing to assay dose of alum and determine the need for sodium aluminate to be added as a buffer.
- Develop cost estimates and detailed application plan for hypolimnetic injection.
- Permits and SEQR (if required)
- If the potential environmental benefits are attractive, identify funding for full-scale application.

Lead agency and involved agencies

Lead: Livingston County Planning Department (supported by technical consultant), NYSDEC, academic institutions

Involved: Livingston County Department of Health, Conesus Lake Association

Measures and Targets

- Additional water quality monitoring and jar tests, August 2003
- Data analysis and reporting, go/no-go decisions: November 2003
- Cost estimates, funding request and detailed application plan, final by June 2004
- Full-scale application, summer 2005

Cost

The estimated cost for the necessary studies and permits for alum application is \$15,000. Alum treatment costs about \$70 per acre-foot. Based on a preliminary estimate of the area treated, hypolimnetic injection of the material over the deepest portion of the lake would cost about \$100,000. This cost estimate would be refined based on the detailed lake monitoring and jar tests. State, federal, or private grants may be available.

Recommendation G-4. Initiate effort to determine if increased stocking of walleye fingerlings, or other species, would be an effective biological control in Conesus Lake. Proceed with plans for implementation if effectiveness is warranted.

Priority: High

Summary

The ecology of Conesus Lake has been altered in recent decades with introduction of exotic plant and animal species. Among the most disruptive of these introductions is the alewife, a fish that feeds on large-



Boat trails through the weeds are clearly visible from above.

PHOTO: PETER D'AIUTO; PILOT: JIM RAFFA

bodied zooplankton (among other food sources). In the years since the alewife invaded the lake, the community of large-bodied zooplankton has decreased dramatically. The loss of the zooplankton has led to proliferation of phytoplankton (tiny algae and bacteria suspended in the water column) and a visible decline in water clarity. One technique to biologically control the alewife population is to introduce large numbers of walleye (*Stizostedion vitreum*), a native gamefish, to feed on the alewife. In order for this strategy to be effective, walleye must be stocked in the lake as fingerlings (greater than 2.5 inches) so that they can avoid predation by other animals.

Benefits to Conesus Lake

If successful, the crash in the alewife population would allow the population of larger zooplankton in the lake to recover and ultimately keep phytoplankton under control. This would increase the clarity of the lake, reduce the amount of organic material in the water (which would help reduce the risk of formation of trihalomethanes in the public water distribution systems), and help restore the lake's food web back to conditions that were typical of the 1910 – 1970 period. Re-establishing a viable reproducing population of walleye may also help restore the yellow perch fishery of Conesus Lake, as early life stages of yellow perch are decimated by the prolific alewife.

Implementation Strategy

- Convene an expert working group of fisheries biologists to assess the potential success of this innovative technique for controlling algal abundance by means of food web manipulation.
- If warranted, proceed to confer with NYSDEC regarding their existing stocking program, availability of fingerlings and fry, and cooperative arrangements.
- Work with fishery scientists to estimate optimal stocking density based on energetic model.
- Meet with representatives of local colleges to identify interest or expertise in supporting local aquaculture program for rearing fry to fingerlings in ponds.
- Identify cooperating pond owners.
- Investigate feasibility of creating ponds at Livingston County Water and Sewer Authority wastewater treatment plant.
- The NYSDEC Region 8 Fisheries Unit, under the NYS Walleye Management Plan, will continue to stock fingerling walleyes from the State hatchery system. Stocking numbers will depend on availability of fingerlings.

Lead agency and involved agencies

Lead: Livingston County Planning Department (supported by technical consultant), NYSDEC, academic institutions

Involved: Livingston County Water and Sewer Authority, Conesus Lake Association

Measures and Targets

- Identify interested investigators by December 2003
- Convene technical team to complete feasibility assessment by June 2004
- Go/no-go decision by September 2004
- If warranted, proceed with identifying cooperators by December 2004
- Pond construction and training complete by March 2005
- Stocking to begin by 2006 and continue for 5 years.

Cost

Approximately \$500K based on 142 fish per acre (350/ha) if purchased from private source. Cost will be much less if local rearing ponds are available and successful. The NYSDEC Bureau of Fisheries, Fish Culture Section, under its Cooperative Walleye Rearing Program, may be able to

provide walleye fry at no cost, as available. Grants may be available to build rearing ponds on non-DEC cooperator's property. One such opportunity may be to build wastewater finishing ponds at the Livingston County Water and Sewer Authority's wastewater treatment plant in Lakeville, which could also function as rearing ponds for walleye fingerlings.

Recommendation G-5. Develop an experimental program for control of aquatic weeds using the aquatic moth and/or weevil.

This is one of a series of recommendations to address aquatic plant management. It would be a part of an integrated aquatic plant management plan, which would specify the combination of measures, their timetable, and funding sources for implementation.

Priority: Medium

Summary

The larval stages of an aquatic moth (*Acentria ephemerella*) and the aquatic weevil (*Euhrychiopsis lecontei*) preferentially feed on Eurasian watermilfoil. Experiments using these biological controls in other lakes have shown variable success. Investigations are needed to ensure the viability of this strategy in Conesus Lake. These insects are established species in the Northeast and the Finger Lakes region. No adverse impacts have been observed in other lakes. However, monitoring and keeping current with scientific knowledge concerning these species will be an important component of the implementation phase for this recommendation.

Benefits to Conesus Lake

Eurasian watermilfoil is an introduced species that has become a nuisance in Conesus Lake. If biomanipulation using the aquatic moth, the aquatic weevil, or both is successful, lake users will notice a marked reduction in the biomass of this species. Reduced biomass of Eurasian watermilfoil in Conesus Lake would allow other native plants to re-colonize areas from where they had been crowded out. According to the technical experts consulted during preparation of the Watershed Management Plan, there is no danger of these aquatic organisms migrating to feed on terrestrial vegetation or agricultural products, as they are restricted to the aquatic environment and the immediate shoreline.

Implementation Strategy

Researchers from Cornell University and some private vendors have ongoing programs in several regional lakes. This is an area where collaboration with SUNY Geneseo faculty could be highly beneficial.

- Survey shoreline for appropriate weevil habitat
- Develop test protocol
- Investigate permits and SEQR
- Identify potential contractors and solicit proposals
- Pilot testing depending on availability of funds and organisms
- Monitor and research for possible adverse environmental effects

Lead agency and involved agencies

Lead: Livingston County Planning Department (supported by technical consultant), NYSDEC, academic institutions

Involved: Conesus Lake Association

Measures and Targets

During 2003, convene a workshop to develop experimental protocol, and identify funding sources. Target limited pilot testing in 2004.

Cost

A private vendor, EnviroSource, has estimated the cost for pilot tests in three areas of the lake at \$13,000-\$15,000. Their cost for the weevils is \$1000 per 1000 adults, plus an initial survey that can range from \$4,000 to \$10,000 depending on what is needed. Cornell Cooperative Extension sells the weevils at \$1.00 per adult, which is comparable to the EnviroSource price for the weevils only. Cost for the aquatic moth, based on experimental studies, is \$10,000 for 20,000 moths. Stocking density is estimated at 20,000 moths per 0.5 acres. State, federal, or private grants may be available for this project. Special Benefit District funding may be pursued.

Recommendation G-6. Develop program for suctioning aquatic weeds from designated public areas that are too shallow for harvester to maneuver.

This is one of a series of recommendations to address aquatic plant management. It would be a part of an integrated aquatic plant management plan, which would specify the combination of measures, their timetable, and funding sources for implementation.

Priority: Low

Summary

This strategy requires the services of a professional diver and specialized equipment that work somewhat like a vacuum cleaner. Rooted plants are pulled out of the sediment and transferred to a mesh bag for disposal. An experienced professional can select plants for removal and minimize disturbance of sediments.

Benefits to Conesus Lake

Recreational activities would be the greatest beneficiary of this strategy. If limited to designated bathing beaches, the amount of aquatic vegetation harvested would not be enough to make a difference in the level of nutrients in the lake.

Implementation Strategy

- Develop an integrated aquatic plant management plan for Conesus Lake.
- Implement diver suction in selected areas (as funding allows).

Lead agency and involved agencies

Lead: Shoreline municipalities, Livingston County Water and Sewer Authority, Livingston County Planning Department

Involved: Conesus Lake Association, NYSDEC

Measures and Targets

Implementation in 2004, as funding allows.

Cost

Estimated costs are about \$200 per hour for a professional diver capable of suctioning an area of about 500 square feet in one hour. A Special Benefit District would need to be created to pay for this effort.

Recommendation G-7. Develop a weed harvesting program either by contracting with outside vendor or purchasing equipment.

This is one of a series of recommendations to address aquatic plant management. It would be a part of an integrated aquatic plant management plan, which would specify the combination of measures, their timetable, and funding sources for implementation.

Priority: Low

Summary

Harvesting aquatic vegetation in Conesus Lake would help improve the lake's attractiveness for water contact recreation. Efficient removal of harvested vegetation also removes the nutrients in the mass of plant material. Weed harvesting has been implemented on Conesus Lake in the past. However, effectiveness was limited by the sheer size of the area to be harvested in comparison to the production rate of the single machine, and the lack of easy access points to launch and remove the material. In order to be successful, this strategy would have to include multiple harvesters and use equipment that can get very close to shore. Harvesting, if done properly, is a temporary measure to improve recreational access and improve aesthetics. The harvested vegetation must be collected, dewatered, and disposed of in an appropriate manner in an upland setting.

Benefits to Conesus Lake

Harvesting aquatic weeds would improve the recreational quality of the lake. Plant fragments created by the harvester must be removed as well for these benefits to be fully realized.

Implementation Strategy

- Develop an integrated aquatic plant management plan for Conesus Lake.
- Identify contractors and obtain cost estimates.
- Identify sites for accessing equipment, dewatering, and disposal.
- Implement mechanical harvesting, shoreline cleanup and diver suction in selected areas (as funding allows).

Lead agency and involved agencies

Lead: Livingston County Water and Sewer Authority, Livingston County Planning Department, shoreline municipalities

Involved: Conesus Lake Association, GLOW (composting sites), NYSDEC

Measures and Targets

- Develop an integrated aquatic plant management plan for Conesus Lake by September 2003.
- Identify equipment, contractors, and funding sources
- Initiate limited harvesting in target areas
- Full-scale program as funding allows

Cost

Capital cost to purchase each harvester is estimated at \$70,000 to \$100,000. Annual operating and maintenance costs are at least \$100,000 for multiple harvesters. Cost for contracting a harvesting service (based on previous experience and adjusting for inflation) is estimated to be at least \$40,500 for 200 hours of harvesting. A Special Benefit District would need to be created to pay for this effort.

CATEGORY 4: MONITORING AND ASSESSMENT

H. COORDINATED MONITORING EFFORTS AND ANNUAL REPORTING

Recommendation H-1. Conduct an annual monitoring program of Conesus Lake and its watershed to evaluate water quality and ecological conditions, assess the effectiveness of controls, and identify the need for additional actions. An annual monitoring meeting should be held to coordinate the monitoring program.

Priority: High

Summary

Currently, a number of agencies and programs conduct monitoring activities within the Conesus Lake watershed. There is a potential to coordinate activities and greatly enhance the value of the information for managing the lake and watershed ecosystem. The *State of Conesus Lake: Watershed Characterization Report* outlined a framework for monitoring that rotated the sampling and analytical effort on a three-year cycle between monitoring the lake, the major tributaries, and specific subwatershed areas. This monitoring framework is included as Appendix 9.

Benefits to Conesus Lake

By adopting a unified approach to monitoring, the value of the data and information will be increased. The monitoring and assessment activities will also foster increased public awareness of water quality challenges and progress towards meeting the goals for the resource.

Implementation Strategy

- Work with regional natural resources agencies, the Conesus Lake Watershed Inspector, SUNY Geneseo, SUNY Brockport, and other regional academic institutions to track monitoring efforts and identify opportunities for collaboration.
- Convene an annual monitoring meeting in late winter to identify issues, define objectives of monitoring, and look for opportunities to collaborate and enhance the value of the information.

Lead agency and involved agencies

Lead: Livingston County Planning Department, Watershed Council

Involved: Livingston County Department of Health, SUNY Geneseo, SUNY Brockport, other academic institutions (if active), NYSDEC, Livingston County Soil and Water Conservation District, Conesus Lake Association

Measures and Targets

- Annual planning meeting
- Annual reporting to watershed residents and interested parties.

Cost

The costs of monitoring will vary based on the number of locations and the suite of parameters. An annual budget of \$10,000 is considered a baseline.

Recommendation H-2. Prepare and distribute an annual Conesus Lake and Watershed Report Card describing progress towards implementing the CLWMP recommendations, elements of the CLWMP workplan for the upcoming year, the status of funding requests, and water quality and ecological conditions of the lake and watershed.

Priority: High

Summary

This recommendation is a potentially effective means to communicate progress towards implementing the recommendations of the Watershed Management Plan.

Benefits to Conesus Lake

This reporting will foster an awareness of watershed issues and build continued support for plan implementation.

Implementation Strategy

Annual summary at public meeting of the Watershed Council. This may be effectively coordinated with the annual meeting of the Watershed Inspection Program.

Lead agency and involved agencies

Lead: Livingston County Planning Department with possible technical consultant assistance, Watershed Council and Committees

Involved: Livingston County Department of Health, Conesus Lake Watershed Inspector, Conesus Lake Association, NYSDEC

Measures and Targets

Annual reporting.

Cost

Annual cost range \$2,000 - \$5,000.

Conesus Lake

CHAPTER 6 IMPLEMENTATION

As outlined in Chapter 5, a number of aggressive measures are needed to bring about improvements to the quality of Conesus Lake and its watershed. These specific recommendations were developed over a three-year collaborative planning process designed to include the community. To ensure that the many stakeholders were heard during the planning process, an institutional framework was adopted to include elected officials, technical experts, agricultural producers, agency representatives, and the concerned public. An institutional framework will also be required to guide the implementation phase into the future; a detailed discussion of this institutional framework is the subject of Chapter 6.

6.1 Ongoing Implementation

During the collaborative process of identifying measures needed to protect and restore Conesus Lake, several important areas for immediate action were brought forward. The Planning Department and other participating agencies developed a philosophy of “ongoing implementation,” whereby immediate actions were taken to improve the quality of the lake and watershed. Highlights of these efforts and ongoing programs are summarized below.

- A prime example of the success of ongoing implementation is the Model Erosion and Sediment Control Law developed by the Livingston County Planning Department in response to public concerns. The Planning Department researched and drafted a model law (Appendix 4) and worked with municipal boards within the watershed to foster its adoption. As of March 2003 the status of this effort is as follows:
 - **Town of Geneseo** -- adopted the Town of Geneseo Erosion and Sediment Control Law on April 14, 2002. This law was based on the model Erosion and Sediment Control Law developed by the Planning Department.
 - **Town and Village of Livonia** -- have erosion and sediment control regulations in their zoning law consistent with the provisions of the model Erosion and Sediment Control Law. The effort to promote adoption of uniform sediment and erosion control measures has raised public and agency awareness of erosion as an important water quality issue, and the Town Planning Boards, Village Planning Boards, Code Enforcement Officers, and contractors are taking it into consideration during the development process.
 - **Town of Conesus** -- adopted the Town of Conesus Erosion and Sediment Control Law on November 19, 2002. This law was based on the model Erosion and Sediment Control Law developed by the Planning Department.
 - **Town of Groveland** -- adopted the Town of Groveland Erosion and Sediment Control Law on March 13, 2003. This law was based on the model Erosion and Sediment Control Law developed by the Planning Department.
 - **Town of Sparta** --- Has consulted with the Conesus Lake Watershed Inspector to discuss the law. Also an informational meeting with the Town Board and the Livingston County Planning Department was held on November 12, 2002.
 - **Town of Springwater** – No action to date.
- The Town of Conesus received a one million dollar grant from New York State’s Clean Water/Clean Air Bond Act to construct a sewage collection system serving the Hamlet of Conesus, where septic systems are failing. Wastewater will flow to the Conesus Lake Wastewater Treatment Plant at Lakeville for treatment.
- The Livingston County Water and Sewer Authority (LCWSA) received a \$90,000 grant from the Clean Water/Clean Air Bond Act to construct a sewer in the Town of Livonia that will prevent sanitary sewer overflows from Camp Run and other areas into Conesus Lake.

- Since 2000, annual monitoring efforts within the Conesus Lake watershed have been coordinated through the actions of the CLWMP Planning Committee. Meetings were held in early 2000, 2001 and 2002 to bring together researchers from SUNY Geneseo and SUNY Brockport, the Conesus Lake Watershed Inspector, representatives of the Livingston County Planning Department, and staff of EcoLogic LLC (technical consultant to the CLWMP Planning Committee). Details of monitoring efforts are discussed and coordinated at these annual meetings to ensure that resources are targeted to areas and issues of greatest priority.
- The Conesus Lake Aquatic Weeds Strategy (CLAWS) program, funded through the Finger Lakes-Lake Ontario Watershed Protection Alliance, has directed New York State Environmental Protection Funds to controlling nonpoint sources of pollution within the Conesus Lake watershed. The CLAWS program has been in place in Livingston County for over 14 years, and has directed over \$500,000 towards monitoring efforts to define priority areas and implementation efforts to reduce nonpoint source pollution, particularly sediment.
- Data and information developed as part of the Watershed Management Plan have been used to support grant applications for outside funding. Identification of funding opportunities and preparation of grant proposals is an ongoing commitment.
 - A request for matching funds to restore targeted areas of eroding streambanks and roadbanks within the watershed was submitted to the New York State Department of State under the Environmental Protection Fund.
 - The CLWMP Planning and Policy Committees provided support to Professor Joseph Makarewicz of SUNY Brockport in his successful effort to obtain USDA funding for implementing agricultural best management practices within the Conesus Lake watershed.
 - The CLWMP Planning and Policy Committees provided support to the Town of Livonia in its application for listing by the NYSDEC Open Space Advisory Committee. Funding was requested from New York State Office of Parks, Recreation, and Historic Preservation for acquisition of a 6.14-acre parcel of land adjacent to the existing town park – Vitale Park.
- The Livingston County Soil and Water Conservation District (SWCD) has been working with local farmers to implement the AEM whole farm planning program. By the end of 2002, 112 of the watershed's 250 farms had completed Tier 1 (self-assessment). Of these 112 farms, 50 have environmental issues requiring additional evaluation and will progress to Tier 2. The SWCD has assisted 32 of these producers with completing the Tier 2 technical worksheet; this step is designed to provide the basis for developing specific management plans. In addition, the SWCD has been working with the two farms in the Conesus Lake watershed that are currently subject to CAFO regulations.
- The Conesus Lake Watershed Inspection Program, which is part of the Livingston County Department of Health, is responsible for enforcing the Watershed Rules and Regulations. This program has had a number of notable successes in recent years working with the agricultural community, developers, and code enforcement officers to reduce nonpoint source pollution of the lake and streams. The Conesus Lake Watershed Inspection Program focuses on complaint investigation and non-point source pollution related issues. The Watershed Inspector and other staff of the Livingston County Department of Health make presentations to high school students, civic groups, and town and village boards to improve awareness of watershed issues. The Watershed Inspector tests the lake water at public beaches during the summer recreational season to determine if bacteria levels meet the standards for swimming safety.
- The Conesus Lake Association has produced an informational booklet directed at shoreline residents that describes effective dockside measures to control nuisance weeds.
- The CLWMP Policy Committee sent a letter addressed to the New York State Legislature urging them to adopt strong regulatory controls focused on preventing the spread of exotic species. This serious issue transcends the boundaries and potential actions of an individual watershed planning area. A coordinated regional approach is essential. The State is urged to direct the Department of Environmental Conservation and Office of Parks,

Recreation, and Historic Preservation to develop and promulgate effective policies to reduce the risk of exotic species introduction into New York's inland waterways.

- Public education and outreach to increase awareness of watershed issues has been an ongoing commitment during development of the Watershed Management Plan. The Conesus Lake Association has been a major partner in these efforts, which have resulted in brochures, fact sheets, and public forums on water quality protection issues. The Conesus Lake Watershed Lecture Series has brought experts in the areas of limnology, shoreline vegetation, fisheries, and other relevant topics to the watershed.
- The CLWMP Planning Committee has been working with local municipalities to prepare for compliance with the federal Phase 2 Stormwater Regulations, which will become effective in March 2003. Training materials have been purchased and will be distributed to watershed municipalities.

6.2 Implementation Framework

Implementing the recommendations of the Conesus Lake Watershed Management Plan requires a high level of commitment at all levels. An institutional framework for implementation is needed to identify clear lines of leadership and accountability, focus on funding opportunities, and keep stakeholders informed of progress.

Alternative structures for implementation were a focus of extensive discussions by the CLWMP Planning and Policy Committees. Lessons from other watershed management efforts were reviewed, and factors unique to Conesus Lake were considered. Watershed planning efforts are underway throughout New York and, in fact, throughout the world. The Conesus Lake watershed planning effort has been able to draw on insights and lessons learned from other communities. According to the EPA's Watershed Academy, successful watershed management programs share six key attributes:

1. Support partnering of multiple agencies and interest groups.
2. Use sound science to define causes of water quality impairment, sources of pollution, and potential effectiveness of control actions.
3. Take well planned actions, document and communicate results.
4. Remain flexible to new developments.
5. Recognize that the cycle of identifying and solving problems is continuous.
6. Adopt multi-disciplinary approaches.

The Planning and Policy Committees evaluated four specific options for implementing the CLWMP recommendations:

- The first alternative considered was the formation of a Watershed Council, modeled on the implementation framework in place for the Canandaigua Lake watershed. The Council would be comprised of the chief elected officials (or designated representatives) of the watershed municipalities and the communities served by Conesus Lake water. Costs of implementing (and managing) the recommended actions would be borne by the Council members and grants, and possibly supplemented by funding derived from a special benefit district. Local costs would be allocated based on a funding formula that considers factors such as population, watershed area, shoreline miles, volume of water withdrawals, and the assessed value of shoreline and watershed properties. Stakeholders could serve as members of advisory committees. This alternative requires strong community support, as each of the Municipal Boards would have to agree to an equitable funding formula, and sign an inter-municipal agreement.
- Second, consideration was given to creating a Watershed District. This would be a new entity; members of the district would include residents within the watershed and those households supplied with water drawn from Conesus Lake. Formation of a Watershed District would require a process of formal delineation and mapping, petitioning, and voting. The District could generate a funding stream through direct assessment of its members. Stakeholders could serve as members of advisory committees. This alternative, while potentially very effective, carries a high risk that sufficient support would not be mobilized and an effective implementation structure would not be formed.

- The third alternative would rely on the Livingston County Water Quality Coordinating Committee (WQCC) for implementation. Counties in New York have developed WQCCs to advance the efforts of NYSDEC and other agencies related to identifying and controlling nonpoint sources of pollution. This alternative was not selected, as the WQCC priorities and actions are county-wide, not specifically focused on the Conesus Lake watershed.
- Finally, a “status quo” alternative was considered. Under this alternative, technical elements of the Watershed Management Plan would be carried out by the agencies and organizations that are currently members of the Planning Committee. Policy oversight would be provided by the elected officials of watershed municipalities, Villages of Avon and Geneseo (water suppliers), and Livingston County. This framework would likely be the easiest to implement, as it is essentially a continuation of the structure in place for developing the Watershed Management Plan. However, it might not provide sufficient momentum to drive the changes in agency actions and priorities needed to carry out the plan recommendations.

6.3 *Conesus Lake Watershed Council*

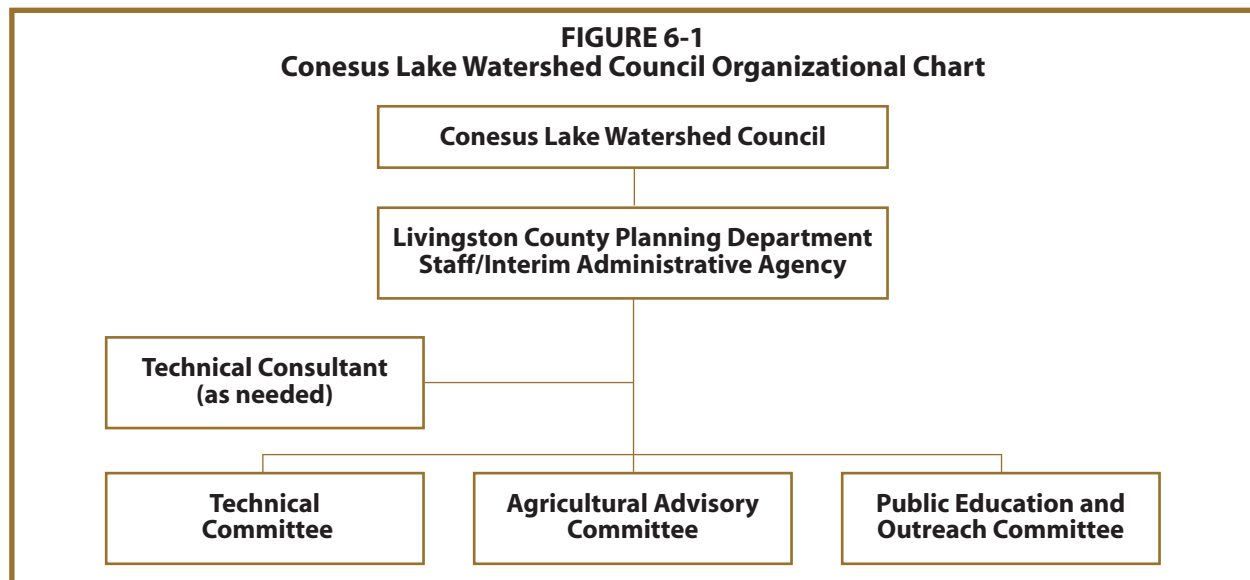
After careful consideration of the advantages and disadvantages associated with each of the four alternatives outlined above, the creation of a Watershed Council was chosen as the best option for implementing the recommendations in the Plan. The Council will be structured so that decisions are made by elected officials. Challenges associated with lake restoration and protection will continue to have a high profile in the community.

Several important steps remain before the Watershed Council is created. The Council must formalize its membership and organizational structure, including the number, focus, and membership of committees needed to carry out the CLWMP recommendations. A conceptual organizational chart is included as Figure 6-1. The Council must also determine an equitable funding formula to support its operations and memorialize these important decisions in an Intermunicipal Agreement signed by all parties. Finally, the Council must decide how it will be staffed. These issues were discussed at the series of Policy Committee meetings between June and September 2002 dedicated to reviewing the draft CLWMP recommendations.

6.3.1 COMMITTEE STRUCTURE

Three standing committees will be created to support the Watershed Council.

- A Technical Committee will advise the Council on technical issues related to defining priority actions and identifying funding opportunities. Membership will be similar to that of the CLWMP Planning Committee: key staff from federal, state, and county agencies involved with water quality and nonpoint source pollution issues.



- An Agricultural Advisory Committee will help track the many issues and recommendations affecting the farming community. Members of the Agricultural Advisory Committee will include active producers throughout the watershed, with balanced representation by municipality, along with representatives of the agricultural support agencies.
- A Public Education and Outreach Committee will be tasked with carrying out the many recommendations related to communicating issues and progress to the watershed community. Membership will include volunteers from the Conesus Lake Association, the farming community, and interested public.

6.3.2 FUNDING FORMULA

In a unanimous decision, the CLWMP Policy Committee agreed that the funding formula will be a weighted fee assessed to members based on six factors: water withdrawal, shoreline miles, percent of land area in the watershed, population in the watershed, assessed value of shoreline properties, and assessed value of properties within watershed boundaries. While the Policy Committee agreed on the six factors to be included in the weighting formula, a final decision on the relative importance assigned to each of the factors has not been reached. A weighted formula is one where the factors included are not given the same importance. For example, some factors might be assigned a 50% weight and others only 10%. Negotiating this funding formula will be crucial for the language of the Intermunicipal Agreement between members of the Watershed Council.

Some of the recommended actions, particularly those related to the in-lake measures (category G measures such as harvesting and shoreline cleanup), will primarily benefit shoreline property owners. A special benefit district may be an appropriate mechanism to fund these actions. Creation of a special benefit district would require a process of formal delineation and mapping, petitioning, and voting.

6.3.3 STAFFING

Ideally, the Watershed Council would be staffed by a Watershed Manager, dedicated to implementing the CLWMP recommendations. This model best meets the recommendations of the EPA Watershed Academy regarding the need for well-defined leadership and accountability. The Watershed Manager would need strong technical and communication skills; this individual would report to the Watershed Council and be supported in day-to-day activities by one of the existing County agencies. A core responsibility of the Watershed Manager would be to identify outside funding sources to minimize costs to local government.

Discussions of staffing options focused on four alternatives: staffing with a full-time manager, staffing with a part-time manager, staffing with contract services (consultant), and relying on current staff to implement the recommendations. Because of current County budget uncertainties, the Policy Committee was reluctant to recommend creating a new staff position, either full or part time. Reliance on existing staff, possibly supplemented by consultant services, was viewed as an appropriate interim solution. However, the Policy Committee recognized the value of hiring a Watershed Manager and the position may be created in the future, depending on economic conditions.

The Livingston County Planning Department was identified as the interim leader of the implementation effort, supported with consultant assistance as funding allows. The Planning Department was viewed as the agency best suited for this interim assignment, and has agreed to assume this role for a one to two year period while the Watershed Council organizes and defines a long-term solution for staffing. The Planning Department has directed the development of the Watershed Management Plan and works very closely with local government on land use, environmental quality, and development issues. Moreover, the Planning Department has been successful in identifying and securing external funding and creating effective partnerships between other agencies, academic institutions, and the community.

6.4 Annual Workplans

The recommendations outlined in Chapter 5 encompass actions by multiple agencies over a time period that extends for five years and, in some cases, beyond. A key element for managing the program will be to create annual workplans for the Watershed Council, reflecting priority actions and availability of funds. These workplans will be reviewed and approved by the Watershed Council. An example of a multiple-year workplan is included as Table 6-1. Efforts will be directed first at the high priority items. Lower priority items may shift to later years, depending on availability of staffing and financial resources. This sample workplan is included to highlight the need for a high level of commitment and coordination by the may involved organizations, both public and private. Details of actions by organization needed to implement the CLWMP recommendations are summarized in the next section. *(A list of acronyms for the involved agencies is included at the end of the table.)*

6.5 Sources of Funding

Identifying sources of funding for the implementation of the CLWMP is one of the major steps in the process. Possible sources of funding have been suggested under each of the recommendations in the Plan. Many recommendations will be dependent upon grants (federal, state, or private) because of the high cost of the implementation process; it would not be possible to raise that amount of money locally. However, grants usually have lengthy application requirements and specific deadlines. Therefore, the Watershed Council must develop a strategy for identifying possible sources in a timely manner and completing the application process in an efficient way.

Other sources to be considered include:

- Municipal contribution
- Matching funds
- In-kind services
- Local fund raisers for small cost items
- Creation of a low-interest, revolving loan fund
- Creation of a Special Benefit District(s)

All of these options must be researched by the Watershed Council. Persistence in pursuing available funds and creative thinking to come up with funds where no specific grants exist will be a key role of the Watershed Council.

**TABLE 6-1
Example Workplan**

Recommendation	Approx. Cost	Cost Basis	Agencies Involved (<i>Bold = Lead agency</i>)	Target Date
Development				
A-1 Review and amend zoning regulations as needed	\$80,000 - \$100,000		Municipalities , LCPD, NYSDOS, G/FLRPC	Completed by Dec. 2004
A-2 Local sediment/erosion control laws	Agency staff time		Municipalities , LCPD, CLWI	Completed by Dec. 2003
A-3 Public education	\$1,500	per year	PEOC , CLA, CCE, CLWI	Annual event
Agriculture				
B-1 Financial support	Agency staff time		SWCD, NRCS, Ag Comm , FSA, CCE, STRC&D, USDA, LCPD	Initiate by 2003
B-2 AEM program: establish BMPs	\$50,000 - \$100,000	per farm	SWCD, NRCS , FSA, CCE	On-going
B-3 Removal of farm waste	Agency staff time		GLOW , AgComm, CCE	Initiate by June 2005
B-4 Public education	\$2,000	per year	CCE , PEOC, AgComm, CLWI, COC	Annual event
B-5 Ag producers for CLWMP	implementation	No additional cost	WC , LCPD	Initiate by June 2003
Stormwater				
C-1 Restore/stabilize streambanks	\$160,000 - \$528,000	per mile	SWCD, Town & County Highway Depts. , CLWI, LCPD, USFS, USDA	Initiate 2004
C-2 Regional stormwater facilities	>>\$100,000	per facility	NYSDEC , Municipalities, LCPD, ACOE	Initiate studies by 2004
Roadways				
D-1 Erosion control practices training	\$1,200	per year	NYSDOT , LCPD G/FLRPC, NYSDEC, Municipalities, CLWI, County Hwy Dept.	Initiate April 2003
D-2 BMP establishment after road work	Agency staff time		Town & County Highway Depts, NYSDOT , SWCD, CLWI	Initiate April 2003
D-3 Road ditch remediation	\$190,080	per mile	NYSDOT, Town & County Highway Depts. SWCD, CLWI	Initiate April 2003
D-4 Computer controlled salt spreaders	\$1,200	per truck	Town & County Highway Depts , NYSDOT	50% by Dec. 2005
D-5 Public education	\$1,500	per year	PEOC , Town & County Highway Depts. LCPD, CLWI	Annual event
Recreation				
E-1 Toilets on boats, pump-out station	<\$20,000		LCDOH, LCWSA, NYSOPRHP, Municipalities , LCPD, PEOC, CLA	Completed by Oct. 2005

**TABLE 6-1 (cont'd.)
Example Workplan**

Recommendation	Approx. Cost	Cost Basis	Agencies Involved (<i>Bold = Lead agency</i>)	Target Date
E-2 Public education	\$1,500	per year	PEOC , CLA, LC Sheriff's Office Navigation Patrol, FL-LOWPA, CLWI, USCGA	Annual event
E-3 Continued enforcement of personal watercraft laws	No additional cost		LC Sheriff's Office Navigation Patrol , CLA, Municipalities	On-going
E-4 Revise dock laws: provision of toilet facilities as requirement for Special Use Permits	Agency staff time		Municipalities , LCPD, LCDOH	Completed by Dec. 2004
E-5 Winterize public toilets	<\$20,000		NYSOPRHP, Town of Geneseo , LCPD, LCWSA	Completed by March 2005
E-6 Allow portable ice shelters	Agency staff time		LCDOH , CLA, PEOC, Municipalities	Completed by Oct. 2005
Water/Wastewater				
F-1 Update safe yield calculation and revise water supply permits (if needed)	Agency staff time		NYSDEC , ACOE, Villages of Avon and Geneseo	Completed by June 2005
F-2 Extend sewer system	Accrues to affected residents		LCWSA, Municipalities , LCPD, LCDOH, NYSDEC	Initiate design by Oct. 2003
F-3 Control sanitary sewer overflows	Site specific	per project	LCWSA , LCDOH, LCPD, NYSDEC	Completed by Oct. 2003
F-4 Inventory of septic/sanitary systems	\$8,000	per year	LCDOH , LCPD, local AI	Completed by Dec. 2005
In-Lake				
G-1 Investigate and report on effective measures to control spread of exotic organisms	\$400	per year	WC and committees , FL-LOWPA, NYSDEC, NYSOPRHP, CLA, AI	Initiate April 2003
G-2 Clean algae/weeds along shoreline	Accrues to participating shoreline owners (SBD)		LCWSA, Municipalities , CLA, GLOW, LCPD	Initiate by Oct. 2004
G-3 Alum treatment	\$15,000 / \$100,000	Pilot study / Application	LCPD (w/consultant) , NYSDEC, AI, LCDOH	Initiate studies by Oct. 2003
G-4 Walleye stocking	To be determined	Startup costs plus annual costs	NYSDEC, AI, LCPD (w/consultant) , LCWSA, CLA	Feasibility study and go/no-go decision by Sept. 2004
G-5 Aquatic moth/weevil	\$17,000 - \$25,000	for initial study and survey	AI, LCPD (w/consultant) , NYSDEC, CLA	Initiate studies 2004

**TABLE 6-1 (cont'd.)
Example Workplan**

Recommendation	Approx. Cost	Cost Basis	Agencies Involved (<i>Bold = Lead agency</i>)	Target Date
G-6 Suction aquatic weeds	\$200	per hour for approx. 500 sq. ft.	Municipalities, LCWSA, LCPD, CLA, NYSDEC	Initiate 2004
G-7 Aquatic weed harvesting (purchased equipment)	\$100,000 / \$100,000 (SBD)	per harvester/ annual operating costs	LCWSA, Municipalities, LCPD, CLA, GLOW, NYSDEC	Aquatic Plant Mgt Plan by June 2003
Aquatic weed harvesting (contracted out)	At least \$40,500 (SBD)	for 200 hours		
Monitoring and Annual Reporting				
H-1 Annual coordinated monitoring program	\$10,000	baseline budget	WC, LCPD, LCDOH, CLWI, AI, NYSDEC, SWCD, CLA	Ongoing (coordination began in 2000)
Monitoring and Annual Reporting				
H-2 Prepare annual Lake Report Card	No additional cost to WC	Annual	WC, LCPD (w/ consultant), CLA, LCDOH, CLWI, NYSDEC	First report in April 2004

ACOE	Army Corps of Engineers	NRCS	Natural Resources Conservation Service
Ag Comm	Agricultural Committee	NYSDEC	New York State Department of Environmental Conservation
AI	Academic Institutions		
CCE	Cornell Cooperative Extension	NYSDOS	New York State Department of State
CLA	Conesus Lake Association	NYSDOT	New York State Department of Transportation
CLWI	Conesus Lake Watershed Inspector		
FL-LOWPA	Finger Lakes-Lake Ontario Watershed Protection Alliance	NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
FSA	Farm Services Agency	PEOC	Public Education and Outreach Committee
G/FLRPC	Genesee/Finger Lakes Regional Planning Council	SBD	Special Benefit District
		STRC&D	Seneca Trails Resource
GLOW	Genesee-Livingston-Orleans-Wyoming Region Solid Waste Management Committee	SWCD	Conservation & Development Council
		USDA	Soil and Water Conservation District
LCDOH	Livingston County Department of Health	USCGA	United States Department of Agriculture
LCPD	Livingston County Planning Department	USFS	United States Coast Guard Auxiliary
LCWSA	Livingston County Water and Sewer Authority	WC	United States Forest Service
			Watershed Council

6.6 Summary of Recommended Actions by Agency

Implementing the CLWMP recommendations will need to remain an important priority of the many agencies and organizations involved in natural resources management issues within the watershed. Actions are required by federal, state, county, and municipal governments, public agencies, interest groups, and watershed residents (Table 6-2). The following sections describe the responsibilities and programs of the complex matrix of agencies and groups involved in water resources management. Because the CLWMP is an evolving plan, additional programs and responsibilities are likely to be added to this list in the future. *(A list of acronyms for the agencies is included at the end of the table.)*

**TABLE 6-2
Summary of Responsibilities by Agency**

Agency	Primary Responsibilities, as shown in Recommendation:	Support Responsibilities, as shown in Recommendation:
ACOE	--	C-2 (regional stormwater), F-1 (safe yield)
Ag Comm	B-1 (ag financial)	B-3 (farm waste), B-4 (Ag outreach)
CCE	B-4 (Ag outreach)	A-3 (public ed), B-1 (ag financial), B-2 (whole farm planning), B-3 (farm waste)
CLA	--	A-3 (pub ed), E-1 (boat toilets and pumpout), E-2 (public ed), E-3 (enforce boating laws), E-6 (ice shelters), G-1 (exotics), G-2 (shoreline weed cleanup), G-4 (walleye stocking), G-5 (aquatic moth/weevil), G-6 (weed suction), G-7 (weed harvesting), H-1 (monitoring), H-2 (report card)
COC	--	B-4 (Ag outreach)
Conesus Lake Watershed Inspector	Continued enforcement of watershed rules and regulations	A-2 (sediment and erosion), A-3 (public ed), B-4 (Ag outreach), C-1 (streambank stabilization), D-1 (erosion control training), D-2 (road BMPs), D-3 (road ditch remediation), D-5 (road public ed), E-2 (recreation public ed), H-1 (monitoring), H-2 (report card)
FL-LOWPA	--	E-2 (recreation public ed), G-1 (exotics)
FSA	--	B-1 (ag financial), B-2 (whole farm planning)
G/FLRPC	--	A-1 (zoning), D-1 (erosion control training)
GLOW	B-3 (agricultural waste)	G-2 (shoreline weed cleanup), G-7 (weed harvesting)
Highway Depts.	C-1 (streambank stabilization), D-2 (road BMPs), D-3 (road ditch remediation), D-4 (salt spreaders)	D-5 (public outreach on roads and driving)
Livingston County Sheriff	E-3 (boating enforcement)	E-2 (public education on boating practices)
LCDOH	E-1 (boat toilets and pumpouts), E-6 (ice fishing shelters), F-4 (septic inventory)	E-4 (dock laws), F-2 (sewer system extension), F-3 (sewer overflows), G-3 (alum), H-1 (monitoring), H-2 (report card)
LCPD	Staff to Watershed Council, A-1 (zoning), G-3 (alum), G-4 (walleye stocking), G-5 (aquatic moth/weevil), G-6 (weed suction), G-7 (weed harvesting), H-1 (monitoring); H-2 (report card)	All
LCWSA	E-1 (boat toilets and pumpout station), F-2 (sewer system extension), F-3 (sewer overflows), G-2 (shoreline weed cleanup), G-7 (weed harvesting), G-6 (weed suction)	E-5 (winterize park facilities), G-4 (walleye stocking)
Municipalities	A-1 (zoning), A-2 (erosion control laws), E-1 (boat toilets and pumpout station), E-4 (dock laws), E-5 (winterize park facilities, F-2 (sewer system extension), G-2 (shoreline weed cleanup), G-6 (weed suction), G-7 (weed harvesting)	All
NRCS	B-1 (ag financial), B-2 (whole farm planning)	--

**TABLE 6-2 (cont'd.)
Summary of Responsibilities by Agency**

Agency	Primary Responsibilities as shown in Recommendation:	Support Responsibilities as shown in Recommendation:
NYSDEC	C-2 (regional stormwater); F-1 (safe yield); G-3 (alum), G-4 (walleye stocking), G-5 (aquatic moth/weevil)	D-1 (erosion control training); F-2 (sewer system extension), F-3 (sewer overflows), G-1 (exotic species), G-6 (weed suction), G-7 (weed harvesting), H-1 (monitoring), H-2 (report card)
NYSDOS	--	A-1 (zoning)
NYSDOT	D-1(erosion control training), D-2 (road BMPs), D-3 (ditch remediation)	D-4 (salt spreaders)
NYSOPRHP	E-1 (pumpout facility and boat toilets) E-5 (winterize park facilities)	G-1 (exotics)
Public Education and Outreach Committee	A-3 (development); B4 (agricultural outreach); D-5 (roads), E2 (recreation)	B-4 (ag outreach), E-1 (toilets on boats), E-6 (ice shelters)
STRC&D	--	B-1 (ag financial)
SUNY and other Academic Institutions	G-3 (alum), G-4 (walleye stocking), G-5(aquatic moth/weevil)	F-4 (septic inventory), G-1 (exotics), H-1 (monitoring)
SWCD	B-1 (ag financial), B-2 (whole farm planning), C-1 (streambank stabilization)	D-2 (hydroseeding and other road BMPs); D-3 (road ditch remediation), H-1 (monitoring)
USDA	--	B-1(ag financial), C-1(streambank stabilization)
USFS	--	C-1 (streambank stabilization)
USCGA	--	E-2 (public education)
Watershed Council	Workplan development and oversight B-5 (Ag committee); G-1 (exotics), H-1 (monitoring), H-2 (report card)	All

ACOE	Army Corps of Engineers	LCWSA	Livingston County Water and Sewer Authority
Ag Comm	Agricultural Committee	NRCS	Natural Resources Conservation Service
CCE	Cornell Cooperative Extension	NYSDEC	New York State Department of Environmental Conservation
CLA	Conesus Lake Association	NYSDOS	New York State Department of State
COC	Livingston County Chamber of Commerce	NYSDOT	New York State Department of Transportation
FL-LOWPA	Finger Lakes-Lake Ontario Watershed Protection Alliance	NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
FSA	Farm Services Agency	STRC&D	Seneca Trails Resource Conservation & Development Council
G/FLRPC	Genesee/Finger Lakes Regional Planning Council	SWCD	Soil and Water Conservation District
GLOW	Genesee-Livingston-Orleans-Wyoming Region Solid Waste Management Committee	USCGA	United States Coast Guard Auxiliary
LCDOH	Livingston County Department of Health	USDA	United States Department of Agriculture
LCPD	Livingston County Planning Department	USFS	United States Forest Service
		WC	Watershed Council

6.6.1 FEDERAL AGENCY INVOLVEMENT

The federal government will be involved in implementation of the CLWMP recommendations through technical contributions and as a source of non-local funding.

United States Department of Agriculture (USDA) is the federal agency responsible for developing and implementing policy for agriculture. USDA grant opportunities for implementing agricultural BMPs will be actively pursued.

- **Natural Resources Conservation Service (NRCS)** is part of the USDA. The NRCS is the federal agency with primary responsibility for implementing nonpoint source pollution programs. The following actions are requested:
 - Work with local agencies, particularly the Livingston County Soil and Water Conservation District, and local agricultural producers on selecting and implementing the recommendation for whole farm planning.
 - Serve as a gateway for access to federal funding (grants and matching funds) for agricultural BMPs.
 - Actively participate in the Agricultural Committee supporting the Watershed Council.
- **Resource Conservation & Development (RC&D) Councils** are a unique program within the U.S. Department of Agriculture providing technical assistance to rural areas for projects to develop and protect natural resources. The local Seneca Trails RC&D is requested to allocate staff time to consult funding databases and prepare grant applications to public and private sources to implement applicable CLWMP recommendations.

Environmental Protection Agency (EPA) is the federal agency responsible for developing national policy and guidance to protect the quality of surface water and groundwater. In New York, EPA policy and guidance are implemented by the Department of Environmental Conservation.

- EPA is requested to direct federal funds for specific program elements related to water supply improvements. The lake's listing in June 2002 on the NYSDEC 303(d) list may provide additional justification for federal EPA funds to be directed to the Conesus Lake watershed to help control phosphorus inputs and proliferation of nuisance weeds and algae. Federal funds for nonpoint source pollution controls and the Clean Lakes Program are coordinated through NYSDEC.

Army Corps of Engineers (Region 8 - Buffalo) will be requested to provide technical review and direction with issues related to lake level and federal wetlands.

- Review the updated NYSDEC safe yield calculations for Conesus Lake and determine whether modifications to the rule curve for water level management are needed.
- Provide technical assistance with locating and permitting any regional stormwater control facility.

6.6.2 STATE AGENCY INVOLVEMENT

Adoption of a community based comprehensive watershed management plan meets a central requirement for accessing New York State funds for water quality improvement projects. Projects to control both point and nonpoint sources of pollution are funded through the Environmental Protection Fund, the Clean Water Clean Air Bond Act, and the Clean Water State Revolving Fund. This plan has been created as a coordinated means to facilitate access to these funding opportunities.

Several agencies of New York State are directly affected by the CLWMP recommendations. Similar to the federal agency involvement, required actions include both technical and funding commitments.

New York State Legislature, the governing body of the State, is requested to take action on a regional issue that transcends the Conesus Lake watershed boundaries.

- Pass a state law aimed at implementing all possible controls on introductions of non-native aquatic species. Direct the Department of Environmental Conservation and the Office of Parks, Recreation, and Historic Pres-

ervation to develop and promulgate effective policy for controlling the spread of exotic organisms. Examples of these actions include, but are not limited to, restricting the use of live bait from uncertified sources, mandatory boat washing and inspection of boats traveling between lakes, etc.

New York State Department of Environmental Conservation (NYSDEC) is part of many of the recommended actions. NYSDEC is requested to provide technical assistance in several key areas, to issue permits where necessary, and to support funding requests from state and federal sources.

- Identify sites and permitting requirements for regional stormwater control facilities.
- As directed by the New York State Legislature, promulgate and enforce effective policy and regulations regarding controls on nuisance species.
- Review and update the safe yield assessment and related water supply permits.
- If the revised safe yield analysis warrants, revise water supply permits for Villages of Avon and Geneseo.
- NYSDEC is an integral part of the recommendations for in-lake measures to control weeds and algae.
 - Fisheries scientists from the agency are requested to participate in a feasibility evaluation of alewife control through increased stocking of walleye fingerlings.
 - If justified, NYSDEC would be requested to allocate fingerlings and/or actively support development of a pond cooperator program to grow fry into fingerlings prior to stocking.
 - The recommendation for alum treatment of the lake's deepest waters will benefit from NYSDEC technical participation, input on permitting issues, and allocation of funds for this lake restoration technique.
 - NYSDEC scientists are requested to participate in an evaluation of the feasibility of using aquatic moths and/or weevils to control nuisance aquatic vegetation.
 - Other recommendations for which DEC assistance is requested are streambank stabilization, aquatic plant management plan development, and monitoring and assessment.
- Continued participation of NYSDEC Region 8 on the Technical Committee.
- Participate in an annual meeting to coordinate monitoring activities in the lake and watershed.
- Grants available for water quality improvements, such as those available through the Environmental Protection Fund and the Clean Water/Clean Air Bond Act.

New York State Department of State (NYSDOS) provided major funding for preparation of the CLWMP through Title 11 of the Environmental Protection Fund.

- Funding for implementing the major CLWMP recommendations will be directed to NYSDOS for access to the Environmental Protection Fund and other funding sources.
- In May 2002, Governor Pataki announced a matching grant for a project to develop local laws, particularly related to stormwater controls, for municipalities within the Conesus Lake watershed, among others. NYSDOS staff and/or their consultants will provide technical planning support to communities in their efforts to revise local laws. This focus on local laws will advance the specific (Category A) recommendations of the Watershed Management Plan that address limits to impervious cover, riparian setback requirements, designating and protecting critical environmental areas, and encouraging cluster development regulations with strict stormwater controls.

New York State Department of Health is responsible for reviewing, approving, and promulgating changes to watershed rules and regulations as part of the state sanitary code.

- The New York State Department of Health, Bureau of Water Supply Protection is requested to review and approve changes to the Watershed Rules and Regulations reflecting the CLWMP recommendations.

New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) operates public facilities on Conesus Lake. The following activities are requested of this agency.

- Winterize toilet facilities at the state boat launch on East Lake Road.
- Participate in the planning effort to site, design, fund, and construct a pump-out facility for boats.
- Upon request by the Legislature, promulgate and enforce effective policy and regulations regarding controls on nuisance species

New York State Department of Transportation is responsible for maintaining a number of major roads in the watershed. The following CLWMP recommendations requiring implementation of best management practices for road construction and maintenance activities are directed to Highway Departments at the State, County, and Municipal levels.

- Schedule and coordinate best management practices (including, but not limited to, hydroseeding) to reduce sediment loss during road construction and maintenance activities.
- Assess specific roadbank segments that have been documented as needing restoration and include these in a phased workplan for implementation.
- Implement BMPs for highway deicing and maintenance that minimize discharge of contaminants to local waterways.
- Provide assistance in developing public education and outreach materials related to transportation issues (safe winter driving, importance of maintaining road ditches, etc).

6.6.3 REGIONAL AGENCY INVOLVEMENT

There are several regional agencies that are directly affected by the CLWMP recommendations.

Genesee/Finger Lakes Regional Planning Council (G/FLRPC) provides technical support on water resources and planning issues throughout the Finger Lakes region.

- Training municipal personnel on issues such as compliance with storm water regulations can be effectively implemented in partnership with G/FLRPC.
- Continued participation on the Technical Committee advising the Watershed Council during the implementation phase.
- Management of the Department of State grant to provide technical planning support to communities in their effort to revise local laws and control nonpoint source pollution.

The Finger Lakes-Lake Ontario Watershed Protection Alliance (FL-LOWPA) provides important services related to community-based watershed planning within the 23 New York counties that are part of the Lake Ontario drainage basin. This agency serves as an effective conduit for directing New York State funds to participating counties for implementing nonpoint source controls and water quality improvement projects (e.g., CLAWS Program).

- FL-LOWPA will continue to provide leadership on the regional issue of protecting inland lakes from invasive species.

The Genesee-Livingston-Orleans-Wyoming Region Solid Waste Management Committee (GLOW) is included in the Watershed Management Plan as a provider of technical expertise and services related to solid waste issues.

- GLOW will play a major role in the effort to develop programs to remove waste materials from farms, particularly plastics, waste oil, and obsolete pesticides.
- Identify disposal sites for weed and algae removal.

6.6.4 LIVINGSTON COUNTY AGENCY INVOLVEMENT

Controls on nonpoint sources of pollution are typically identified and implemented at the local level, and the CLWMP recommendations are no exception. Livingston County agencies have taken a lead role in efforts to restore and protect Conesus Lake. Actions of four County agencies are critical to successful implementation: Livingston County Planning Department, Livingston County Department of Health, the Livingston County Soil and Water Conservation District, and the Livingston County Water and Sewer Authority. These agencies will need to continue to devote significant staff time and resources to Conesus Lake watershed issues over the Plan's implementation phase.

Two other Livingston County agencies are the subject of specific recommendations; these agencies are the Livingston County Highway Department and the Livingston County Sheriff's Office Marine Patrol.

Livingston County Planning Department (LCPD) was designated by the CLWMP Policy Committee as interim leader of the implementation effort for a period of one to two years. With this designation comes responsibility for overall coordination of the recommendations. Specific responsibilities include:

- Support the organization of the Watershed Council.
- Draft the annual work plans for review and approval by the Council.
- Convene and support the activities of the three standing committees.
- Coordinate the activities of the multiple implementation partners.

The LCPD has primary responsibility for implementing specific recommendations of the plan:

- Modifications to local laws for controls on development activities.
- (With other agencies) Aquatic plant management plan, including formation of Special Benefit District, harvesting, and shoreline cleanup.
- Convening the annual meeting to coordinate lake and watershed monitoring.

A significant commitment will be required from the Planning Department to accomplish these assignments in addition to their ongoing commitments. The LCPD may elect to engage consultant services to assist with some of the implementation activities during their period of interim leadership.

Livingston County Department of Health (LCDOH) has been deeply involved in the efforts to develop the Watershed Management Plan and will need to continue this high level of participation during the implementation phase. Specific recommendations directed at LCDOH include:

- Revise the watershed rules and regulations to accommodate changes in boat toilets and ice fishing structures
- Develop a program to inventory individual on-site wastewater disposal systems in the watershed.
- Coordinate the actions and priorities of the Watershed Management Plan with the ongoing programs of the Watershed Inspection Program.
- Serve on the Technical Committee advising the Watershed Council.
- Review the proposal for alum application to ensure it adequately protects public health.
- Participate in the annual meeting to coordinate monitoring activities in the lake and watershed.
- Continue monitoring and assessing drinking water quality.

The Conesus Lake Watershed Inspection Program will continue to be an important mechanism for defining priority areas in need of controls to reduce transport of sediment, nutrients, and animal waste. This program will continue to focus on enforcement of the watershed rules and regulations as a means of protecting the purity and quality of the public water supply.

Livingston County Soil and Water Conservation District (SWCD) will play an important role during the implementation phase of CLWMP through their outreach and technical assistance to the agricultural community. This agency is also requested to provide leadership in identifying appropriate restoration techniques for priority roadbanks and streambanks.

- Identify producers and encourage their participation in the Whole Farm Planning/Agricultural Environmental Management (AEM) program.
- Provide technical support in identifying appropriate Best Management Practices for agricultural producers.
- Coordinate and schedule personnel and equipment with highway departments at the state, county, and municipal level in need of best management practices (including but not limited to hydroseeding) during roadway construction and maintenance.
- Serve on the Technical Committee and the Agricultural Committee advising the Watershed Council.
- Provide technical services to identify appropriate remedial techniques to restore and protect priority streambank areas.

The Livingston County Water and Sewer Authority (LCWSA) is responsible for water and sewer infrastructure projects. This agency has been an active participant in developing the Watershed Management Plan and will continue to be important in its implementation. Several important recommendations are directed at this agency.

- The Watershed Management Plan calls for expansion of the sewer area. The process of adding to the District will require strong leadership from LCWSA.
- Recommendations related to developing a boat pump-out station and winterizing toilet facilities will affect wastewater flows and loads to the Livingston County wastewater treatment plant and must be reviewed and approved by LCWSA.
- The potential for developing walleye rearing ponds at the wastewater treatment plant has been discussed at the conceptual level; additional detailed evaluation is needed to determine feasibility.

Livingston County Highway Department representatives participated in the Road System Issues Work Group. The following CLWMP recommendations requiring implementation of best management practices for road construction and maintenance activities are directed to Highway Departments at the State, County and Municipal levels.

- Schedule and coordinate best management practices (including but not limited to hydroseeding) to reduce sediment loss during road construction and maintenance activities.
- Assess specific roadbank segments that have been documented as needing restoration and include these in a phased workplan for implementation.
- Reduce the amount of winter deicing materials applied to watershed roads.
- Inventory vehicles used for application of winter deicing materials and make schedule and budget commitment to phasing in computer-controlled spreaders.
- Provide assistance in developing public education and outreach materials related to transportation issues (safe winter driving, importance of maintaining road ditches, etc).

Livingston County Sheriff's Office Marine (Navigation) Patrol is requested to continue enforcement of existing boat and personal watercraft laws. These laws address illegal waste discharges from vessels, excessive speed, and unsafe boating practices. A representative of the Sheriff's Office participated in the Recreational Use Issues Work Group.

6.6.5 MUNICIPAL INVOLVEMENT

By adopting the Watershed Council framework, the municipalities within the Conesus Lake watershed are assuming leadership and ultimate accountability for implementing the Watershed Management Plan. In addition to this overall responsibility for implementation, several recommendations are targeted to specific municipalities.

All Municipalities (*Town of Geneseo, Town of Livonia, Town of Conesus, Town of Groveland, Town of Sparta, Town of Springwater*, Village of Livonia, Village of Geneseo, and Village of Avon*) are subject to several important recommendations in the Watershed Management Plan.

- Negotiate and sign an Intermunicipal Agreement to create and fund the Watershed Council
 - Determine equitable funding formula.
 - Formalize committee structure.
 - Develop and oversee annual workplans.
- Annual reporting of progress towards implementation of the CLWMP recommendations.
- Support the Watershed Inspection Program.

Watershed Municipalities (*Town of Geneseo, Town of Livonia, Village of Livonia, Town of Conesus, Town of Groveland, Town of Sparta, and Town of Springwater**)

- Complete a detailed analysis of and revisions to local zoning and land use laws as needed to protect water resources against the effects of nonpoint source pollution. These issues include:
 - Limits to impervious cover.
 - Riparian setback requirements.
 - Designating and protecting critical environmental areas.
 - Encouraging cluster development regulations with strict stormwater controls.
 - Erosion and sediment controls during construction.
 - Requirements for sewers in existing and proposed district.
- Provide training and oversight of Highway Department personnel to ensure that the following recommendations are implemented:
 - Schedule and coordinate best management practices (including but not limited to hydroseeding) to reduce sediment loss during road construction and maintenance activities.
 - Assess specific roadbank segments that have been documented as needing restoration, and include these in a phased workplan for implementation.
 - Reduce the amount of winter deicing materials applied to watershed roads.
 - Inventory vehicles used for application of winter deicing materials and make schedule and budget commitment to phase-in computer-controlled spreaders.
- Support the activities of the Sheriff's Office Marine Patrol.

Shoreline municipalities (*Town of Geneseo, Town of Conesus, Town of Livonia and Town of Groveland*) are subject to an additional recommendation:

- Modify dock laws to add a requirement for 24-hour access to toilet facilities as part of a Special Use Permit.

Town of Geneseo is requested, in addition to the preceding recommendations, as follows:

- Winterize facilities at Long Point Park to permit year-round use of public toilets.

**Town of Springwater has not been an active participant in the Conesus Lake Watershed Management Planning process.*

- This watershed municipality is encouraged to join the Watershed Council.

6.6.6 ACADEMIC INSTITUTION INVOLVEMENT/PARTICIPATION

Researchers from SUNY Brockport and SUNY Geneseo have been a valuable resource during development of the Watershed Management Plan and would continue to be a tremendous asset during the implementation phase. Specific recommendations requiring partnerships with the academic community include:

- Experimental programs for biological control of Eurasian watermilfoil using aquatic moths and/or weevils.
- Feasibility investigation of the effectiveness of enhanced walleye stocking as a lake restoration technique, followed by development of a cooperative program for walleye rearing ponds if the feasibility investigation indicates that the benefits justify the costs.
- Conduct the detailed in-lake water chemistry profiles and jar testing required to determine the feasibility and specific design parameters of alum application.
- Participate in an annual monitoring meeting to coordinate efforts in the Conesus Lake watershed.



Weed beds can extend over large areas.

PHOTO: PETER D'AIUTO; PILOT: JIM RAFFA

- Continued pursuit of grants and other funding opportunities to benefit Conesus Lake and the watershed.
- Participation on the Technical Committee to help insure that the priority actions will continue to be based on sound science.

6.6.7 CONESUS LAKE ASSOCIATION

The Conesus Lake Association (CLA) has been a key participant in developing the Watershed Management Plan through its membership on the Planning Committee, the Public Education Subcommittee, the Policy Committee, and the Lake Management Issues Work Group. The CLA also developed a compendium of near shore aquatic weed and algae control techniques that could be used by shoreline property owners to improve the aesthetic and recreational quality of the nearshore area.

The active participation of the CLA in the planning process and their detailed reviews of draft reports have facilitated communication of the concerns of lakeshore residents. Two-way communication will be even more important during the implementation phase. The CLA is encouraged to consider renewing their participation in the Citizens Lake Assessment Program (CSLAP), which is now open to all Lake Associations by paying an enrollment fee to the New York State Federation of Lake Associations. The CLWMP recommendations look to the CLA for support with the following actions:

- Membership on the Technical Committee.
- Membership on the Public Education and Outreach Committee.
- Volunteer monitoring through CSLAP.
- Support with permitting and implementing in-lake measures.

6.6.8 PUBLIC PARTICIPATION

Residents of the Conesus Lake watershed have been active participants during plan development and will continue to be an important voice during implementation. Members of the Watershed Council are elected officials dedicated to representing their constituents. The public can express their commitment to restore and protect Conesus Lake and its watershed by communicating their support for the implementation of the CLWMP recommendations to the Watershed Council. Ultimately, residents will bear the local share of implementing the recommendations; this highlights the importance of providing public information and outreach materials. Watershed residents and the interested public are encouraged to participate in voluntary implementation activities as they arise and to participate as members of the Public Education and Outreach Committee (PEOC).

The PEOC is charged with the production of public education materials in several areas: development, agriculture, roadway issues, and recreation. Some specific topics suggested are outlined below:

- Encourage planting and protection of streamside vegetation (A-3)
- Discourage use of herbicides, pesticides, and fertilizers on shoreline properties (A-3)
- Erosion control and lake-friendly landscaping (A-3)
- Promote communication between the agricultural and non-agricultural communities (B-4)
- Recognize lake-friendly farming practices (B-4)
- Educate the non-farming public about environmental practices being carried out by agricultural producers in the watershed (B-4)
- Sensible winter driving (D-5)
- Why and when are road ditches cleaned (D-5)
- Need to keep yard debris and trash out of road ditches (D-5)
- Effect of boat speed on weeds (creates weed-chop) (E-2)
- Precautions to follow when discarding unused bait or transporting bait from one waterbody to another (exotic species introduction) (E-2)
- Need to clean and inspect boat (body, bilge, coolant system, etc.) and trailer when transporting from one waterbody to another (exotic species introduction) (E-2)
- Existing boat and personal watercraft laws (E-2)

This is not an exhaustive list. Other topics will be taken up by the PEOC as the need arises. Public input will help identify the needs of the watershed community.